Theivanai Ammal College for Women (Autonomous)

(Affiliated to the Annamalai University - Chidambaram)
(Accredited by NAAC (3rd Cycle) with CGPA of 3.2/4 at 'A' Grade)
(Recognized under 2(f) and 12(B) by UGC)
Villupuram, Tamilnadu

ACADEMIC COUNCIL BOOKLET - XVI
(Arts & Science)

18th March 2023

தமிழாய்வுத்துறை

இளங்கலைத்தமிழ்

முகவுரை

ஆறு பருவங்களுக்குரிய பாடத்திட்ட வடிவமைப்பு இடம்பெற்றுள்ளது. **ஆறாம்** பருவத்திற்கு உரிய பாடத்திட்டம் மற்றும் அகமதிப்பீட்டுக் கூறுகள் இடம்பெற்றுள்ளன. **இப்பாடத்திட்டமானது 2021 - 2024 ஆம் கல்வியாண்டுகளில் பயிலும் மாணவியர்களுக்கு உரியது.**

பாடத்திட்ட அமைப்பு : இளங்கலைத்தமிழ் (B.A)

பாடத்திட்டப் பயன்கள்

PSO – 1 தமிழ் இலக்கியம் மற்றும் இலக்கணங்களின் வளர்ச்சி நிலைகளை அறிந்து கொள்வர்.

PSO – 2 தமிழர் வரலாற்றினையும் பண்பாட்டினையும் புரிந்து கொள்வர்.

PSO – 3 இலக்கியம் வழி கண்டறிந்த நெறிகளை வாழ்வில் பொருத்திப் பார்க்கும் திறனைப் பெறுவர்.

PSO – 4 தமிழியல் கூறுகின்ற மெய்மைகளைக் காரண காரிய அடிப்படையில் பகுத்தாய்வர்.

PSO – 5 தமிழ் இலக்கியம் முன்மொழிகின்ற செந்நெறிகளை மதிப்பிட்டு ஆராயும் திறன் பெறுவர்.

PSO– 6 தமிழ் இலக்கிய வகைமைகளை கற்றுத்தெளிந்து புத்திலக்கியங்களைப் படைக்கும் திறன் மற்றும் பணி வாய்ப்பினை பெறும் திறன் பெறுவர்.

பருவம்	பிரிவு	வகை	பாடக் குறியீடு	பாடத்தலைப்பு	முன் பாடக் குறியீடு	வாரம் மணி நேரம்	தரம் Min/ Max
I	I	தமிழ்	UTAL107 UTAL108	பொதுத்தமிழ் - I / சிறப்புத்தமிழ் - I	UTAL105/ UTAL106	5	3/4
	II	ஆங்கிலம்	UENL109/ UENL110	English for Communication (Stream-I) / English for Communication (Stream-II)	UENL107/ UENL108	5	3/4
	III	முதன்மைப்பாடம் - I	UTAM102	நன்னூல் - எழுத்ததிகாரம்	-	6	4
		முதன்மைப்பாடம் - II	UTAM110	தமிழ் மொழி வரலாறு	-	6	4
		சார்புப்பாடம் - III	UTAA111	இக்கால இலக்கியங்கள்	-	6	4
		அலுவல்சார் ஆங்கிலம்	UPEM101	Professional English I	-	6	4
	IV	மதிப்பீட்டுக் கல்வி			-	2	1
				மொத்தம்		**36**	**23/25**
II	I	தமிழ்	UTAL207 UTAL208	பொதுத்தமிழ் - II / சிறப்புத்தமிழ் - II	UTAL205/ UTAL 206	5	3/4
	II	ஆங்கிலம்	UENL209/ UENL210	English for Communication (Stream-I) / English for Communication (Stream-II)	UENL207/ UENL208	5	3/4
	III	முதன்மைப்பாடம் - IV	UTAM202	நன்னூல் - சொல்லதிகாரம்	-	5	4
		முதன்மைப்பாடம் - V	UTAM206	சிற்றிலக்கியங்கள்	-	5	4
		முதன்மைப்பாடம் - VI	UTAR201	பயிற்சிப் பட்டறை - I		2	1
		சார்புப்பாடம் - I	UTAA207	தமிழ் இலக்கிய வரலாறு	-	5	4
		அலுவல்சார் ஆங்கிலம்	UPEM201	Professional English II	-	6	4
	IV	துறை சாரா விருப்பப்பாடம் - I	UTAE203	படைப்பிலக்கியம் - I	-	3	2

	V	கூடுதல் செயல்பாடு (ExtensionActivites)			-	-	2
				மொத்தம்		**36**	**27/29**
III	I	தமிழ்	UTAL307 UTAL308	பொதுத்தமிழ் - III / சிறப்புத்தமிழ் - III	UTAL 305/ UTAL306	5	3/4
	II	ஆங்கிலம்	UENL309 UENL310	English for Communication (Stream-I)/ English for Communication (Stream-II)	UENL 307/ UENL 308	5	3/4
	III	முதன்மைப்பாடம் - VII	UTAM303	யாப்பருங்கலக்காரிகை	-	5	4
		முதன்மைப்பாடம் - VIII	UTAM304	காப்பியங்கள்		4	4
		முதன்மைப்பாடம் - IX	UTAM306	கவிதை இலக்கியம்		4	4
		சார்புப்பாடம் - II	UTAA306	தமிழக வரலாறும் பண்பாடும்	UTAM106	5	4
		செயல்முறைக் கற்றல்		பாரதியார் அருங்காட்சியகம்			
		மதிப்பீட்டுக்கல்வி				2	1
				மொத்தம்		**30**	**23/25**
IV	I	தமிழ்	UTAL407 UTAL408	பொதுத்தமிழ் - IV/ சிறப்புத்தமிழ் - IV	UTAL405/ UTAL406	5	3/4
	II	ஆங்கிலம்	UENL409 UENL410	English for Communication (Stream-I) / English for Communication (Stream-II)	UENL407/ UENL 408	5	3/4
	III	முதன்மைப்பாடம் - X	UTAM401	புறப்பொருள் வெண்பாமாலை	-	5	5
		முதன்மைப்பாடம் - XI	UTAM405	அற இலக்கியங்கள்	-	4	4
		முதன்மைப்பாடம் - XII	UTAR401	பயிற்சி பட்டறை - II		2	1
		சார்புப்பாடம் - III	UTAA404	நாட்டுப்புறவியல்	UTAM601	4	4
	IV	துறைசாரா விருப்பப்பாடம் - II	UTAE402	படைப்பிலக்கியம் - II	-	3	2
		செயல்முறைக் கற்றல்		திருவக்கரை			
		Online course		Spoken Tutorial(NPTEL)		3	1/2
		திறன்சார்கல்வி			-	2	1
	V	கூடுதல் செயல்பாடு (Extension Activites)					2
				மொத்தம்		**33**	**26/29**
V	III	முதன்மைப்பாடம் - XIII	UTAM505	கவின் கலைகள்	-	6	5
		முதன்மைப்பாடம் - XIV	UTAM506	சமய இலக்கியம்	-	6	4
		முதன்மைப்பாடம் - XV	UTAM509	நம்பியகப்பொருள்	UTAM403	6	5
		முதன்மைப்பாடம் - XVI	UTAP501/ UTAM510	திட்டக்கட்டுரை / ஊடகத்தமிழ்	-	5	4/5
		துறைசார் விருப்பாடம் - I	UTAO511 UTAO512 UTAO513	நாடகவியல் பெண்ணியம் சிந்தனையியல்	-	5	4
	IV	மதிப்பீட்டுக்கல்வி				2	1
				மொத்தம்		**30**	**23/24**

VI	III	முதன்மைப்பாடம் - XVII	UTAM603	இலக்கியத் திறனாய்வியல்	-	5	5
		முதன்மைப்பாடம் - XVIII	UTAM610	இணையத்தமிழ்	-	5	5
		முதன்மைப்பாடம் -XIX	UTAM607	தண்டியலங்காரம்	-	6	6
		முதன்மைப்பாடம் - XX	UTAM609	சங்க இலக்கியம்	-	5	5
		முதன்மைப்பாடம் - XXI	UTAR601	பயிற்சி பட்டறை - III		2	1
		துறைசார் விருப்பப்பாடம் - II	UTAO610 UTAO611 UTAO612	புலம்பெயர்வு இலக்கியம் பெண்ணியப் படைப்புகள் விளம்பரவியல்	-	5	4
		புறவாய்மொழித்தேர்வு	UTAC606	மீள் ஆய்வு	-	-	1
	IV	திறன்சார்கல்வி			-	2	1
	V	கள ஆய்வு	UTAF601				
		கூடுதல் செயல்பாடு (Extension Activites)			-	-	2
		கிராமபுறப் பயன்பாட்டு திட்டம்					
மொத்தம்						**30**	**26**
கூட்டு எண்ணிக்கை						**195**	**148/158**

இலக்கியத் திறனாய்வியல்
UTAM603

பருவம் : ஆறாம் பருவம் **தரம்** : 05
பிரிவு : முதன்மைப்பாடம் – XVII **மணிநேரம்/வாரம்** : 05
வகுப்பு : III BA தமிழ் **மொத்தமணிநேரம்** : 65

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் 1	இலக்கியத்தினை திறனாய்வு செய்யும் நெறிமுறைகள் குறித்து புரிந்து கொள்ள செய்தல்.
கற்றலின் நோக்கம் 2	இலக்கியங்களின் பொருண்மைகளை திறனாய்வியல் நோக்கில் பொருத்திப் பார்க்கச் செய்தல்.
கற்றலின் நோக்கம் 3	திறனாய்வு வகைமைகளைக் கொண்டு இலக்கியங்களை பகுப்பாய்வு செய்ய செய்தல்.
கற்றலின் நோக்கம் 4	தமிழில் தோன்றிய அனைத்து இலக்கிய வகைமைகளையும் மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் 5	திறனாய்வுக் கோட்பாடுகளை இலக்கியங்களில் புகுத்தி விமர்சனம் செய்யச் செய்ய செய்தல்.

அலகு – 1 திறனாய்வு அறிமுகம் **13 மணி நேரம்**

இலக்கியத் திறனாய்வு – தரமான திறனாய்வாளர் - திறனாய்வு வகைகள் - திறனாய்வால் ஏற்படும் சிக்கல்கள் - உரையாசிரியர்கள் திறனாய்வார்கள்.

அலகு – 2 இலக்கியப் பாகுபாடுகள் **10 மணி நேரம்**

இலக்கியமும் வாழ்க்கையும் - இலக்கியப் பாகுபாடுகள் - இலக்கிய உணர்ச்சி - கற்பனை - இலக்கியத்தில் கருத்து - உண்மையியல் - குறிக்கோள்நிலை - நடை - இலக்கியத்தில் இயற்கை.

அலகு – 3 கவிதை **20 மணி நேரம்**

கவிதையின் விளக்கம் - கவிதையின் கூறுகள் - தொடைகள் - கவிதையும் யாப்பு வடிவமும் - சொல்லாட்சி - அணிகள் - உள்ளுறை உவமம் - கவிதை வகைகள் - புதுக்கவிதை விளக்கம் - புதுக்கவிதை போக்குகள் - புதுக்கவிதைக்குரிய பொருள்.

அலகு – 4 நாவல் **10 மணி நேரம்**

நாவல் விளக்கம் - நாவலுக்குரிய கதையும், கதைகோப்பும், கதைக்குரிய பொருள் - கதைமாந்தர் - உரையாடல் - கதையமைப்பு – சிறுகதை விளக்கம் - சிறுகதையின் அமைப்பு - புதினம், சிறுகதை வேறுபாடுகள்.

அலகு – 5 நாடகம் **12 மணி நேரம்**

நாடகம் விளக்கம் - நாடகத்தின் கதைக்கோப்பு பாத்திரங்கள் - நாடக அமைப்புகளும் அவற்றின் இயல்புகளும் - காட்சிகள் அமைப்பு - நாடகத்திற்குரிய இடமும், காலமும் - நாடகத்திற்கும் புதினத்திற்கும் உள்ள வேறுபாடுகள்.

பாடநூல்கள்

- பாலச்சந்திரன்,சு. (2011). இலக்கியத் திறனாய்வு.நியூ செஞ்சுரி புக் ஹவுஸ். சென்னை.

பார்வை நூல்கள்

- ஞானசம்பந்தன்,அ.ச. (2010). இலக்கியக் கலை. சைவ சித்தாந்தம். சென்னை.
- ஞானமூர்த்தி,தா.ஏ. (2011). இலக்கியத் திறனாய்வியல். ஐந்திணைப் பதிப்பகம். சென்னை.

கற்றலின் பயன்கள் வரிசை எண்	**கற்றலின் பயன்கள்**	**Bloom's Level**
கற்றலின் பயன்கள் 1	இலக்கியத்தினை திறனாய்வு செய்யும் நெறிமுறைகள் குறித்து புரிந்து கொள்வர்.	K1 , K2
கற்றலின் பயன்கள் 2	இலக்கியங்களின் பொருண்மைகளை திறனாய்வியல் நோக்கில் பொருத்திப் பார்க்கும் திறன் பெறுவர்	K3
கற்றலின் பயன்கள் 3	திறனாய்வு வகைமைகளைக் கொண்டு இலக்கியங்களை பகுப்பாய்வு செய்யும் திறன் பெறுவர்.	K4
கற்றலின் பயன்கள் 4	தமிழில் தோன்றிய அனைத்து இலக்கிய வகைமைகளையும் மதிப்பிடும் திறன் பெறுவர்.	K5
கற்றலின் பயன்கள் 5	திறனாய்வுக் கோட்பாடுகளை இலக்கியங்களில் புகுத்தி விமர்சனம் செய்யும் திறன் பெறுவர்	K6

CO/PSO	PSO 1	PSO 2 .	PSO 3	PSO 4 .	PSO 5	PSO 6
CO 1	**3**	**3**	**3**	**1**	**1**	**1**
CO 2	**3**	**3**	**3**	**2**	**2**	**2**
CO 3	**3**	**3**	**3**	**3**	**2**	**2**
CO 4 .	**3**	**3**	**3**	**3**	**3**	**3**
CO 5	**3**	**3**	**3**	**3**	**3**	**3**

உயர்தர இணைநிலை **73%**

இடைத்தர இணைநிலை **17 %**

குறைதர இணைநிலை **10 %**

இணையத் தமிழ்
UTAM610

பருவம் : ஆறாம் பருவம் **தரம்** : 05
பிரிவு : முதன்மைப்பாடம் - XVIII **மணிநேரம் வாரம்** : 05
வகுப்பு : இளங்கலைத்தமிழ் **மொத்த மணிநேரம்** : 65

கற்றல் நோக்கம் வரிசை எண்	**கற்றல் நோக்கம்**
கற்றல் நோக்கம் 1	இணையத்தில் தமிழின் தோற்ற நிலை மற்றும் வளர்ச்சி படிநிலைகளை புரிந்து கொள்ளச் செய்தல்.
கற்றல் நோக்கம் 2	இணையத்தினை பயன்படுத்தும் முறைகள் குறித்தும் இணையத்தில் தமிழின் பங்களிப்புகள் குறித்தும் பொருத்திப் பார்க்கச் செய்தல்.
கற்றல் நோக்கம் 3	இணையத்தின் தேவைகளை சமூகத்தோடு பொருத்திப் பார்த்து சமுதாயத்தில் இணையத்தின் தேவை குறித்து பகுத்தாராயச் செய்தல்.
கற்றல் நோக்கம் 4	இணையம், இணையத்தமிழ், இணையத்தமிழ் இதழ்களின் தேவை மற்றும் பங்களிப்பு நிலைகளை மதிப்பிடச் செய்தல்.
கற்றல் நோக்கம் 5	தமிழை இணையத்தில் பயன்படுத்தும் நிலைகளை அறிந்து படைப்புகளை தரவேற்றம் செய்யும் ஆற்றல் மற்றும் செயலிகளை உருவாக்கும் திறன்களைப் பெற செய்தல்.

அலகு – 1 இணையம் **12 மணி நேரம்**

இணையம் அறிமுகம் – இணையம் சொல் விளக்கம் – மேம்பாட்டு ஆய்வுத்திட்ட முகவான்மை வலையகம் - ஆர்பா நெட் – டார்பா நெட் – இணையத்தின் வளர்ச்சி – உலகளாவிய வலையின் தோற்றம் – இணைய உலாவிகள் .

அலகு – 2 இணையத்தமிழ் **15 மணி நேரம்**

தமிழின் முதல் வலையேற்றம் – இணையத்தில் தமிழின் பயன்பாடு - தமிழ் இணையக்கல்விக்கழகம் - இணையத்தில் தமிழ்க்கல்வி தமிழ் - இணையக் கல்விக்கழகம் - குறிக்கோள்கள் – கல்வித்திட்டம் - பாடத்திட்டங்கள் – சான்றிதழ் – பட்டயம் இணைய வகுப்பறை – தேர்வு முறைகள் – மின் நூலகம் – சுவடிக்காட்சியகம் – கலைச்சொல் தொகுப்புகள்

அலகு – 3 இணையத்தமிழ் இதழ்கள், வலைப்பதிவுகள் **12 மணி நேரம்**

இணையத்தமிழ் இதழ் – இணையத்தமிழ் இதழ்களின் பொதுப்பண்புகள் – இணையத்தமிழ் இதழ்களின் தோற்றம் – வளர்ச்சி நிலைகள் - இணைய இதழ்களின் வகைபாடுகள் - இலக்கியம் – படைப்பு – பல்சுவை – பக்தி – புகலிடம் - சமூகம் - ஆய்வு – மருத்துவம் – அறிவியல் – மகளிர் – தனிமனித கருத்துக்கள் - வலைப்பதிவு சொற்பொருள் விளக்கம் – வலைப்பதிவின் பகுதிகள் - பதிவின் முகப்பு – தலைப்பு – உட்பகுதி – இடுகைகள் சேமிப்பகம் – தொடுப்புகள் – வலைப்பதிவின் பொதுப்பண்புகள் – வலைப்பதிவின் வகைப்பாடுகள்.

அலகு – 4 இணையத்தில் மின்னஞ்சல் **12 மணி நேரம்**

மின்னஞ்சல் சேவைத்தரும் நிறுவனங்கள் - மின்னஞ்சலின் பகுதிகள் – தமிழில் மின்னஞ்சல் அனுப்பும் வழிமுறைகள் – மின்னஞ்சலின் பொதுப்பண்புகள் – சிறப்புகள் – இணையத் தேடுதளங்கள் – தேடுதளங்களின் அமைப்பு முறைகள் – தமிழில் இணையத்தேடுதலுக்கான வழிமுறைகள்.

அலகு – 5 தமிழ் வளர்ச்சியில் இணையம் **14 மணி நேரம்**

இணையத்தில் தமிழ் அகராதி – கலைக்களஞ்சியம் – விக்கிப்பீடியா – மொழிப்பெயர்ப்புகள் – நூலகங்கள் - தமிழாய்வு வளர்ச்சியில் இணையத்தின் பங்களிப்புகள்.

பாட நூல்கள்

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பார்வை நூல்கள்

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கற்றல் பயன்கள் வரிசை எண்	**கற்றல் பயன்கள்**	Bloom's Level
கற்றல் பயன்கள் 1	இணையத்தில் தமிழின் தோற்ற நிலை மற்றும் வளர்ச்சி படிநிலைகளை புரிந்து கொள்வர்.	K1, K2
கற்றல் பயன்கள் 2	இணையத்தினை பயன்படுத்தும் முறைகள் குறித்தும் இணையத்தில் தமிழின் பங்களிப்புகள் குறித்தும் பொருத்திப் பார்க்கும் திறன் பெறுவர்.	K3
கற்றல் பயன்கள் 3	இணையத்தின் தேவைகளை சமூகத்தோடு பொருத்திப் பார்த்து சமுதாயத்தில் இணையத்தின் தேவை குறித்து பகுத்தாய்ந்து பார்க்கும் திறன் பெறுவர்.	K4
கற்றல் பயன்கள் 4	இணையம், இணையத்தமிழ், இணையத்தமிழ் இதழ்களின் தேவை மற்றும் பங்களிப்பு நிலைகளை மதிப்பிடும் திறன் பெறுவர்.	K5
கற்றல் பயன்கள் 5	தமிழை இணையத்தில் பயன்படுத்தும் நிலைகளை அறிந்து படைப்புகளை தரவேற்றம் செய்யும் ஆற்றல் மற்றும் செயலிகளை உருவாக்கும் திறன்களைப் பெறுவர்.	K6

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	2	1	1
CO 2	3	3	2	2	2	2
CO 3	3	3	3	3	2	2
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

உயர்தர இணைநிலை **69 %**

இடைத்தர இணைநிலை **24 %**

குறைதர இணைநிலை **7 %**

தண்டியலங்காரம்

UTAM607

பருவம் : ஆறாம் பருவம் **தரம்** : 06

பிரிவு : முதன்மைப்பாடம் – XIX **மணிநேரம்/வாரம்** : 06

வகுப்பு : III BA தமிழ் **மொத்தமணிநேரம்** : 78

கற்றல் நோக்கம் வரிசை எண்	கற்றல் நோக்கம்
கற்றல் நோக்கம் 1	இலக்கியங்களில் அணி பயின்று வரும் தனித்துவம் குறித்து புரிந்து கொள்ளச் செய்தல்.
கற்றல் நோக்கம் 2	இலக்கியங்களில் பயின்று வரும் அணியின் வகைகளை பொருத்திப் பார்க்கச் செய்தல்.
கற்றல் நோக்கம் 3	இலக்கணங்களில் இடம்பெற்றுள்ள அணிவகைகளை பகுத்தாராயச் செய்தல்.
கற்றல் நோக்கம் 4	இலக்கணங்களில் பயின்று வரும் அணிகள் குறித்து மதிப்பிடச் செய்தல்.
கற்றல் நோக்கம் 5	இலக்கண இலக்கியங்களை பிழையின்றி பேசும் எழுதும் திறன் பெற செய்தல்..

அலகு – 1 அணியின் தோற்றம் **14 மணி நேரம்**

அணிவிளக்கம் - தண்டியலங்காரம் - தன்மை - வகைகள் – உவமை வகைகள் - உருவகம் வகைகள்.

அலகு – 2 அணி வகைகள் **20 மணி நேரம்**

தீவகம் - வகைகள் -வேற்றுப்பொருள் வைப்பு அணி - வகைகள் - முன்னவிலக்கு - வகைகள் - வேற்றுமை

அலகு – 3 அணி வகைகள் **15 மணி நேரம்**

ஏது - வகைகள் - அதிசயஅணி - வகைகள் - ஒட்டணி - நுட்பம் - நிரல்நிரைஅணி.

அலகு – 4 அணி வகைகள் **14 மணி நேரம்**

பரியாயஅணி – அவநுதி - வகைகள் - சிலேடை- வகைகள் - மாறுபடுபுகழ் நிலையணி – நிதர்சனஅணி

அலகு – 5 அணி வகைகள் **15 மணி நேரம்**

பரிவர்த்தனஅணி - வாழ்த்தணி - சீங்கீரணஅணி – பாவிக அணி.

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கற்றலின் பயன்கள் வரிசை எண்	**கற்றலின் பயன்கள்**	**Bloom's Level**
கற்றலின் பயன்கள் 1	இலக்கியங்களில் அணி பயின்று வரும் தனித்துவம் குறித்து புரிந்து கொள்வர்.	K1, K2
கற்றலின் பயன்கள் 2	இலக்கியங்களில் பயின்று வரும் அணியின் வகைகளை பொருத்திப் பார்க்கும் திறன் பெறுவர்.	K3
கற்றலின் பயன்கள் 3	இலக்கணங்களில் இடம்பெற்றுள்ள அணிவகைகளை பகுத்தாராய்ந்து பார்க்கும் திறன் பெறுவர்.	K4
கற்றலின் பயன்கள் 4	இலக்கணங்களில் பயின்று வரும் அணிகள் குறித்து மதிப்பிட்டு அறியும் திறன் பெறுவர்.	K5
கற்றலின் பயன்கள் 5	இலக்கண இலக்கியங்களை பிழையின்றி பேசும் எழுதும் திறன் பெறுவர்.	K6

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	1	1	1
CO 2	3	3	3	2	2	2
CO 3	3	3	3	3	2	2
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

உயர்தர இணைநிலை **73 %**

இடைத்தர இணைநிலை **17 %**

குறைதர இணைநிலை **10 %**

சங்க இலக்கியம்
UTAM609

பருவம் : ஆறாம் பருவம் **தரம்** : 05

பிரிவு : முதன்மைபாடம் - XX **மணி நேரம்/வாரம்** : 05

வகுப்பு : III B.A. தமிழ் **மொத்தமணி நேரம்** : 65

கற்றல் நோக்கம் வரிசை எண்	கற்றல் நோக்கம்
கற்றல் நோக்கம் 1	அகவாழ்விற்கு உண்டான தனிச் சிறப்புகள் குறித்து புரிந்து கொள்ளச் செய்தல்.
கற்றல் நோக்கம் 2	இலக்கியங்கள் வெளிப்படுத்தும் மானுட மாண்புகளைப் பொருத்திப் பார்க்கச் செய்தல்.
கற்றல் நோக்கம் 3	இலக்கியத்தினை வாழ்வில் பகுத்தாராயச் செய்தல்.
கற்றல் நோக்கம் 4	இலக்கியங்களின் வழி அறிந்த வாழ்க்கை நிலை குறித்து காலமாற்றத்திற்கு ஏற்ப மதிப்பிடச் செய்தல்.
கற்றல் நோக்கம் 5	இலக்கியங்கள் வழி பெற்ற நன்னெறி கற்றல் அனுபவங்களை நடைமுறை வாழ்வில் செயல்படுத்தும் திறன் பெற செய்தல்.

அலகு – 1 அக இலக்கியம் (தொகை) **14 மணி நேரம்**

நற்றிணை - பாலை (பாடல் எண் -103), நெய்தல் (பாடல் எண் -172) - குறிஞ்சி – (பாடல் எண் - 32), முல்லை (பாடல் எண் -115) - மருதம் (பாடல் எண் -120) **ஐங்குறுநூறு -** குறிஞ்சி - கிள்ளைப் பத்து (பாடல் எண் – 281) முல்லை - செவிலிக் கூற்று பத்து (பாடல் எண் – 404) மருதம் - தோழிக்குரைத்து பத்து (பாடல் எண் -32) நெய்தல் - வளைப்பத்து (பாடல் எண் – 281) பாலை - செலவழுங்குவித்து பத்து – (பாடல் எண் -301) **குறுந்தொகை -** குறிஞ்சி (பாடல் எண் –

208) முல்லை (பாடல் எண் -220) மருதம் (பாடல் எண் -258) நெய்தல் (பாடல் எண் – 226) பாலை (பாடல் எண் – 232) **அகநானூறு -** குறிஞ்சி (பாடல் எண் – 28) முல்லை (பாடல் எண் – 44) மருதம் (பாடல் எண் – 36) நெய்தல் (பாடல் எண் – 80) பாலை (பாடல் எண் – 9).

அலகு – 2 அக இலக்கியம் (பாட்டு) **14 மணி நேரம்**

முல்லைப்பாட்டு (முழுவதும்).

அலகு – 3 புற இலக்கியம் (தொகை) **12 மணி நேரம்**

புறநானூறு - கலைஞர்கள் வாழ்க்கை பற்றிய (பாடல் எண்-14, 68, 141,155) பதிற்றுப்பத்து - கபிலர் - செல்வக்கடுங்கோவாழியாதன் (7- ஆம் பத்து).

அலகு – 4 புற இலக்கியம் (பாட்டு) **12 மணி நேரம்**

சிறுபாணாற்றுப்படை (முழுவதும்)

அலகு – 5 அகப்புற இலக்கியம் **13 மணி நேரம்**

பரிபாடல் - திருமால் – தொழுது பேணுவோம் (2ஆம் பாடல்), செவ்வேள் - வெற்றிவேல் (5ஆம் பாடல்), வையை - புது வெள்ளம் வருகின்றது (6ஆம் பாடல்).

பாடநூல்கள்

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- சிதம்பரனார்,சாமி. (2011). எட்டுத்தொகையும் தமிழர் பண்பாடும். அறிவுப்பதிப்பகம். சென்னை.

கற்றல் பயன்கள் வரிசை எண்	**கற்றல் பயன்கள்**	**Bloom's Level**
கற்றல் பயன்கள் 1	அகவாழ்விற்கு உண்டான தனிச் சிறப்புகள் குறித்து புரிந்து கொள்வர்.	K1, K2
கற்றல் பயன்கள் 2	இலக்கியங்கள் வெளிப்படுத்தும் மானுட மாண்புகளைப் பொருத்திப் பார்க்கும் திறன் பெறுவர்.	K3
கற்றல் பயன்கள் 3	இலக்கியத்தினை வாழ்வில் பகுத்தாராய்ந்து பார்க்கும் திறன் பெறுவர்.	K4
கற்றல் பயன்கள் 4	இலக்கியங்களின் வழி அறிந்த வாழ்க்கை நிலை குறித்து காலமாற்றத்திற்கு ஏற்ப மதிப்பிட்டு அறியும் திறன் பெறுவர்.	K5
கற்றல் பயன்கள் 5	இலக்கியங்கள் வழி பெற்ற நன்னெறி கற்றல் அனுபவங்களை நடைமுறை வாழ்வில் செயல்படுத்தும் திறன் பெறுவர்.	K6

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	1	1	1
CO 2	3	3	3	2	2	1
CO 3	3	3	3	3	2	1
CO 4	3	3	3	3	3	2
CO 5	3	3	3	3	3	3

உயர்தர இணைநிலை **69 %**

இடைத்தர இணைநிலை **14 %**

குறைதர இணைநிலை **17 %**

பயிற்சிப் பட்டறை – III
UTAR601

பருவம் : ஆறாம் பருவம் **தரம்** : 01

பிரிவு : முதன்மைப்பாடம் - XXI **மணிநேரம் / வாரம்** : 02

வகுப்பு : III B.A. தமிழ் **மொத்தமணிநேரம்** : 26

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் 1	மேடைப்பேச்சிற்கான வரலாறு, வரைமுறைகள் குறித்து புரிந்து கொள்ளச் செய்தல்.
கற்றலின் நோக்கம் 2	பொது மன்றத்தில் கருத்தை சமூகம் சார்ந்து இலக்கிய நயத்துடன் வெளிப்படுத்தும் முறைகளை பொருத்திப் பார்க்கச் செய்தல்.
கற்றலின் நோக்கம் 3	பேச்சு, நடிப்பு ஆகியவற்றின் சிறப்பியல்புகளை வாழ்க்கையில் பகுத்தாராயச் செய்தல்.
கற்றலின் நோக்கம் 4	மேடைப்பேச்சு, பட்டிமன்றம், நிகழ்ச்சி தொகுப்பு ஆகியவற்றில் உள்ள வேறுபாடுகளை மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் 5	பேச்சு மற்றும் நடிப்புதிறன் சார்ந்த அடிப்படை நுட்பங்களை அறிந்து பேச்சாளராக, நடிப்புதிறன் மிக்கவராக, நாடகங்கள் இயக்குபவராக பணி வாய்ப்பினை பெறும் திறன் பெற செய்தல்.

அலகு - 1 மேடைப் பேச்சு **5 மணி நேரம்**

குரல் வளம் - உச்சரிப்பு - மொழிஅறிவு - குரலில் ஏற்ற இறக்கம் - பிழையின்றி பேசுதல் - பேச்சாளனும் நூல் வாசிப்பும் - பிறமொழிச் சொற்களை தவிர்த்தல் - பயிற்சி அளித்தல்.

அலகு – 2 பட்டிமன்றமும், நகைச்சுவை மன்றமும் **4 மணி நேரம்**

கருத்தை தெளிவாக வெளிப்படுத்தும் திறன் - சமூகம் மற்றும் உலகியல் பற்றிய தெளிவு - இனிமையான உரையாடல் - கருத்துகளை துணிவுடன் எடுத்துரைத்தல் தன்மை - எதிர் மறுத்துரைத்தல் - நகைச்சுவை உணர்வு - பயிற்சி அளித்தல்.

அலகு - 3 நிகழ்ச்சி தொகுப்பாளர் **6 மணி நேரம்**

வானொலி - தொலைக்காட்சி - பல்வேறு விழாக்கள் - தொகுப்பு முறை பற்றிய தெளிவு - நிகழ்ச்சி குறித்த தெளிவு - மொழிப்புலமை – குரல் வளம் - பயிற்சி அளித்தல்.

அலகு - 4 ஒரங்க நாடகம் எழுதுதல் **5 மணி நேரம்**

வானொலி - தொலைக்காட்சி - திரைப்படத்திற்கு வழங்கப்படும் சூழலைக்கொண்டு ஒரங்கநாடகம் எழுதபயிற்சி அளித்தல்.

அலகு - 5 மௌன மொழி நாடகம் **6 மணி நேரம்**

கதைக்கரு உருவாக்கம் – தமிழ் இலக்கியத்தில் உள்ள மெய்ப்பாடுகளை வெளிக்கொணர்தல் - உடல் அசைவு - இசைப்புலமை – கருத்து வெளிப்பாடு - முகபாவணை – நடிப்புத்திறன் பயிற்சி அளித்தல்

பாடநூல்

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வரிசை எண்	கற்றலின் பயன்கள்	Bloom's Level
கற்றலின் பயன்கள் 1	மேடைப்பேச்சிற்கான வரலாறு, வரைமுறைகள் குறித்து புரிந்து கொள்வர்.	K1, K2
கற்றலின் பயன்கள் 2	பொது மன்றத்தில் கருத்தை சமூகம் சார்ந்து இலக்கிய நயத்துடன் வெளிப்படுத்தும் முறைகளை பொருத்திப் பார்க்கும் திறன் பெறுவர்.	K3
கற்றலின் பயன்கள் 3	பேச்சு, நடிப்பு ஆகியவற்றின் சிறப்பியல்புகளை	K4

	வாழ்க்கையில் பகுத்தாராய்துப் பார்க்கும் திறன் பெறுவர்.	
கற்றலின் பயன்கள் 4	மேடைப்பேச்சு, பட்டிமன்றம், நிகழ்ச்சி தொகுப்பு ஆகியவற்றில் உள்ள வேறுபாடுகளை மதிப்பிட்டு அறியும் திறன் பெறுவர்.	K5
கற்றலின் பயன்கள் 5	பேச்சு மற்றும் நடிப்புதிறன் சார்ந்த அடிப்படை நுட்பங்களை அறிந்து பேச்சாளராக, நடிப்புதிறன் மிக்கவராக, நாடகங்கள் இயக்குபவராக பணி வாய்ப்பினை பெறும் திறன் பெறுவர்.	K6

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**3**	**2**	**2**	**2**	**2**
CO 2	**3**	**3**	**3**	**2**	**2**	**2**
CO 3	**3**	**3**	**3**	**3**	**2**	**2**
CO 4	**3**	**3**	**3**	**3**	**3**	**3**
CO 5	**3**	**3**	**3**	**3**	**3**	**3**

உயர்தர இணைநிலை **70 %**

இடைத்தர இணைநிலை **30 %**

குறைதர இணைநிலை -

புலம்பெயர்வு இலக்கியம்

UTAO610

பருவம் : ஆறாம் பருவம் **தரம்** : 04

பிரிவு : துறைசார் விருப்பபாடம் II **மணிநேரம் / வரம்** : 05

வகுப்பு : இளங்கலை மூன்றாம் ஆண்டு (தமிழ்) **மொத்தமணி நேரம்** : 65

கற்றலின் நோக்கம் வரிசை எண்	**கற்றலின் நோக்கம்**
கற்றலின் நோக்கம் 1	புலம்பெயர்ந்த தமிழர்களின் தொடக்காலம் முதல் இக்காலம் வரை உள்ள வரலாற்றினை குறித்து புரிந்து கொள்ளச் செய்தல்.
கற்றலின் நோக்கம் 2	புலம்பெயர்வு இலக்கியங்களின் பங்களிப்பினை படைப் பிலக்கியங்களின் வாயிலாக பொருத்திப் பார்க்கச் செய்தல்.

கற்றலின் நோக்கம் 3	புலம்பெயர்ந்து அயலகங்களில் வாழும் புலம்பெயர்ந்த மக்களின் வாழ்க்கை அனுபவங்களை தாயக வாழ்க்கையுடன் பகுத்தாராயச் செய்தல்.
கற்றலின் நோக்கம் 4	புலம்பெயர்ந்த தமிழர்களின் தன் தாய் நாட்டில் பின்பற்றிய தனித்துவமிக்க அடையாளங்களை பிறநாடுகளுக்கு சென்ற பிறகும் கடைபிடிக்கும் முறைகளை மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் 5	புலம் பெயர்ந்த தமிழர்கள் அயலகங்களில் எதிர்கொள்ளும் வாழ்க்கைச் சார்ந்த சிக்கல்களை அறிந்து புதிய படைப்புகளின் வாயிலாக சமூகத்தில் வெளிப்படுத்தும் திறன் பெற செய்தல்.

அலகு – 1 தமிழில் புலம்பெயர்வு இலக்கியத்தின் தோற்றம் 15 மணி நேரம்

காலனிய ஆதிக்கம் – குடியேற்றம் – குடியிறக்கம் - புலம்பெயர்வு – புலம்பெயர்வுக்கான சமூக அரசியல் – பொருளாதாரக் காரணங்கள் – புலப்பெயர்வின் வரலாறு – புலம்பெயர்வுக் கோட்பாடுகள் – புலம்பெயர்வுக்கான காரணங்கள்.

அலகு – 2 புலம்பெயர்வு இலக்கியத்தின் உருவமும், உள்ளடக்கமும் 15 மணி நேரம்

தமிழில் புலம்பெயர்வு இலக்கியம் – தமிழர்புலம் பெயர்வுக்கான காரணங்கள் – வெளிநாடுகளின் தமிழர்புலம் பெயர்வு – புலம்பெயர்வு தமிழர்களின் கல்வி – சமயம் – பொருளாதாரம் – அரசியல் – வாழ்க்கை நிலை.

அலகு – 3 புலம்பெயர்வு கவிதைகள் 15 மணி நேரம்

திருமாவளவன் - இருள் யாழி (கவிதைகள்) - பனிவயல் உழவு.

அலகு – 4 புலம்பெயர்வு சிறுகதைகள் 10 மணி நேரம்

மகாராஜாவின் ரயில் வண்டி (தொகுப்பு நூல்) – அ. முத்துலிங்கம் - மகாராஜாவின் ரயில் வண்டி – தொடக்கம் – கறுப்பு அணில் – கொம்புளானா – ராகு காலம்

அலகு– 5 புலம்பெயர்வு நாவல்கள் 10 மணி நேரம்

வ. ந. கிரிதரன் - குடிவரவாளன் (நாவல்) – அமெரிக்கா (நாவல்)

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வரிசை எண்	**கற்றலின் பயன்கள்**	**Bloom's Level**
கற்றலின் பயன்கள் 1	புலம்பெயர்ந்த தமிழர்களின் தொடக்காலம் முதல் இக்காலம் வரை உள்ள வரலாற்றினை குறித்து புரிந்து கொள்வர்.	K1, K2
கற்றலின் பயன்கள் 2	புலம்பெயர்வு இலக்கியங்களின் பங்களிப்பினை படைப் பிலக்கியங்களின் வாயிலாக பொருத்திப் பார்க்கும் திறன் பெறுவர்.	k3
கற்றலின் பயன்கள் 3	புலம்பெயர்ந்து அயலகங்களில் வாழும் புலம்பெயர்ந்த மக்களின் வாழ்க்கை அனுபவங்களை தாயக வாழ்க்கையுடன் பகுத்தாராய்ந்து பார்க்கும் திறன் பெறுவர்.	K4
கற்றலின் பயன்கள் 4	புலம்பெயர்ந்த தமிழர்களின் தன் தாய் நாட்டில் பின்பற்றிய தனித்துவமிக்க அடையாளங்களை பிறநாடுகளுக்கு சென்ற பிறகும் கடைபிடிக்கும் முறைகளை மதிப்பிட்டு அறியும் திறன் பெறுவர்.	K5
கற்றலின் பயன்கள் 5	புலம் பெயர்ந்த தமிழர்கள் அயலகங்களில் எதிர்கொள்ளும் வாழ்க்கைச் சார்ந்த சிக்கல்களை அறிந்து புதிய படைப்புகளின் வாயிலாக சமூகத்தில் வெளிப்படுத்தும் திறன் பெறுவர்.	K6

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	1	1	1
CO 2	3	3	3	2	1	1
CO 3	3	3	3	3	2	2
CO 4	3	3	3	3	3	2
CO 5	3	3	3	3	3	2

உயர்தர இணைநிலை **69 %**

இடைத்தர இணைநிலை **14 %**

குறைதர இணைநிலை **17 %**

பெண்ணியப் படைப்புகள்
UTAO611

பருவம் : ஆறாம் பருவம் **தரம்** : 04

பிரிவு : துறைசார் விருப்பப்பாடம் - II **மணிநேரம் / வாரம்** : 05

வகுப்பு : III B.A. தமிழ் **மொத்தமணிநேரம்;** : 65

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் - 1	பெண்ணியத்தின் தோற்றம் வளர்ச்சி நிலைகள், வகைகள் குறித்து புரிந்து கொள்ளச் செய்தல்.
கற்றலின் நோக்கம் - 2	பெண்ணியப் படைப்புகளின் வாயிலாக பெண்ணியத்தின் இயல்புகளை பொருத்திப் பார்க்கச் செய்தல்.
கற்றலின் நோக்கம்; - 3	பெண்ணிய கோட்பாட்டினை காலந்தோறும் பகுத்தாராயச் செய்தல்.
கற்றலின் நோக்கம் - 4	பெண்ணியக் கருத்துக்களை அறிந்து படைப்பிலக்கியங்களில் மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் - 5	பெண்ணியத்தினை பின்பற்றி சமுதாயத்தில் ஆளுமைத்திறனை பெண்கள் பெறும் வழிமுறைகளை நடத்தை மற்றும் படைப்புகளின் வாயிலாக சமூகத்தில் புகுத்தும் திறன் பெற செய்தல்.

அலகு – 1 பெண்ணியம் விளக்கம் **10 மணி நேரம்**

பெண்ணியம் சொற்பொருள் விளக்கம் - மேலை நாடுகளில் பெண்ணியத்தின் தோற்றம் - பெண் விடுதலை இயக்கம் - பெண்ணியத்தின் வளர்ச்சி

அலகு – 2 பெண்ணியக் கவிதைகள் **15 மணி நேரம்**

சல்மா - ஒரு மாலையும் இன்னொரு மாலையும் - குட்டிரேவதி – அகமுகம் (பெண்மைமுகம்) - மாலதி மைத்திரி – சங்கராபரணி

அலகு - 3 பெண்ணிய சிறுகதைகள் **10 மணி நேரம்**

அம்பை - வில் முறியாத சுயம்வரங்கள் (சிவப்புக் கழுத்துடன் ஒரு பச்சைப் பறவை) - வீட்டின் மூலையில் ஒரு சமையலறை (தொகுப்பு: வீட்டின் மூலையில் ஒரு சமையலறை) - பாமா - பொன்னுத்தாயி (ஒரு தாத்தாவும் எருமையும்) - வெண்ணிலா - இந்திர நீலம் (தொகுப்பு: இந்திர நீலம்).

அலகு - 4 பெண்ணிய நாவல்கள் **15 மணி நேரம்**

சிவகாமி - ஆனந்தாயி - ஆண்டாள் பிரியதர்சினி - தகனம்

அலகு - 5 பெண்ணிய நாடகம் **15 மணி நேரம்**

கீதா.வ - கால கனவு (பெண்ணிய வரலாற்று ஆவண நாடகம்)

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- ஓவியா. (2021). ஆதிப் பெண்ணின் அடி தேடி. கருஞ்சட்டைப் பதிப்பகம். சென்னை.

கற்றலின் பயன்கள் வரிசை எண்	**கற்றலின் பயன்கள்**	**Bloom's Level**
கற்றலின் பயன்கள் 1	பெண்ணியத்தின் தோற்றம் வளர்ச்சி நிலைகள், வகைகள் குறித்து புரிந்து கொள்வர்.	K1, K2
கற்றலின் பயன்கள் 2	பெண்ணியப் படைப்புகளின் வாயிலாக பெண்ணியத்தின் இயல்புகளை பொருத்திப் பார்க்கும் திறன் பெறுவர்.	K3
கற்றலின் பயன்கள் 3	பெண்ணிய கோட்பாட்டினை காலந்தோறும் பகுத்தாராய்ந்து பார்க்கும் திறன் பெறுவர்.	K4
கற்றலின் பயன்கள் 4	பெண்ணியக் கருத்துக்களை அறிந்து படைப்பிலக்கியங்களில் மதிப்பிட்டு அறியும் திறன் பெறுவர்.	K5
கற்றலின் பயன்கள் 5	பெண்ணியத்தினை பின்பற்றி சமுதாயத்தில் ஆளுமைத்திறனை பெண்கள் பெறும் வழிமுறைகளை நடத்தை மற்றும் படைப்புகளின் வாயிலாக சமூகத்தில் புகுத்தும் திறன் பெறுவர்.	K6

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**3**	**3**	**1**	**1**	**1**
CO 2	**3**	**3**	**3**	**2**	**2**	**2**
CO 3	**3**	**3**	**3**	**3**	**2**	**2**
CO 4	**3**	**3**	**3**	**3**	**3**	**3**
CO 5	**3**	**3**	**3**	**3**	**3**	**3**

உயர்தர இணைநிலை	**73 %**
இடைத்தர இணைநிலை	**17 %**
குறைதர இணைநிலை	**10%**

விளம்பரவியல்

UTAO612

பருவம் : ஆறாம் பருவம் **தரம்** : 04
பிரிவு : விருப்பப்பாடம் – II **மணிநேரம் / வாரம்** : 05
வகுப்பு : III B.A. தமிழ் **மொத்த மணிநேரம்** : 65

கற்றலின் நோக்கம் வரிசை எண்	**கற்றலின் நோக்கம்**
கற்றலின் நோக்கம் – 1	விளம்பரத்தின் வரலாறு, இயல்புகள் குறித்து புரிந்து கொள்ளச் செய்தல்.
கற்றலின் நோக்கம் – 2	விளம்பரத்தினால் விளையும் நன்மை, தீமைகளைப் பொருத்திப் பார்க்கச் செய்தல்.
கற்றலின் நோக்கம் – 3	விளம்பரத்தின் நெறிகளையும், விளம்பரத்திற்கான விதிமுறைகளையும் அறிந்து, விமர்சனத்தின் அடிப்படையில் பகுத்தாராயச் செய்தல்.
கற்றலின் நோக்கம் – 4	விளம்பர அறங்களை அறிந்து கொண்டு, இன்றைய விளம்பரங்களின் போக்குகளை மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் – 5	விளம்பர உத்திகளை அறிந்து கொண்டு, இக்கால தொழில்துறைகளில் புகுத்தி பணி வாய்ப்பினைப் பெறும் திறன் பெற செய்தல்.

அலகு - 1 விளம்பர அறிமுகம் மற்றும் நோக்கம் **10 மணி நேரம்**

விளம்பரம் – சொற்பொருள் விளக்கம் – விளம்பரத்தின் வரலாறு – தொடக்கக்காலம் – விளம்பர வளர்ச்சி – இடைக்கால நிலை – பிற்கால நிலை – இந்திய விளம்பர வரலாறு விளம்பரத்தின் நோக்கம்

அலகு - 2 விளம்பரத்தின் வகைகள் **15 மணி நேரம்**

விளம்பரத்தின் வகைகள் – தயாரிப்பு விளம்பரம் – நிதி விளம்பரம் – பிரபல விளம்பரம் – ஒப்பீட்டு விளம்பரம் – பொது சேவை விளம்பரம் - விளம்பரத்தினால் விளையும் தீமைகள் – துறை விளம்பரங்கள் – விளம்பரங்களின் பயன்பாடு

அலகு - 3 விளம்பர நெறிகள் **15 மணி நேரம்**

விளம்பர ஒழுக்க நெறிகள் – தடை செய்யப்பட்ட விளம்பரங்கள் – விளம்பரத்திற்கான சில விதிமுறைகள் – விளம்பர வரைவின் அடிப்படைத் தத்துவங்கள் - விளம்பரத்தின் தாக்கம் – விளம்பரங்களும் சட்டங்களும் - விளம்பரக் கட்டுப்பாட்டுச் சட்டங்கள்

அலகு - 4 விளம்பர நிறுவனங்கள் **15 மணி நேரம்**

விளம்பரத்தின் பணிகள் – விளம்பர நிறுவனங்கள் – விளம்பர அறங்கள் – விளம்பர நிறுவனத்தின் தகுதிகள் – விளம்பர நிறுவன விருதுகள் – நுகர்வோரின் வழிகாட்டி

அலகு - 5 இன்றையச் சூழலில் விளம்பரங்கள் **10 மணி நேரம்**

போலி விளம்பரம் – விளம்பர மோசடி - விளம்பரக் கட்டுப்பாட்டுச் சட்டங்கள் - விளம்பர உத்திகள் – விளம்பரக்கலைச் சொற்கள் - தொலைக்காட்சி விளம்பரங்களில் தவறான போதனைகள் – விளம்பரங்களில் குழந்தைகள் – பண்பாட்டுக் கலப்பு

பாடநூல்

- விநாயகமூர்த்தி, அ. (2020). விளம்பரக்கலை. பாலமுருகன் பதிப்பகம். வேலூர்.

பார்வை நூல்கள்

- முத்தையன், இராம.இ. (1973). விளம்பரம். தமிழ்நாட்டுப் பாடநூல் நிறுவனம். சென்னை.
- விஜயராணி, ஆர்., ரெங்கநாதன்,என். (1995). விளம்பரக் கலைச்சொற்கள். சங்கப்பலகை வெளியீடு. மதுரை.

கற்றலின் பயன்கள் வரிசை எண்	**கற்றலின் பயன்கள்**	**Bloom's Level**
கற்றலின் பயன்கள் 1	விளம்பரத்தின் வரலாறு, இயல்புகள் குறித்து புரிந்து கொள்வர்.	K1, K2
கற்றலின் பயன்கள் 2	விளம்பரத்தினால் விளையும் நன்மை, தீமைகளைப் பொருத்திப் பார்க்கும் திறம் பெறுவர்.	K3
கற்றலின் பயன்கள் 3	விளம்பரத்தின் நெறிகளையும், விளம்பரத்திற்கான விதிமுறைகளையும் அறிந்து, விமர்சனத்தின் அடிப்படையில் பகுப்பாய்வு செய்யும் ஆற்றல் பெறுவர்.	K4
கற்றலின் பயன்கள் 4	விளம்பர அறங்களை அறிந்து கொண்டு, இன்றைய விளம்பரங்களின் போக்குகளை மதிப்பிட்டு அறியும் திறன் பெறுவர்.	K5
கற்றலின் பயன்கள் 5	விளம்பர உத்திகளை அறிந்து கொண்டு, இக்கால தொழில்துறைகளில் புகுத்தி பணி வாய்ப்பினைப் பெறும் திறன் பெறுவர்.	K6

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**3**	**3**	**2**	**2**	**2**
CO 2	**3**	**3**	**3**	**2**	**2**	**2**
CO 3	**3**	**3**	**3**	**3**	**3**	**2**
CO 4	**3**	**3**	**3**	**3**	**3**	**3**
CO 5	**2**	**3**	**3**	**3**	**3**	**3**

உயர்தர இணைநிலை **76 %**

இடைத்தர இணைநிலை **24 %**

குறைதர இணைநிலை -

அகமதிப்பீட்டிற்கான உட்கூறுகள்

இளங்கலைத்தமிழ்

பருவம்	பிரிவு	வகை	பாடக் குறியீடு	பாடத்தலைப்பு	III உட்கூறுகள்	IV உட்கூறுகள்
VI	III	முதன்மைப்பாடம் -XVII	UTAM603	இலக்கியத் திறனாய்வியல்	குறிப்பு அட்டவணை	ஒப்படைப்புத் தாள்
		முதன்மைப்பாடம் -XVIII	UTAM610	இணையத்தமிழ்	தகவல் களஞ்சியம் உருவாக்குதல்	தமிழ் வலைப்பதிவு உருவாக்கம்
		முதன்மைப்பாடம் -XIX	UTAM607	தண்டியலங்காரம்	ஒப்படைப்புத்தாள்	இலக்கண சொல்லடைவு
		முதன்மைப்பாடம் -XX	UTAM609	சங்க இலக்கியம்	ஒப்படைப்புத்தாள்	அட்டவணை தயாரித்தல்

துறைசார் விருப்பப்பாடத்திற்கான உட்கூறுகள்

இளங்கலைத்தமிழ்

பருவம்	பிரிவு	வகை	பாடக் குறியீடு	பாடத்தலைப்பு	III உட்கூறுகள்	IV உட்கூறுகள்
VI	III	துறைசார் விருப்பப்பாடம் - II	UTAO610	புலம்பெயர்வு இலக்கியம்	ஒப்படைப்புத்தாள்	அட்டவணை தயாரித்தல்
		துறைசார் விருப்பப்பாடம் - II	UTAO611	பெண்ணியப் படைப்புகள்	படைப்பாளர் அட்டவணை	படைப்புதிறன் பயிற்சி
		துறைசார் விருப்பப்பாடம் - II	UTAO612	விளம்பரவியல்	தகவல் அட்டவணை	விளம்பரம் தயாரித்தல்

அகமதிப்பீட்டிற்கான உட்கூறுகள்

பயிற்சி பட்டறை - III

பருவம்	பிரிவு	வகை	பாடக்குறியீடு	பாடத்தலைப்பு	உட்கூறுகள்
VI	**III**	முதன்மைப்பாடம் -XXI	UTAR601	பயிற்சி பட்டறை	1. மேடைப்பேச்சு 2. பட்டிமன்றம் 3. நகைச்சுவை மன்றம் 4. நிகழ்ச்சி தொகுப்பாளர் 5. ஓரங்க நாடகம் எழுதுதல் 6. மௌன மொழி நாடகம்

DEPARTMENT OF ENGLISH

PREAMBLE

UG: Programme Profile and the Syllabi of Courses offered in the VI Semester along with Evaluation Components III & IV (With effect from 2021-2024 Batch onwards)

PROGRAM PROFILE ENGLISH

PROGRAM SPECIFIC OUTCOMES (PSO)

PSO. No	Upon completion of the programme, the students will be able to
PSO-1	Understand literary texts and theoretical framework of literature.
PSO-2	Apply the theoretical and communication knowledge of different theories in English Learning and Teaching.
PSO-3	Compare the cultural context of different nations through literature.
PSO-4	Acquire employability skills to excel in literary and media professions.
PSO-5	Critique the socio-political and environmental inequalities.
PSO-6	Develop a research skill through project and present their independent ideas effectively.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hour/ Week	Credit Min/Max
I	I	Language/ AECC-II	UTAL107/ UTAL108/ UHIL 101/ UFRL 101	Basic Tamil I Advanced Tamil I Hindi I/ French I	UTAL103/ UTAL104	5	3/4
	II	English/AECC-I	UCEL109/ 110	English for Communication (Stream – I) English for Communication (Stream – II)	-	5	3/4
	III	Major Core I/ DSC	UENM110	Indian Writing in English	UENM401, UENM403U ENM305	6	5
	III	Major Core II/ DSC	UENM111	British Literature- I	-	6	5
	III	Allied(GE)1	UENA104	Literary Forms	-	6	4
	III	PE	UPEM101	Professional English -1	-	6	4
	IV	VE(SEC)		Family Life Education		2	2
TOTAL						**36**	**26/28**
II	I	Language/ AECC-II	UTAL205/ UTAL206/ UHIL 201/	Basic Tamil II Advanced Tamil II Hindi II/	UTAL203/ UTAL204	5	3/4

			UFRL201	French II			
	II	English/AECC-I	UENL209/ 210	English for Communication (Stream – I) English for Communication (Stream – II)	-	5	3/4
	III	Major Core III/ DSC	UENM209	British Literature- II	-	6	4
		Major Core IV/ DSC	UENM210	American Literature	UENM502, UENM506, UENM306	5	4
		Allied (GE)	UENA204	Women In Literature	-	6	4
		PE	UPEM201	Professional English –II	-	6	4
	IV	NME/SEC				3	2
	V	Extension Activity/ Physical Education				-	1/2
	III	INTERNSHIP	UENI201	Internship/Field work / Field project	-	-	-/1
				TOTAL		**36**	**25/29**
III	I	Language/ AECC-II	UTAL307/ UTAL308/ UHIL 301/ UFRL 101	Basic Tamil III Advanced Tamil III Hindi III/ French III	UTAL103/ UTAL104	5	3/4
	II	English/AECC-I	UENL309/ 310	General English I / Advanced English I	-	5	3/4
	III	Major Core V/ DSC	UENM307	Language and Linguistics	-	4	4
	III	Major Core VI/ DSC	UENM308	Introduction to Comparative Literature	-	5	5
	III	Allied(GE)	UENA304	Introduction to English Language Teaching	-	6	4
	IV	Value Education/SEC		Environmental Studies	-	2	1
		Online course		Online course		3	1/2
				TOTAL		**30**	**21/24**
IV	I	Language/ AECC-II	UTAL407/ UTAL408/ UHIL 401/ UFRL 401	Basic Tamil IV Advanced Tamil IV Hindi IV/ French IV	UTAL203/ UTAL204	5	3/4
	II	English/AECC-I	UENL409/ UENL410	General English II/ Advanced English-II	-	5	3/4
	III	Major Core VII/ DSC	UENM408	Shakespeare	UENM508 UENM612	5	5
		Major Core VIII/ DSC	UENM409	Cinema and Literature	-	5	5
		Allied(GE)	UENA404	Phonetics and Spoken English	-	5	5
		Internship	UENI201	Internship/Field work /Field	-	30	-/1

				project		(Hour)	
	IV	NME/SEC			-	3	2
		Soft skill / SEC		Personality Development	-	2	1
	V	Extension Activity/ Physical Education				-	-/2
TOTAL						**30**	**24/29**
V	III	Major Core IX/ DSC	UENM516	Popular Literature	-	6	5
	III	Major Core X/ DSC	UENM517	Australian and Canadian Literature	-	6	5
	III	Major Core XI / DSC I	UENM518	Literary Criticism	UENM503, UENM507,UENM512	6	6
	III	Major Elective/DSE I	UENO501/ UENO502	Detective Fiction / World Classics in Translation	-	5	4
	III	Core XII Project	UENP501	Project	-	5	5
	IV	VE/SEC		Cyber Security/ Health Issues	-	2	1
TOTAL						**30**	**26**
V I	III	Major Core XIII/ DSC	UENM614	Introduction to Feminism	-	6	5
		Major Core XIV/ DSC	UENM615	Asian Literature in English	-	6	5
		Major Core XV/ DSC	UENM616	Diasporic Literature	UENM504, UENM405	6	5
		Major Core XVI/ DSC I	UENM618	Women's Life Writing	-	5	5
		Major Core XVII	UENM619	Comprehensive Viva Voce	UENC601	-	1
		Major Elective/DSE II	UENO605/ 606	Creative Writing/ English for Competitive Exams	-	5	5
		INTERNSHIP	UENI201	Internship/Field work /Field project	-	-	-/1
	IV	Soft Skill/SEC		Career skill/ Foundation course (Entrepreneurship and Innovation		2	
	V	Extension Activity/ Physical Education				-	-/2
		Extension Activity	UROX601	Rural Outreach Programme		-	-/1
TOTAL						**30**	**26/30**
GRAND TOTAL						**192**	**148/166**

INTRODUCTION TO FEMINISM

UENM614

Semester : VI **Credits : 5**

Category : Major Core XIII / DSC **Hours/Week : 6**

Class &Major: III B.A English **Total Hours : 78**

Course Objectives

CO No.	To enable the students
CO-1	Define origin and growth of Feminism.
CO-2	Understand the role of women in society through the lens of literature.
CO-3	Assess the patriarchal society and its norms.
CO-4	Analyze and evaluate the themes and symbols of women writers.
CO-5	Explore the concept of intersectionality through the works of women writers of different literatures.

UNIT I INTRODUCTION **15 Hours**

Feminism – five waves of feminism- Feminist Literature – Feminist Criticism, Postfeminism.

UNIT II POETRY **16 Hours**

Maya Angelo : Still I Rise
Sylvia Plath : Daddy
Eunice de Souz : Bequest
Imtiaz Dharkar : Pardah
Kishwar Naheed : I am not That Woman
MeenaKandasamy :Mascara
Adrienne Rich : Living in Sin

UNIT III PROSE **15Hours**

Elaine Showalter : Towards a Feminist Poetics
Joyce Carol Oats : Against Nature

UNIT IV FICTION **16 Hours**

Gita Hariharan : Thousand Faces of Night
Kamila Shamsie : Home Fire

UNIT V DRAMA **16 Hours**

Manjula Padmanaban : Lights Out
Ama Ata Aidoo :The Dilemma of a Ghost

Text Books:

- Patu and AnjeScrupp. A Brief History of Feminism (Lewis, Sophie, Trans.) MIT Press, Cambridge,2017.
- Shamsie, Kamila (2017). *Home Fire,*Bloomsbury, India.

Reference Books

- Scott, Wilbur (2009).Five Approaches of Literary Criticism, Collier Books. New York.
- Ata Aidoo, Ama (1995), The Dilemma of a Ghost, Longman, London.
- Hariharan, Gita (2008). Thousand Faces of Night, Penguin, India.

- Panmanabhan, Manjula (2020). *Lights Out*, Worldview Publications, India.
- Showalter, Elaine (1986). "Toward a Feminist Poetics". The New Feminist Criticism:
- Essays on Women, Literature and Theory. Virago, London.
- Angelou, Maya (1978). "Still I Rise", And Still I Rise. Random House, New York.

E-Resources

- https://thebookshelfofemilyj.com/2013/10/30/roaring-and-reclaiming-womans-connection-to-nature/.
- https://chromeextension://oemmndcbldboiebfnladdacbdfmadadm/http://2010yeagleyenglish.pbworks.com/f/Against%20Nature%20by%20Oates019.pdf.
- https://www.tumblr.com/asuddenline/4834518949/i-am-not-that-woman-kishwar-naheed-i-am-not.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Understand the significance of feministic movements.	K1, K2
CO-2	Apply themes, and narrative strategies of women writers	K3
CO-3	Analyze the patterns and concepts of feministic literature	K4
CO-4	Interpret the writings and its significance in feminist movements.	K5
CO-5	Empower themselves to integrate feminist principles into daily lives and foster leadership skills.	K6

CO-PSO MAPPING

CO/PSO	PSO - 1	PSO - 2	PSO – 3	PSO - 4	PSO – 5	PSO - 6
CO1	3	2	3	2	3	3
CO2	3	3	3	2	2	2
CO3	3	3	3	3	3	3
CO4	3	2	3	3	3	2
CO5	3	3	3	3	3	3

High Correlation : 76.3%
Moderate Correlation : 23.3%
Low Correlation : -

ASIAN LITERATURE IN ENGLISH

UENM615

Semester : VI **Credit : 5**
Category : Major Core XIV/DSC **Hours/Week : 6**
Class & Major : III B.A English **Total Hours : 78**

Course Objectives:

CO.NO	To enable the Students
CO-1	Understand the historical background and growth of Asian Literature and Asian Diaspora.
CO-2	Identify the gender issues, class, caste, race and location employed in the works.
CO-3	Compare and contrast the writing styles and generic forms of different periods and different Asian cultures.
CO-4	Identify major themes of representative Asian poetic, fictional and dramatic works.
CO-5	Develop the influence of Asian literature on Western literature.

UNIT-I INTRODUCTION **15 Hours**

History and Background of Asian Literature- Growth of Asian Literature- Characteristics of Asian Literature – Themes and style- Diasporic Asian Literature.

UNIT- II Poetry **16 Hours**

Bei Dao (China)	:	Moon Festival
ImtiazDharkar (Pakistan)	:	Minority
Arjun Dangle (India)	:	I Will Belong to It.
Yasmine Gooneratne(Sri Lanka)	:	There was a Country
Meena Alexander (India)	:	For my father karachi 1947
Mahmoud Darwish (Palestine)	:	In Jerusalem
Hiromi Ito (Japan)	:	Nasty Morning

UNIT- III SHORT STORY **15 Hours**

Saya Zawgyi (Myanmar)	:	His Spouse
Mulk Raj Anand (India)	:	The Price of Bananas

UNIT- IV FICTION **16 Hours**

Michael Ondaajte (Srilanka)	:	Anil's Ghost
Maxim Gorky (Russia)	:	Mother

UNIT- V DRAMA **16 Hours**

Frank Chin (China)	:	The Year of the Dragon
Kalidas (India)	:	Malavika and Agnimithra

Text Books:

- Ganesan. S. *Asian Voices: An Anthology of Asian Writings in English* (2015).Chennai: New Century Book House.
- Gorky, Maxim. *Mother* (2015). India: Maple Press.

Reference Books:

- Shamsie, Muneeza. *And the World Changed: Contemporary Stories by Pakistani Women*. (2008).New York: The Feminist Press.
- Wijesinha, Rajiva. *Bridging Connections: An Anthology of Sri Lankan Short Stories*. (2007) New Delhi: National Book Trust.
- Wijesinha, Rajiva. *Bridging Connections: An Anthology of Sri Lankan Short Stories*.(2007), New Delhi: National Book Trust.
- Sanga, C. Jaina.*South Asian Literature in English: An Encyclopedia*. (2004) Greenwood Press: India.
- Kalidas. *Malavikagnimitram (MalavikaAndAgnimitra*(2004). Global Vision Publishing House. New Delhi.
- Ondaatje, Michael. *Anil's Ghost*. (2001). U.S.A: Vintage Publishers.

e – Resources:

- https://towardswriting.blogspot.com/2020/02/there-was-country.html.
- https://www.poetryfoundation.org/
- https://en.wikipedia.org/wiki/Malavikgnimitram.
- https://www.burmalibrary.org/en/zawgyis-collected-short-stories
- https://archive.org/details/chickencoopchina00chin

Course Outcomes:

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Recognize the major figures, institutions and events in the history of Asia and explain their historical significance.	K1, K2
CO-2	Identify the various culture and traditions of Asian Literature.	K3
CO-3	Analyze the diasporic elements in Asian Literary text.	K4
CO-4	Compare the literary, artistic and cultural achievements of Asian writers and produce own text.	K5
CO-5	Construct the impact of post colonialism employed in the text.	K6

CO-PSO MAPPING

CO/PSO	PSO - 1	PSO - 2	PSO – 3	PSO - 4	PSO – 5	PSO - 6
CO-1	3	2	3	2	3	3
CO-2	2	3	2	3	3	3
CO-3	1	2	3	3	3	3
CO-4	3	3	3	3	3	3
CO-5	1	3	3	2	3	3

High Correlation : 73%
Moderate Correlation : 20%
Low Correlation : 6.6%

DIASPORIC LITERATURE

UENM616

Semester : VI **Credits : 5**
Category : Major Core XV/ DSC **Hours/Week: 6**
Class & Major: III UG **Total Hours: 78**

Course Objectives:

CO.NO	To Enable Students
CO-1	Understand the relationship of diaspora towards globalization and transnationalism
CO-2	Comprehend the historical, economic and political backdrop of the Diaspora and the contemporary global importance of this diaspora
CO-3	Examine the culture across the continents through the study of Diasporic Literature
CO-4	Analyze the richness of Diasporic Literature.
CO-5	Develop the Indian Diasporic Fiction against the backdrop of political, gender, racist, religious and identity issues

UNIT I INTRODUCTION **15 Hours**

Diaspora - Definition and Scope- origin of diaspora writing- Theories of Diaspora - historical perspective - major themes in diasporic literature.

UNIT II POETRY **16 Hours**

TaslimaNasreen : Women Breaking Bricks
Wole Soyinka : In the Small Hours
A.K. Ramanujan : Small Scale Reflections on a Great House
David Diop : Vulture
HasheemahAfaneh : Remember the Name
Meena Alexander : House of a Thousand Doors Muse
Agha Shahid Ali : Tonight

UNIT IIISHORT STORY **16 Hours**

Gita Hariharan : Ghosts of Vasumaster
Chitra Banerjee Divakaruni : The Blooming Season For Cacti (from the Unknown Errors of our Lives)

UNIT IVDRAMA **15 Hours**

George F.Walker : Escape from Happiness
Femi Osofisan : Once Upon four Robbers

UNIT VFICTION **16 Hours**

Khaled Housseine : The Kite Runner
Anita Rau Badami : The Hero's Walk

Text Books:

- Rau Badami, Anita. (2002). The Hero's Walk. Bloomsbury Publishing, London.

- Hossein, Khaled. (2013). The Kite Runners. Riverhead Books; 1st edition, UK.

Reference Books:

- Mark Shackleton, ed, *Diasporic Literature Theory and Where Now?,*Cambridge Scholars Publishing, UK, 2008.
- Asharudeen, N. New Image of Nirmala in Anita Rau Badami's The Hero's Walk.
- Manimozhi, R. (2019). The Narrative Techniques used by GithaHariharan in The Ghosts of Vasu Master. *Indian Journal of Language & Literary Criticism*, 233.
- Alexander, M. (1982). 'HOUSE OF A THOUSAND DOORS'.
- Lane, H. (2002). Chris Johnson. Essays on George F. Walker: Playing with Anxiety. *Modern Drama*, *45*(2), 305-309.
- Divakaruni, Chitra Banerjee (2002). The Unknown Errors of Our Lives. Anchor; Reprint edition, India.
- Hariharan, G. (1994). The Ghosts of Vasu Master. Penguin Books India.
- Walker, G. F. (1992). Escape from Happiness. Coach House Press.
- Alexander, M. (1988). House of a Thousand Doors: Poems and Prose Pieces. Passeggiata Press.

e-Resources:

- https://mrsmeganparrish.weebly.com/uploads/3/8/0/5/38056115/the_kite_runner.pdf
- https://archive.org/stream/TheKiteRunnerPDF_201905/The-Kite-Runner-PDF_djvu.txt
- https://rukhaya.com/poetry-analysis-meena-alexanders-house-of-a-thousand-doors-2/
- https://engpoetry.com/wole-soyinka/in-the-small-Hours/
- https://www.cenresinjournals.com/wp-content/uploads/2020/03/Page-20-25-684.pdf
- https://books.google.co.in/books/about/Once_Upon_Four_Robbers.html?id=pNUIAQAAIAAJ&redir_esc=y

Course Outcomes:

CO. No	On completion of the course, the students will be able to	Bloom's Level
CO-1	Understand the definition and scope of Diaspora Literature.	K1, K2
CO-2	Apply the theoretical backgrounds of international migration, race, and ethnicity.	K3
CO-3	Compare the sources of literature on Indian Diaspora, review them and apply to their research topic.	K4
CO-4	Criticize the various issues of identity of Indians in the Diaspora and how they negotiate that identity in their everyday life.	K5
CO-5	Create the Socio-Cultural and historical knowledge of Diaspora.	K6

Co-Pso Mapping:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	2	2	1	3	2
CO-2	3	3	3	2	3	3
CO-3	3	3	3	3	3	3

CO-4	3	1	3	2	3	2
CO-5	2	2	3	3	3	3

High Correlation : 67 %
Moderate Correlation : 26 %
Low Correlation : 07 %

WOMEN'S LIFE WRITING
UENM618

Semester : VI **Credit : 5**
Category : Major Core XVI/DSC **Hours/Week : 5**
Class & Major : III B.A English **Total Hours : 65**

Course Objectives:

CO.NO	To enable the Students
CO1	Identify the role of women in Literature.
CO2	Understand the patriarchal dominance in society.
CO3	Assess the role of women across the nations.
CO4	Analyze the concepts and social patterns of different feminist writers.
CO5	Evaluate and interpret the ideas, contents and themes in the works with reference to real life.

UNIT I INDIAN LITERATURE **20 Hours**

Kamala Das : My Story (1-30 chapters)
Bama : Karukku

UNIT II BRITISH LITERATURE&GERMANIC LITERATURE **10 Hours**

Mary Wollenscraft : A Vindication of the Rights of Woman
Anne Frank : The Diary of a Young Girl

UNIT III AFRICAN AMERICAN LITERATURE **15 Hours**

Wangari Mathai : Unbowed
Zora Neale Hurston : Dust Tracks on a Road

UNIT IVAMERICAN LITERATURE **10 Hours**

Hellen Keller : The Story of My Life

UNIT VAUSTRALIAN LITERATURE **10 Hours**

Dale Spender : Man Made Language

Text Books:

- McKay, N. Y. (2019). 8. Race, Gender, and Cultural Context in Zora Neale Hurston's Dust Tracks on a Road. In *Life/Lines* (pp. 175-188). Cornell University Press.
- Keller, H. (2022). *The story of my life*. DigiCat.

Reference Books:

- Hurston ZN. Dust Tracks on a Road: Autobiography. e-artnow; 2018 Dec 21.
- Spender, D. (1993). 12. I Language and Reality: who made the world?. *Women's studies: Essential readings*, 407.
- Maathai, W. W. (2006). Unbowed: one woman's story. University of Nairobi.
- Montgomery, T. (2010). Radicalizing Reunion: Helen Keller's" The Story of My Life" and Reconciliation Romance. *The Southern Literary Journal*, 34-51.
- Spender, D. (1985). Man made language.
- George, R. M. (2000). Calling Kamala Das Queer: Rereading" My Story". *Feminist Studies*, *26*(3), 731.
- Wollstonecraft, M. (2014). A Vindication of the Rights of Woman. In *A Vindication of the Rights of Woman*. Yale University Press.
- Frank, A. (1997). *The diary of a young girl: Anne Frank*. M. Pressler (Ed.). Bantam Books.
- Ebila, F. (2015). 'A proper woman, in the African tradition': The construction of gender and nationalism in Wangari Maathai's autobiography Unbowed. *TydskrifvirLetterkunde*, *52*(1), 144-154.
- Nayar, P. K. (2006). Bama's Karukku: Dalit autobiography as testimonio. *The Journal of Commonwealth Literature*, *41*(2), 83-100.

e– Resources:

- https://www.penguinrandomhouse.com/books/104884/unbowed-by-wangari-maathai/9780307275202/teachers-guide/
- https://www.austlit.edu.au/austlit/page/C420638
- https://en.wikipedia.org/wiki/Man_Made_Language
- https://en.wikipedia.org/wiki/Out_of_Africa

Course Outcomes:

CO. No	On completion of the course, the students will be able to	Bloom's Level
CO-1	Interpret the women achievers and their literary works.	K1, K2
CO-2	Construct cultural, Inter-cultural and trans-historical concerns relating to women's life writing.	K3
CO-3	Analyze the barriers of women and their effort to come forward in their life.	K4
CO-4	Determine the complex interrelationships between the real situation and feminist concepts.	K5
CO-5	Develop the social assumptions regarding gender, race, class, nationality, disability, age and sexual orientation.	K6

CO-PSO MAPPING :

CO/PSO	PSO 1	PSO 2.	PSO 3.	PSO 4.	PSO 5.	PSO 6
CO-1	3	3	3	2	3	1
CO-2	2	3	3	3	3	2
CO-3	3	2	3	2	3	3
CO-4	2	2	3	1	3	3

CO-5	2	2	3	3	3	3

High Correlation : 63%
Moderate Correlation : 30%
Low Correlation : 07%

CREATIVE WRITING
UENO605

Semester : VI **Credits : 5**
Category : Elective / DSE I **Hours/Week : 5**
Class& Major : III B.A. English **Total Hours : 65**

Course Objectives:

CO.NO.	To enable the Students
CO1	Identify the basics skills required for creative writing.
CO2	Understand the principles of creative writing and the distinction between the literary genres
CO3	Explain the differences in writing for various literary and social media
CO4	Identify the various forms of creative writing that they have studied through the course of study.
C05	Develop various skills to adhere the standard conventions grammar its usage.

UNIT I FUNDAMENTALS OF CREATIVE WRITING 13 Hours

Meaning and Significance of Creative Writing – Genres of Creative Writing: poetry, fiction, non-fiction, drama and other forms – Research for Creative Writing.

UNIT II ELEMENTS OF CREATIVE WRITING 13 Hours

Plot, Setting, Character, Dialogue, Point of View **–** Literary Devices and Figurative Language – Elements of Style **–** Grammar and the Structure of Language **–** Proof Reading and Editing

UNIT III TRADITIONAL FORMS OF CREATIVE WRITING 13 Hours

Fiction: short story, novella and novel **–** Poetry **–** Drama – Essay **–** Fable – Biography, Memoire and Autobiography **–** Travelogues, Diaries, Self-Narrative Writing

UNIT IV NEW TRENDS IN CREATIVE WRITING 13 Hours

Web Content Writing and Blog Writing – Script Writing – Journalistic Writing – Copywriting – Subtitle writing – SEO (Search Engine Optimization) - Optimized content writing - Graphic Novel – Flash Fiction .

UNIT V CREATIVE WRITING TOOLKIT 13 Hours

Drafting – Editing –Finishing – Publishing – Promoting –Employability skills- (Communication Skills- Ethics- Collaboration-Teamwork-Adaptability-Problem solving-Decision making-Emotional intelligence –Time Management-Computer skills- Life skills)

Text Books

- Bell, James Scott, (2014). *How to Write Dazzling Dialogue*.CA: Compendium Press.
- Hamer, Enid, (2014). *The Metres of English Poetry*. Booksway.

Reference Books

- . Robert Scholes, Nancy R. Comley, Carl H. Klaus,(2007), *Elements of Literature: Essay, Fiction, Poetry, Drama, Film* Michael Silverman Delhi, OUP.
- Hal Zina Bennet California *(2001), Write from the Heart: Unleashing the power of Your Creativity.* , New World Library,.
- Sylvan Bamet, William E.Cain, (2006),*A Guide to Writing about Literature*, New Delhi, Pearson, MLA Handbook for Writers (9th edition)A Routledge writer's guide.
- Bell, Julia and Magrs, Paul(2001). *The Creative Writing Course-Book.* London: Macmillan, Berg, Carly. *Writing Flash Fiction: How to Write Very Short Stories* and Get Them Published.
- Clark, Roy Peter(2008) *Writing Tools*.US: Brown and Company.
- Earnshaw, Steven (Ed)(2007). *The Handbook of Creative Writing*. Edinburgh: EUP.
- Egri, Lajos(1960) *The Art of Dramatic Writing*. NY: Simon and Schuster.
- Gardner, John. (1991)*The Art of Fiction*. New York: Vintage.
- Mezo, Richard E. (1999),*Fire i' the Blood: A Handbook of Figurative Language.* USA: Universal Publishers/u PUBLISH.com.
- Show, Mark.(2012), *Successful Writing for Design, Advertising and Marketing.* New York: Laurence King.
- Sugrman, Joseph .(2009),*The Adweek Copywriting Handbook: The Ultimate Guide to WritingPowerful Advertising and Marketing Copy from One of America's Top Copywriters*. New York: Wiley.
- AnjanaNeira Dev. AnuradhaMarwah (2009), Creative Writing: A Beginner's Manual, Swati Pal Delhi, Pearson Longman.
- Abrams(2005), M.H. *Glossary of Literary Terms*. Boston: Wadsworth Publishing Company.

e-Resources:

- http://www.chillibreeze.com/articles_various/creativewriter.asp
- http://www.contentwriter.in/articles/writing/
- http://www.cbse.nic.in/cw-xii/creative-writing-xii-unit-1.pdf.
- www.wordstream.com/blog/ws/2015/02/09/how-to-write-a-blog-post
- https://smartblogger.com/how-to-write-a-blog-post

Course Outcome

CO. No	On completion of the course, the students will be able to	Bloom's Level
CO-1	Illustrate the distinctive features of creativity.	K1,K2
CO-2	Develop various literary and social media writings.	K3
CO-3	Examine the various skills in creative writing.	K4
CO-4	Prioritize the importance of reading as a part of creative writer's development.	K5
CO-5	Compose the fundamentals of creative writing and produce own text like Blogs, Articles, Journals, Magazines, Novels and Stories	K6

CO-PSO MAPPING :

CO/PSO	PSO 1	PSO 2.	PSO 3.	PSO 4.	PSO 5.	PSO 6
CO-1	2	3	2	3	2	1
CO-2	3	3	3	3	3	2
CO-3	2	3	3	3	2	3
CO-4	3	3	2	3	1	3
CO-5	3	3	3	3	3	3

High Correlation : 70%
Moderate Correlation : 23%
Low Correlation : 07%

ENGLISH FOR COMPETITIVE EXAMINATIONS

UENO606

Semester : VI **Credits: 4**
Category : Elective/ DSE II **Hours/Week :5**
Class & Major: III UG **Total Hours:65**

Course Objectives:

CO. No.	To Enable Students
CO-1	Understand the basics of English grammar.
CO-2	Identify the different types of vocabulary.
CO-3	Analyze the structure of a sentence
CO-4	Assess the grammatical structure in a sentence.
CO-5	Evaluate the proficiency in grammar and its effective usage in speaking and writing

UNIT I VOCABULARY **15 Hours**

Synonyms and Antonyms, Homophones/Homonyms, Spelling Test/Cloze Test, Fill in the Blanks, Idioms & Phrases, One Word Substitution, Sentence or Phrase Improvement, Word Association

UNIT II GRAMMAR **20 Hours**

Parts of Speech, Active and Passive Voice, Direct & Indirect Speech, Determiners and Articles, Tenses, Modals, Subject-Verb agreement.

UNIT IIIREARRANGEMENT OF SENTENCES **10 Hours**

Sentence Correction/Error Spotting, Para Jumbles/ Jumbled Sentence Error Detection, Paragraph Completion, Multiple Meaning.

UNIT IVCOMPREHENSION **10 Hours**

Listening Comprehension, Reading Comprehension, Assessment and Reasoning, Numbered gaps- cloze Test.

UNIT VCOMPOSITION& INTERVIEW SKILLS **10 Hours**

Essay Writing, Letter Writing (Formal and Informal), Interview and group discussion.

Text Books

- Wren and Martin. (2020). *English for Competitive Examinations.* S. Chand Publication.
- Gupta S.C. (2016) *English for All Competitive Examinations.* Arihant Publication.

Reference Books

- Prasad, Hari Mohan and Uma Rani Sinha.(2011).*Objective English for Competitive Examinations*. Tata McGraw Hill Education Pvt ltd, New Delhi.
- Thorpe, Edgar and Showick Thorpe.(2012). *Objective English*. Pearson, New Delhi.

e -Resources

- https://leverageedu.com/blog/english-for-competitive-exams/
- https://www.schools360.in/english-syllabus-for-all-competitive-exams/
- https://byjus.com/govt-exams/general-english-competitive-exams/
- https://exam-adda247.com/general-english-syllabus-for-competitive-exams/

Course Outcomes

CO. No	On completion of the course, the students will be able to	Bloom's Level
CO-1	Understand the basic concepts of English Language.	K1, K2
CO-2	Apply the acquired knowledge to different areas and situations.	K3
CO-3	Explore the different features of language.	K4
CO-4	Evaluate the methods of patterns for Competitive exams.	K5
CO-5	Prove themselves by taking part in various competitive examinations to place in various sectors.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2.	PSO 3.	PSO 4.	PSO 5.	PSO 6
CO-1	2	3	3	3	1	2
CO-2	3	3	3	3	3	3
CO-3	3	3	2	3	2	3
CO-4	2	3	2	3	2	1
CO-5	3	3	3	3	2	2

High Correlation : 63.3 %
Moderate Correlation : 30 %
Low Correlation : 6.6 %

MAJOR ELECTIVES

Semester	Part	Category	Course Code	Course Title	Contact Hours/week	Credit
VI	III	MAJORELECTIVES	UENO605	Creative Writing	5	4
			UENO606	English for Competitive Exam		

EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Course Code	Course Title	Contact Hours/week	Credit
VI	III	Core	UENP601	Mini-Project	26	1

III AND IV EVALUATION COMPONENTS OF CIA

SEMESTER	CATEGORY	COURSE CODE	COURSE TITLE	COMPONENT-III	COMPONENT-IV
VI	Major Core XIII/DSC	UENM614	Introduction to Feminism	Paper Presentation	Seminar
	Major Core XIV/DSC	UENM615	Asian Literature in English	Power Point Presentation	Paper Presentation
	Major Core XV/DSC	UENM616	Diasporic Literature	Paper Presentation	Seminar
	Major Core XVI/DSC	UENM618	Women's Life Writing	Case Study/ Paper Presentation	Seminar
	Major Core XVII/DSC	UENO605	Creative Writing	Journal Writing/Script for Advertisement	Campus Magazine
	Major Elective/DSE II	UENO606	English for Competitive Exams	Prepare Question Bank	Field Work

DEPARTMENT OF BUSINESS ADMINISTRATION

PREAMBLE

UG: Programme Profile and Syllabi of courses offered in semester VI along with its Evaluation Components III & IV (With effect from 2021 – 2024 batches onwards).

PROGRAM PROFILE BBA

PROGRAM SPECIFIC OUTCOMES (PSO)

PSO No.	Upon completion of the Programme, the students will be able to
PSO-1	Understand and remember the concepts of various disciplines of management, economics, accounting, marketing, finance, human resource and corporate governance.
PSO-2	An ability to apply conceptual foundations of management to solve practical decision-making problems.
PSO-3	Execute technical competence in domestic and global business through the study of various dimensions in the field of business studies.
PSO-4	Develops overall personality through proper education skill enhancement courses & inculcate human values.
PSO-5	Creating the ability to understand the impact of managerial decisions on global economic and environmental context.
PSO-6	Acquire Entrepreneurial traits start to manage their own innovative business successfully.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hours/ Week	Credit Min/Max
I	I	Languages/ AECC-II	UTAL107/ UTAL108	General Tamil - I/ Advanced Tamil – I/ French I / Hindi I	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3/4
	II	Communicative English AECC-I	UCEL101/ UCEL102	Communicative English I / Effective Communicative English I	UENL107/ UENL108	5	3/4
	III	Major Core I/(DSC)	UBAM109	Business Communication	UBAM 311	6	5
		Major Core II/ (DSC)	UBAM108/ UCOM104/ UCCM102	Financial Accounting	-	6	4
		Allied – I/ (GE)	UCEA103	Business Economics	UCEA101	6	5
		PE	UPEM101	Professional English I		6	4
		Value Education (SEC)		Family Life Education	-	2	1
					TOTAL	**36**	**25/27**

II	I	Language AECC –II	UTAL207/ UTAL208 UFRL202/ UHIL 202	General Tamil II/ Advanced Tamil II/ French II / Hindi II	UTAL205 / UTAL206	5	3/4
	II	Communicative English / AECC – I	UCEL201/ UCEL 202	Communicative English – II/ Effective Communicative English II	UENL207/ UENL208	5	3/4
	III	Major Core IV /(DSC)	UBAM209	Advertising and Sales Promotion	UBAM206	5	4
		Major Core V /(DSC)	UBAM207	Principles of Management	UBAM107/ UBAM102	5	4
		Major Core VI(DSC)	UBAR201	Workshop on Decision Making	-	1	1
		Allied - II (GE)	UCOA203	Accounting Package Theory	-	3	2
		Allied - Practical I (GE)	UCOR203	Accounting Package Practical	-	3	2
		PE	UPEM201	Professional English II		6	4
		Internship	UBAI201	Internship/Field work/ Field Project (30 Hours)		-	-/1 (Extra Credit)
	IV	Non Major Elective(SEC)			-	3	2
	V	Extension activity / Physical Education/ NCC				-	1/2
					TOTAL	**36**	**26/30**
III	III	Major Core VII(DSC)	UBAM308	Marketing Management	UBAM402	5	4
		Major Core VIII(DSC)	UBAM310/ UCOM305/ UCCM305	Cost Accounting	-	5	5
		Major Core IX(DSC)	UBAM312	Creativity For Innovative Management	-	4	4
		Major Core X(DSC)	UBAM313	Organizational Behavior	UBAM401/ UBAM406	5	4
		Online Course	UONL301	NPTEL	-	3	1/2
		Allied (GE)	UMAA301	Business Statistics	UMAA303	6	4
	IV	Value Education (SEC)		Environmental science		2	1
					TOTAL	**30**	**23/24**
IV	III	Major Core XI(DSC)	UBAM405	Production & Materials Management	-	5	4
		Major Core XII(DSC)	UBAM408	Micro, Small and Medium Enterprises	UBAM406	4	4
		Major Core III(DSC)	UBAM407	Human Resource Management	UBAM302	4	4
		Major Core III(DSC)	UBAM409	Management Information System		5	4
		Major Core XIV (DSC)	UBAR401	Workshop On Creative Thinking Skill	-	1	1
		Allied IV	UMAA410	Quantitative Techniques In Business	UMAA505	6	4
		Internship	UBAI401	Internship/Field work/ Field Project		-	-/1(Extra Credit)

	IV	Non Major Elective (SEC)				3	2
	V	Soft Skill			-	2	1
	V	Extension activity / Physical Education/ NCC				-	0/2
					TOTAL	**30**	**24/27**
V	III	Major Core XV(DSC)	UBAM507	Research Methodology in Business	UBAM403	3	3
		Major Core XVI(DSC)	UBAM508	Services Marketing	-	5	4
		Major Core XVII (DSC)	UBAM510	Stress Management	-	5	4
		Major Core XVIII (DSC)	UBAM504/ UCOM507/ UCCM507	Management Accounting	UBAM502	5	5
		Major Core XIX (DSC)	UBAP501	Project	UBAP601	5	5
		Major Elective (DSE)	UBAO501	Total Quality Management		5	4
			UBAO502	Corporate Governance			
	IV	Value Education				2	1
					TOTAL	**30**	**25/25**
VI	III	Major Core X (DSC)	UBAM608	Strategic Management	-	5	4
		Major Core XI (DSC)	UCOM619 UCCM619 UBAM615	Financial Management	UBAM610	6	4
		Major Core XII (DSC)	UBAM612	Entrepreneurial Development	-	6	4
		Major Core XXIII (DSC)	UBAR601	Workshop On Leadership Skills	-	1	1
		Major Core XXIV (DSC)	UBAM613	Global Business in Management	-	5	3
	IV	Viva Voce	UBAM611	Comprehensive viva	-	-	1
		Internship	UBAI601	Internship/Field work/ Field Project	-	-	-/1 (Extra Credit)
		Major Elective	UBAO609	Consumer Affairs	-	5	3
			UBAO604	Customer Relationship Management			
			UBAO606	Operation Management			
			UBAO607	Consumer Protection			
		Soft Skill			-	2	1
	V	Extension activity / Physical Education/NCC				-	-/2
		Extension Programme	UROX601	Rural Outreach Programme (30 Hours)	-	-	-/1 (Extra Credit)
					TOTAL	**30**	**25/28**
					GRAND TOTAL	**192**	**148/161**

COURSES OFFERED TO OTHER DEPARTMENTS

NON MAJOR ELECTIVES

Semester	Part	Category	Course Code	Course Title	Contact Hour/ Week	Credit Min / Max
II	IV	Non Major Elective-II	UBAE203	Team Building	3	2
IV	IV	Non Major Elective-IV	UBAE404	Rural Banking	3	2

EXPERIENTIAL LEARNING
(Only for Interested Students)

Course mapping				Collaborating agency- Grand technologies/Ponlait		
Semester	**Course Code**	**Course Title**	**Assessment**	**Course Title**	**Hour/Days/ Month**	**Mode of Evaluation**
V	UBAM505	Service Marketing	Component III	Service Marketing	2 Days	Reflection
VI	UBAM608	Strategic Management	Component IV	Strategic Management	2 Days	Reflection

STRATEGIC MANAGEMENT

UBAM608

Semester : VI **Credit : 4**
Category : Major Core X **Hours/Week : 5**
Class & Major : III BBA. **Total Hours : 65**

Course Objectives:

CO No.	To enable the students to
CO-1	Explain the whole and parts of the Strategic Management process.
CO-2	Describe the roles, which the general manager and middle managers play within the hierarchy of strategies.
CO-3	Use SWOT Analysis to analyse the situation of a firm and its industry.
CO-4	Explain the different forms of strategy, such as generic, directional, diversification and international.
CO-5	Illustrate the relationship between a firm's value chain configuration and competitive advantage.

UNIT - I INTRODUCTION **13 Hours**

Concepts in Strategic Management - Strategic Management as a process - Developing a strategic vision - Mission - Objectives - Policies - Factors that shape a company's strategy - Drafting a strategy - Industry and Competitive Analysis.

UNIT - II ENVIRONMENTAL SCANNING AND LEADERSHIP **13 Hours**

SWOT Analysis - Strategies and competitive advantages in diversified companies and its evaluation - Strategic Analysis and Choice: Tools and techniques - Strategic Leadership: Leadership and Style - Key Strategic Leadership Actions - Developing Human Capital and Social Capital - Balanced Scorecard.

UNIT III STRATEGY FORMULATION **13 Hours**

Strategy Framework for Analyzing Competition - Porter's Value Chain Analysis - Competitive Advantage of a Firm - Formulation of strategy at corporate - Types of Strategies - Tailoring strategy to fit specific industry - Restructuring and diversification strategies - Different methods Turnaround strategy and diversification strategies.

UNIT - IV STRATEGY IMPLEMENTATION **12 Hours**

Strategy and Structure - Leadership - Strategies for competing in Globalizing markets and internet economy - Organizational Values and Their Impact on Strategy - Resource Allocation - Planning systems for implementation.

UNIT - V STRATEGIC EVALUATION AND CONTROL **14 Hours**

Establishing Strategic Controls - Measuring Performance - Appropriate Measures - Role of the Strategist - Qualitative and Quantitative Benchmarking to Evaluate Performance - Strategic

Information Systems - Problems in Measuring Performance - Strategic Surveillance - Strategic Audit.

Text Books:

- Kennedy B. Reed, Virginia Tech (2020). Strategic Management. Virginia Tech Publishing.
- Schilling, M. (2016). Strategic management of technological innovation. Boston: McGraw-Hill education.

Reference Books

- Dess, G., McNamara, G., & eisner, A. (2015). Strategic management: Text and cases. New York: McGraw-Hill education.
- Rothaermel, F. (2014). Strategic management: Concepts and cases. Boston: McGraw-Hill/Irwin.
- Appa Rao, Parvatheshwar Rao, Shiva Rama Krishna (2012) "Strategic Management and Business Policy", Excel Books, New Delhi.

e-Resource:

- http://www.indoreindira.com/UG/images/BBA/BBA%20VI%20Sem/Strategic%20Management.pdf
- http://www.strategicmanagementinsight.com/tools/vrio.html

Course Outcomes:

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Understand and recall the fundamental concepts and process of strategic management.	K1, K2
CO-2	Apply the strategic management process and various tasks of Strategic Management for formulating the new strategies based on the case studies.	K3
CO-3	Examine the management of the entire enterprise from the Top Management viewpoints.	K4
CO-4	Evaluate the holistic strategies addressing both internal and external factors.	K5
CO-5	Evolve a new strategic plan towards the measuring performance.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	**3**	**3**	**2**	**1**	**1**	**3**
CO-2	**3**	**3**	**2**	**3**	**2**	**3**
CO-3	**3**	**3**	**2**	**3**	**2**	**3**
CO-4	**3**	**3**	**2**	**3**	**2**	**3**
CO-5	**3**	**3**	**2**	**3**	**2**	**3**

High Correlation : 77%
Moderate Correlation: 27%
Low Correlation : 6%

FINANCIAL MANAGEMENT

UCOM619/UCCM619/ UBAM615

Semester : VI **Credit : 4**
Category : Core XXIII/XX **Hours/Week : 6**
Class & Major : III B.com/B.com(C.A)/BBA **Total Hours :78**

Course Objectives

CO No.	To enable the students
CO 1	Understand the financial concept of finance and its usage
CO 2	Apprehend the various approaches of financial management namely cost of capital, capital structure theory etc.
CO 3	Apply the concept of capital budgeting decision practically
CO 4	Analyze and evaluate the management techniques (inventory, cash, and receivables) practically
CO 5	Synthesize the significant of financial management in real business word

UNIT I FINANCIAL MANAGEMENT - AN OVERVIEW 14 Hours

Financial Management, Meaning and Scope, - Objectives, Agency Problem – Emerging role of financial managers in India.Time Value of Money – Present value, Future value, Practical applications of Time value Techniques. Risk and Return – Types of risk, Tyes of returns, CAPM Model.

UNIT-II COST OF CAPITAL, LEVERAGES 16 Hours

Meaning – Significance - Types. Cost of Capital - Concepts- Importance-Classification: Cost of debt- Cost of Preference shares- cost of equity and cost of retained earnings and weighted average cost of capital.

Leverages - Operating Leverage, Financial Leverage and Combined Leverage.

UNIT III CAPITAL STRUCTURE THEORIES 16 Hours

Meaning - Scope – Approaches: Net Income Approach- Net Operating Income approach - MM approach and Traditional approach.

UNIT IV CAPITAL BUDGETING 15 Hours

Concept - Importance – Methods: Payback period method- Discounted cash flow methods – NPV- present value index and IRR method; Return on Investment method.

UNIT V WORKING CAPITAL MANAGEMENT & DIVIDEND DECISION 17 Hours

Working Capital Management –Cash management – Inventory Management – Receivable Management- Dividend theories and policy, types – Factors influencing dividend policy.

Note-Theory 40%, Problem 60%

Text Books

- Sharma R.K, (2020), *Financial Management,* Kalyani Publications. New Delhi.
- *Pandey I.M., (2020), Financial Management,*Vikas*Publishing*HousePvt.Ltd. New *Delhi.*

Reference Books

- Maheswari S.N., (2019), *Financial Management,* Sultan Chand and Sons, New Delhi.
- Khan and Jain, (2019), *Financial Management,* Sultan Chand and Sons, New Delhi.

e-Resource:

- www.managementstudyguide.com/capital-structure.html
- www.managementstudyguide.com/financial-management.html
- www.sap.com/india/product/financial-mgmt.html

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Recall and interpret the various financial concepts relating to time value of money, cost of capital, capital structure, capital budgeting, working capital management and dividend decision.	K1, K2
CO-2	Build a thorough knowledge of relevant accounting concepts to prepare financial return.	K3
CO-3	Analyze and carryout the various accounting treatments relating to Financial Management discipline.	K4
CO-4	Judge the risk investment pattern and rate of return.	K5
CO-5	Design a plan for optimum rate of return	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	**3**	**2**	**2**	**2**	**3**	**3**
CO-2	**3**	**2**	**3**	**3**	**3**	**3**
CO-3	**3**	**3**	**3**	**2**	**3**	**2**
CO-4	**3**	**2**	**3**	**2**	**3**	**1**
CO-5	**3**	**3**	**2**	**3**	**2**	**1**

High Correlation : 60%
Moderate Correlation: 33.33%
Low Correlation : 06.67%

ENTREPRENEURIAL DEVELOPMENT

UBAM612

Semester : VI **Credit : 4**
Category : Major Core XII **Hours/Week : 6**
Class & Major : III BBA. **Total hours : 78**
Course Objectives:

CO No.	To enable the students to
CO-1	Understand the current scenario of entrepreneurship and execute business idea.
CO-2	Identify a market need or business opportunity for a potential new social venture.
CO-3	Apply the professional knowledge and skills in the respected field of enterprise development.
CO-4	Develop the positive attitudes towards the professions with greater initiative and self- confidence.
CO-5	Create a suitable plan to grow and globalize a business.

UNIT - I INTRODUCTION **16 Hours**

Entrepreneurship Concept - Entrepreneurial Motivation - Ethics in Entrepreneur - Characteristics - Essential Features - Functions of Entrepreneur - Kinds of Entrepreneurs - Corporate Entrepreneurship - Intrapreneurs - Introduction to Edupreneurship - Agripreneurship – Women Entrepreneurship - Social Entrepreneurship - Ecological Entrepreneurship – Technopreneurship.

UNIT - II STARTUPS IDEAS **15 Hours**

Innovation and Disruptive Innovation - Sources of Start - Up Ideas and Evaluation Criteria - Technology Based Start – Ups - Characteristics of Tech Startup - New Startup Model - Key Factors for Success and Reasons for Failure - Innovation Policy - Central Government Support to Startups.

UNIT III LEGAL AND FINANCIAL ASPECTS **15 Hours**

Statutory Requirements for Startups - Entrepreneurs and Legal Regulatory Systems - Patents and Trademarks - Intellectual Property Rights - Financing by Commercial Banks - Bank Loans - Financial Institution - Funds from Mudra Bank - Government Grants and Subsidies – Financial Aspect of SWOT Analysis – Case Studies.

UNIT - IV BUSINESS PLANNING, AND FEASIBILITY STUDIES **16 Hours**

Concept of Business Planning and Modeling - Importance and Contents of Business Plan - Internal and External Environment Analysis - Technological Competitiveness - Feasibility - SWOT Analysis - Product and Process Development - Major Steps in Product Development - Case Studies.

UNIT - V MSME AND ENTREPRENEURSHIP DEVELOPMENT **16 Hours**

Role of Small &Medium Enterprises - Contribution of GDP & Employment - Problems and prospects of MSMEs - Government policy for SMEs Protection - Need for EDPs - Objectives of EDPs - Phases of EDPs - Evaluation of EDPs - Case Studies.

Text Book:

- Radha (2019) Entrepreneurial Development Revised Ed. Prasanna Publishers & Distributors.

Reference Books

- Vasant Desai (2019) Entrepreneurship Development. Himalaya Publishing House Pvt. Ltd.
- E. Gordon and K. Natarajan (2017) Entrepreneurship Development. Himalaya Publishing House Pvt. Ltd.,

e-Resources:

- http://www.indoreindira.com/UG/images/BBA/BBA%20VI%20Sem/Strategic%20Management.pdf
- https://ddceutkal.ac.in/Downloads/UG_SLM/Commerce/SEC_2.pdf
- https://daayitwa.org/storage/archives/1583128980.pdf
- https://www.himpub.com/documents/Chapter3695.pdf

Course Outcomes:

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Define key concepts and explain the importance of entrepreneurship and the role of innovation.	K1, K2
CO-2	Identify the entrepreneurial process and the success factors.	K3
CO-3	Simplify the business opportunities, legal and regulatory considerations, social and environmental entrepreneurship.	K4
CO-4	Evaluate the effectiveness of different entrepreneurial programs.	K5
CO-5	Design a comprehensive entrepreneurial strategy and critically reflect on entrepreneurial experiences.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	**3**	**3**	**2**	**2**	**1**	**1**
CO-2	**3**	**3**	**2**	**2**	**2**	**3**
CO-3	**3**	**3**	**3**	**2**	**2**	**3**
CO-4	**3**	**3**	**2**	**2**	**3**	**3**
CO-5	**3**	**3**	**3**	**3**	**3**	**3**

High Correlation : 67%
Moderate Correlation : 30%
Low Correlation : 3%

GLOBAL BUSINESS IN MANAGEMENT

UBAM613

Semester : VI **Credit : 3**
Category : Major Core XXIV **Hours/Week : 5**
Class & Major : III BBA. **Total hours : 65**

Course Objectives:

CO No.	To enable the students to
CO-1	Understand the most widely used international business terms and concepts.
CO-2	Identify the role and impact of political, economical, social and cultural variables in international business.
CO-3	Analyze the critical issues in International Business.
CO-4	Demonstrate an in-depth understanding of environmental forces affecting International Business.
CO-5	Apply international business scenarios and strategic concepts in gaining practical decision- making skills.

UNIT - I INTRODUCTION **13 Hours**

International Business - Definition - Internationalizing Business - Advantages -Factors Causing Globalization of Business - International Business Environment - Country Attractiveness – Political, Economic and Cultural Environment - Protection Vs Liberalization of Global Business Environment - ISO – Global competitive analysis.

UNIT - II INTERNATIONAL TRADE AND INVESTMENT **13 Hours**

Promotion of Global Business - Challenges for Global Business - Global Trade and Investment - Theories of International Trade and Theories of International Investment - Need for Global Competitiveness - Regional Trade Block - Types - Advantages and Disadvantages - Regional Trade Block (RTBs) across the Globe.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT **13 Hours**

Strategic Compulsions - Standardization Vs Differentiation - Strategic Options - Global Portfolio Management - Global Entry Strategy - Different Forms of International Business – Advantages - Organizational Issues of International Business - Organizational Structures - Controlling of International Business - Approaches to Control - Performance of Global Business Performance Evaluation System - Case Studies.

UNIT - IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS **13 Hours**

Global Production - Cost of Production - Make or Buy Decisions - Global Supply Chain Issues - Quality Considerations - Globalization of Markets - Marketing Strategy - Challenges in Product Development – Pricing - Sources of Fund - Risk and Management - Strategic Orientation - Selection of Expatriate Managers - Training and Development – Compensation - Case Studies.

UNIT - V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT **13 Hours**

Disadvantages of International Business - Conflict in International Business - Sources and Types of Conflict - Conflict Resolutions - Negotiation - The Role of International Agencies - Ethical Issues in International Business - Ethical Decision Making - Function of World Trade Origination (WTO) - Case Studies.

Text Book:

- Charles W. L. Hill, G. Tomas M. Hult and Rohit Mehtani (2018) International Business: Competing in the Global Marketplace (SIE) | 11th Edition, Tata Mc Graw Hill, New Delhi.

Reference Books

- N. Venkateswaran (2017). International Business Management, New Age International (P) Ltd., Publishers
- C.B. Gupta (2014). International Business, S Chand & Co Ltd International Business.

e-Resources:

- https://ebooks.lpude.in/commerce/mcom/term_3/DCOM501_INTERNATIONAL_BUSINESS.pdf
- https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBAA5301.pdf
- https://www.sscasc.in/wp-content/uploads/downloads/MCOM/International-Business.pdf

Course Outcomes:

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Acquire the basic knowledge on various national physical environment and its impact on international business.	K1, K2
CO-2	Apply the current business phenomenon in terms of economic, social and legal aspects of global business environment.	K3
CO-3	Analyze the principle of international business and strategies adopted by firms to expand globally.	K4
CO-4	Evaluate global business risks and assess the ethical considerations in global business practices.	K5
CO-5	Formulate the effective use of world resources with social, cultural and ethical background.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	3	2	1	1	1
CO-2	3	3	2	2	1	1
CO-3	3	1	3	2	3	3
CO-4	3	1	3	2	3	3
CO-5	3	3	3	3	3	3

High Correlation : 60%
Moderate Correlation: 17%
Low Correlation : 23%

CONSUMER AFFAIRS

UBAO609

Semester : VI **Credit : 3**
Category : Major Elective **Hours/Week : 5**
Class & Major : III BBA **Total hours : 65**

Course Objectives:

CO No.	To enable the students to
CO-1	Understand the social framework of consumer rights and legal framework of protecting consumer rights.
CO-2	Apply grievance redressal mechanism and leading case studies.
CO-3	Identify the business firms' interface with consumers and the consumer related regulatory and business environment.
CO-4	Understand the responsibilities consumers must exercise to help enforce their rights.
CO-5	Identify many of the federal governmental departments & agencies that help protect consumers.

UNIT - I CONSUMER AND MARKETS **13 Hours**

Concept of Consumers - Concept of Markets - Nature of Markets - Concept of Price in Retail and Wholesale - Maximum Retail Price (MRP) - and Local Taxes - Fair Price - Misleading Advertisements and Deceptive Packaging.

UNIT - II CONSUMER PROTECTION ACT 2019 **13 Hours**

Consumer Protection Act - Objectives – Consumer - Difference between Goods and Services - Defect in Goods - Deficiency in Service Spurious Goods and Services - Unfair Trade Practices - Restrictive Trade Practices - Organizational Set - Up under the Consumer Protection Act.

UNIT III GRIEVANCE REDRESSAL MECHANISM **13 Hours**

Procedure for file a complaint - Grounds of Filing a Complaint - Limitation Period - Procedure for Filing and Hearing of a Complaint - Temporary Injunction - Reliefs – Remedial Action – Appeal - Enforcement of Order - Bar on Frivolous and Vexation Complaints - Offences and Penalties.

UNIT - IV QUALITY AND STANDARDIZATION **13 Hours**

Voluntary and Mandatory standards - Role of BIS - Indian Standards Mark (ISI) - Ag-mark – Hallmarking - Licensing and Surveillance - ISO: An overview.

UNIT - V CONSUMER MOVEMENT IN INDIA **13 Hours**

Evolution of Consumer Movement in India - Formation of Consumer Organizations - Role in Consumer Protection - Misleading Advertisements through Social Media - Sustainable Consumption - National Consumer Helpline.

Text Books:

- Sri Ram Khanna, Savita Hanspal (2020). Consumer Affairs and Customer Care. Prowess Publishing.
- Sheetal Kapoor (2019). Consumer Affairs and Customer Care 2nd revised ed. Galgotia Publishing Company.

Reference Books

- Tracy Biram (2019) Consumer Affairs, Independence Educational Publishers.

- Khanna, Sri Ram, Hanspal. Savita Kapoor, Sheetal and Awasthi, H. K. "Cosumer Affairs" (2007) Delhi University Publication, Pp. 334

e-Resources:

- https://www.gdcboysang.ac.in/About/droid/uploads/CP-Bcom6thSem.pdf
- https://gehulawreview.com/wp-content/uploads/2021/10/GLR2P7.pdf
- https://legislative.gov.in/sites/default/files/A1986-68_0.pdf
- http://chdfood.gov.in/sites/default/files/consumer-handbook.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Recall and understand the concepts such as terms and conditions, product specifications, and consumer rights.	K1, K2
CO-2	Apply the consumer knowledge by making informed decisions, comparing products, and instructions for product use.	K3
CO-3	Analyse the various perspectives and interpret the collected information to make informed judgments about the overall value and suitability of the offerings.	K4
CO-4	Assess available options by carefully weighing their needs, preferences, and ethical considerations.	K5
CO-5	Create strategies for budgeting, planning purchases, or advocating for consumer rights	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	**3**	**3**	**3**	**2**	**3**	**3**
CO-2	**3**	**3**	**2**	**3**	**2**	**3**
CO-3	**3**	**3**	**2**	**2**	**3**	**3**
CO-4	**3**	**3**	**3**	**3**	**2**	**3**
CO-5	**3**	**2**	**2**	**3**	**3**	**3**

High Correlation: 73.33%
Moderate Correlation: 26.6 %
Low Correlation: Nil

CUSTOMER RELATIONSHIP MANAGEMENT

UBAO604

Semester : VI **Credit : 3**
Category : Major Elective **Hours/Week : 5**
Class & Major : III BBA. **Total hours : 65**

Course Objectives:

CO No.	To enable the students to
CO-1	Describe the concept of Customer Relationship Management (CRM) and implementation of Customer Relationship Management.
CO-2	Understand the organizational need, benefits and process of creating long-term value for individual customers.
CO-3	Identify new trends in CRM, challenges and opportunities for Organizations.
CO-4	Discuss strategy, planning, implementation and evaluation under CRM.
CO-5	Know CRM practices in different sectors like manufacturing, Services, Call Centers, etc.

UNIT - I INTRODUCTION **13 Hours**

CRM Concepts - Acquiring Customers - Customer Loyalty and Optimizing Customer Relationships - Success Factors - The Three Levels of Sales Profiling - Service Level Agreements (SLAs) - Creating and Managing Effective SLAs.

UNIT - II CRM IN MARKETING **13 Hours**

CRM in Marketing - One-to-one Relationship Marketing - Cross Selling & Up Selling - Customer Retention - Behaviour Prediction - Customer Profitability & Value Modeling - Channel Optimization - Event-Based Marketing - CRM and Customer Service - The Call Centre - Call Scripting - Customer Satisfaction Measurement.

UNIT III SALES FORCE AUTOMATION **13 Hours**

Sales Force Automation - Sales Process - Field Force Automation - CRM Links In E-Business - E-Commerce and Customer Relationships on the Internet - Enterprise Resource Planning (ERP) - Supply Chain Management (SCM) - Supplier Relationship Management (SRM) - Partner Relationship Management (PRM).

UNIT - IV ANALYTICAL CRM **12 Hours**

Analytical CRM - Managing and Sharing Customer Data - Customer Information Databases - Ethics and Legalities of Data Use - Data Warehousing and Data Mining Concepts - Data Analysis - Market Basket Analysis (MBA) - Click Stream Analysis - Personalization and Collaborative Filtering.

UNIT - V IMPLEMENTATION OF CRM **14 Hours**

CRM Implementation - Defining Success Factors - Preparing Business Plan Requirements - Justification and Processes - Choosing CRM Tools - Defining Functionalities - Homegrown Versus Out-Sourced Approaches - Managing Customer Relationships - Conflict – Complacency - Resetting the CRM Strategy - Selling CRM Internally - CRM Development Team - Scoping and Prioritizing.

Text Book:

- SIA (2022) Customer Relationship Management, SIA Publishers & Distributors Pvt Ltd.

Reference Books

- Francis Buttle, Stan Maklan, Customer Relationship Management: Concepts and Technologies, 3rd edition, Routledge Publishers, 2015
- Kumar, V., Reinartz, Werner Customer Relationship Management Concept, Strategy and Tools, 1st edition, Springer Texts, 2014.

- Alok Kumar Rai, Customer Relationship Management Concept & Cases, Prentice Hall of India Private Limted, New Delhi. 2011.

e-Resources:

- https://backup.pondiuni.edu.in/sites/default/files/CRM-260214.pdf
- https://www.scitepress.org/Papers/2018/88926/88926.pdf
- https://core.ac.uk/download/pdf/234625464.pdf
- http://ijbssnet.com/journals/Vol.%202_No._10;_June_2011/18.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Recall and comprehend the importance of cultivating effective and efficient customer relationship abilities.	K1, K2
CO-2	Discuss the different types of Consumer-brand relations and how to strengthen relations with valued customers.	K3
CO-3	Analyse the CRM for critically assessing the insights derived from understanding customers.	K4
CO-4	Assess the different CRM models in service industry.	K5
CO-5	Evolve innovative strategies and implement customized CRM solutions to enhance customer experiences, foster guest loyalty, and optimize operational processes.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	3	2	2	2	3
CO-2	3	3	3	2	2	3
CO-3	3	3	3	3	2	2
CO-4	3	3	3	3	2	3
CO-5	3	3	3	3	2	3

High Correlation: 70%
Moderate Correlation: 30 %
Low Correlation: Nil

OPERATIONS MANAGEMENT

UBAO606

Semester : VI **Credit : 3**
Category : Major Elective **Hours/Week : 5**
Class & Major : III BBA. **Total hours : 65**

Course Objectives:

CO No.	To enable the students to
CO-1	Understand key concepts and issues of OM in both manufacturing and service organizations.
CO-2	Analyze business processes in services / manufacturing for improvement.
CO-3	Identify the operational issues in the value addition processes of a firm.
CO-4	Develop ability to analyze and address problem related to the design, planning, control, and improvements of manufacturing and service operations.
CO-5	Apply analytical skills and problem - solving tools to resolve the operational issues.

UNIT - I OPERATIONS MANAGEMENT 13 Hours

Operations Management - Definition - Functions & Responsibilities of Production Management - Process Planning – Plant Location - Plant Lay out - Introduction to Production Planning.

UNIT - II PRODUCT AND SERVICE DESIGN 13 Hours

Phases in Product Design and Development - Design for Manufacturing - Computer-Aided Design (CAD) – Failure Mode and Effects Analysis (FMEA) Recycling Component Commonality - Service Design - Difference Between Product Design and Service Design - Legal and Environmental Issues.

UNIT III QUALITY ASSURANCE AND CONTROL 13 Hours

Concept of Quality – Quality Assurance – Quality Control - Inspection - Statistical Process Control - Control Charts - Acceptance Sampling Concept – Risks - Cost of Quality Control - ISO Quality Systems: ISO:9000 - ISO:14000 - Total Quality Control - Poor Quality Control – Concept – KAIZEN - Six Sigma Concept.

UNIT - IV INVENTORY MANAGEMENT AND CONTROL 13 Hours

Nature and Importance of Inventory - Functions and Objectives - Requirements for Effective Inventory Management - Inventory Costs - Inventory Classification System - ABC Analysis - EOQ (Economic Order Quantity) Models - Economic Production Quantity Model – Inventory Audit.

UNIT - V SUPPLY CHAIN MANAGEMENT AND PURCHASING 13 Hours

Need for Supply Chain Management – Benefits - Elements of SCM - Logistics - EDI (Electronic Data Interchange) - E-commerce - Requirements for SCM - Steps and Optimization - Purchasing Interfaces - Purchasing Cycle - Value Analysis - Centralized Vs Decentralized Purchasing - Ethics in Purchasing – Supplier Audit.

Text Books:

- Chase, R.B., Ravi Shankar & Jacobs, F.R. (2018), Operations & Supply Management. 15th Edition, McGraw Hill
- Jay Heizer, Barry Render and Chuck Munson (2017) Operations Management. Pearson Education; Twelfth edition.

Reference Books

- Ravi Anupindi, Sunil Chopra et al (2013) Managing Business Process Flows: Principles of Operations Management, Pearson.
- Jack Meredith Et Al (2013) Operations management. John Wiley.

e-Resources:

- https://ebooks.lpude.in/management/mba/term_3/DMGT501_OPERATIONS_MANAGEMENT.pdf
- http://www.mim.ac.mw/books/Operations%20Management.pdf
- https://colbournecollege.weebly.com/uploads/2/3/7/9/23793496/operations_management_by_slack_nigel_7th.pdf

Course Outcomes:

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Recall the fundamental concepts in operations management and understand process analysis techniques, operational components, and forecasting methods.	K1, K2
CO-2	Apply decision analysis tools to make informed decisions in operations management	K3
CO-3	Examine the elements of operations management and various transformation processes to enhance productivity and competitiveness.	K4
CO-4	Evaluate quality management systems, inventory management strategies, and sustainable operations practices.	K5
CO-5	Develop skills to operate competitively in the current business scenario.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	**3**	**2**	**2**	**2**	**1**	**1**
CO-2	**3**	**3**	**2**	**2**	**2**	**1**
CO-3	**3**	**3**	**3**	**3**	**2**	**3**
CO-4	**3**	**3**	**2**	**2**	**3**	**3**
CO-5	**3**	**3**	**3**	**3**	**3**	**3**

High Correlation : 60%
Moderate Correlation: 30%
Low Correlation : 10%

CONSUMER PROTECTION

UBAO607

Semester : VI **Credit : 3**
Category : Major Elective **Hours/Week : 5**
Class & Major : III BBA. **Total hours : 65**

Course Objectives:

CO No.	To enable the students to
CO-1	Understand the terms Consumers, Consumerism, Consumer movement
CO-2	Describe the rights and responsibilities of consumers
CO-3	Identify the laws guiding and protecting consumers
CO-4	Explore the relationship between consumer protection laws and consumer disputes law
CO-5	Identify best practices of consumer protection frameworks from national, perspectives.

UNIT - I CONSUMER PROTECTION 13 Hours

Consumerism – Meaning - Need and Importance of Consumerism - Consumer Protection – Objectives - Scope and Importance - Consumer Rights and Standardization -United Nations Guideline on Consumer Protection - Objectives - General Principles and Framework for Consumer Protection.

UNIT - II CONSUMER EDUCATION AND AWARENESS 13 Hours

Consumer Education-Need and Importance - Consumer Responsibility - Role of Consumer Association - Councils in Consumer Education and Awareness - Voluntary Organization - Consumer Protection Councils - Educational Institution and Government Skills Required for Career in Consumer Studies Field.

UNIT III CONSUMER PROTECTION LAW 2019 13 Hours

Overview of Consumer Protection Act 2019 - Features - Consumers - Goods - Services - Defect - Deficiency - Unfair Trade Practices, Dispute - Complaint – Objectives - Consumer Disputes Redressal Agencies - (Composition, Jurisdiction, Powers And Functions) - Procedure of Filling Complaint - Procedure to deal with Complain.

UNIT - IV E-COMMERCE 13 Hours

E Commerce- Scope - Need – Importance - Limitations of E Commerce - Prospects and Challenges of Ecommerce and its Effect on Consumer - Consumer Protection in E-Service - Recent Emerging Issues in E-Commerce.

UNIT - V CORPORATE GOVERNANCE AND BUSINESS ETHICS 13 Hours

Corporate Governance - Concept - Objectives - Features - Core Principles of Good Corporate Governance - Advantages - System of Corporate Governance and SEBI's –Overview of Whsle Blowing – Meaning of Ethics – Business Ethics - Current Issues of Business Ethics.

Text Books:

- G. B. Reddy and Baglekar Akash Kumar (2021) Consumer Protection Act: A Commentary. Eastern Book Company.
- Dr. V.K. Agarwal (2021) Law of Consumer Protection 4th Edition. Bharat Law House.
- Dr. Amit Kumar, Dr. Saurabh Sen (2022) Essentials of E-Commerce. Sahitya Bhawan Publications.
- Neeru Vasishth and Namita Rajput (2022) Corporate Governance Values & Ethics with Case Studies. Taxmann's Corporate Law Publications

Reference Books

- Dr R K Bangia (2022) Consumer Protection Laws. Allahabad Law Agency.
- Surendra Malik and Sudeep Malik (2019) Supreme Court on Consumer Protection. Eastern Book Company.

e-Resources:

- https://www.gdcboysang.ac.in/About/droid/uploads/CP-Bcom6thSem.pdf
- https://egazette.nic.in/WriteReadData/2019/210422.pdf
- https://clap.nls.ac.in/wp-content/uploads/2021/01/E-COMMERCE-AND-CONSUMER-PROTECTION-A-CRITICAL-ANALYSIS-OF-LEGAL-REGULATIONS.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Recall and understand the basic information about their rights on consumer protection.	K1, K2
CO-2	Apply the knowledge of consumer protection principles in real-world situations.	K3
CO-3	Analyze the information about products, services, and businesses to evaluate their compliance with consumer protection standards.	K4
CO-4	Evaluate the effectiveness of consumer protection measures and advocate for improvements.	K5
CO-5	Develop innovative solutions that contribute to the advancement of consumer protection.	K6

CO- PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	3	2	2	2	2
CO-2	3	2	3	2	2	2
CO-3	3	3	3	3	2	3
CO-4	3	3	3	3	3	3
CO-5	3	3	3	3	3	3

High Correlation: 70%

Moderate Correlation: 30%

Low Correlation: Nil

III & IV Evaluation Component of CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
VI	Major Core X (DSC)	UBAM608	Strategic Management	Assignment	Chart Presentation
	Major Core XI (DSC)	UBAM610/ UCOM614/ UCCM614	Financial Management	Problem Solving	Assignment
	Major Core XII (DSC)	UBAM612	Entrepreneurial Development	Create New Business Ideas	Poster Presentation
	Major Core XXIV (DSC)	UBAM613	Global Business in Management	Case Studies	Album Making
	Major Elective	UBAO609	Consumer Affairs	Chart Presentation	Case Studies
		UBAO604	Customer Relationship Management	Feasibility Report	Assignment
		UBAO606	Operation Management	Assignment	Chart Presentation
		UBAO606	Consumer Protection	Chart Presentation	Case Studies

PG & RESEARCH DEPARTMENT OF COMMERCE

PREAMBLE

UG: Programme Profile and the Syllabi of Courses offered in Semester VI along with III and IV Evaluation Components (with effect from 2021-2024 Batch onwards) are presented in this Booklet.

PROGRAMME PROFILE B.Com.
PROGRAM SPECIFIC OUTCOMES (PSO)

PSO No.	Upon completion of the programme, the students will be able to
PSO-1	Understand and acquire knowledge on various concepts in the discipline of Commerce
PSO-2	Develop business skills, positive attitude to meet the expectation of the industry at the national and global level.
PSO-3	Apply the statutory regulations that govern business of corporate sectors.
PSO-4	Discover the business opportunities to create and manage social innovations for sustainable entrepreneurship.
PSO-5	Adapt to rapidly changing environment with learned knowledge and skills and become socially responsible citizen.
PSO-6	Build a professional career and/or further higher education in the specified areas of specialization.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/ Week	Credit Min/Max
I	I	Part I Languages/ AECC-1I	UTAL107/ UTAL108/ UHIL102/ UFRL102	Basic Tamil I/ Advanced Tamil I/ Hindi I / French I	UTAL103/ UTAL104/ UHIL101/ UFRL101	5	3 / 4
	II	Part II Languages/ AECC-1	UENL109/ UENL110	English for Communication I English for Communication II	UENL106	5	3 / 4
	III	Core II/ (DSC)	UCOM104/ UCCM102	Financial Accounting	UCOM103/ UCCM101	6	5
		Allied I/(GE)	UCEA103	Business Economics	UCEA102	6	5
		Allied II/(GE)	UMAA112	Business Mathematics	UMAA214	6	4
		PE	UPEM101	Professional English I	--	6	4
	IV	Value Education		Family Life Education		2	1
TOTAL						**36**	**25/27**
II	I	Part I Languages/ AECC-1I	UTAL207/ UTAL208 UFRL202/ UHIL202	Basic Tamil – II/ Advanced Tamil –II/ French – II/ Hindi – II	UTAL203/ UTAL204/	5	3 / 4
	II	Part II Languages/ AECC-1	UENL209/ UENL210	English for Communication I English for Communication II	UENL206	5	3 / 4

	III	Core III/(DSC)	UCOM204/ UCCM203	Business Correspondence	---	5	4
		Core IV/(DSC)	UCOM206 UCCM206	Management Accounting	UCOM507/ UCCM507/ UBAM408	5	3
		Allied III/(GE)	UCEA202	Indian Economic Development	UCEA301	6	5
		Core V	UCOR206/ UCCR206/ UIAR203	Industry Interface Programme I–Banking and Insurance	UCOR205	1	1
	IV	PE	UPEM201	Professional English II	--	6	4
		NME /(SEC)				3	2
		Internship	UCOI201/ UCCI201/ UIAI201	Internship / Field Work / Field Project			-/1
	V	Extension Activity/ Physical Education				-	1 / 2
TOTAL						**36**	**27/31**
III	III	Core VI/(DSC)	UCOM309/ UCCM309/ UBAM310	Cost Accounting	UCOM501/ UCCM501	5	4
		Core VII/(DSC)	UCOM306/ UCCM306/ UBAM308	Marketing Management	UCOM606/ UCCM601	4	4
		Core VIII/(DSC)	UCOM307/ UBAM309	Financial Market & Services	UCOM303	6	4
		Core IX/(DSC)	UCOM308/ UCCM308	Accounting for Non - Trading Concerns	---	4	4
	IV	Online Course		NPTEL	---	3	1 / 2
		Allied IV/(GE)	UMAA301	Business Statistics		6	4
		VE/(SEC)		Environmental Science		2	1
TOTAL						**30**	**22/23**

IV	III	Core X/(DSC)	UCOM413	Banking Law & Practice	UCOM201	4	4
		Core XI/(DSC)	UCOM414/ UCCM414	Corporate Accounting	UCOM304/ UCCM304	5	4
		Core XII/(DSC)	UCOM409/ UCCM409	Business Law	UCOM302/ UCCM302	5	4
		Core XIV/(DSC)	UCOR413/ UCCR411/ UIAR404	Industry Interface Programme II – Stock Market & Mutual Fund	UCOR411	1	1
		Core XV/(DSC)	UCOM412 / UCCM412	Security Analysis & Portfolio Management	---	4	3
		Allied V/(GE)	UCSA409	Business Analytics and Intelligence	UCSA509	3	3

		Allied Practical I/ (GE)	UCSR415	Business Analytics and Intelligence using SAS – Lab	UCSR512	3	2
	IV	Soft Skills/(SEC)		Personality Development		2	1
	IV	NME/(SEC)				3	2
	IV	Internship	UCOM401/ UCCM401/ UIAM401	Internship / Field Work / Field Project			-/1
	V	Extension Activity/ Physical Education				-	-/ 2
TOTAL						**30**	**24/27**
V	III	Core XVII / (DSC)	UCOM506/ UCCM506	Company Law	UCOM503/ UCCM503	6	4
		Major Elective/ (DSE)	UCOO502	Commodities Market/ Human Resource Management	--	6	5
		Core XVIII/ (DSC)	UCOM509/ UCCM509 UIAM503	Income Tax Law & Practice I	UCOM502/ UCCM502	6	5
		Core XIX/(DSC)	UCOM512/	Accounting Package- Theory	UCOM604/ UCCM604	3	2
		Core Practical I	UCOR502/ UCCR502/ UIAR502	Accounting Package – Lab	UCOR605/ UCCR605	3	3
		Core XX/(DSC)	UCOP501/ UCCP501/ UIAP501/ UCOM511/ UCCM511 UIAM511	Project/Principles and Practice of Insurance	---	4	4
	IV	VE/(SEC)				2	1
TOTAL						**30**	**24/24**
VI	III	Core XXI/(DSC)	UCID601	Women Entrepreneurship		5	5
		Core XXII/ (DSC)	UCOM619/ UCCM619/ UBAM610	Financial Management	UCOM613 UCCM613 UBAM610	6	5
		Core XXIII/ (DSC)	UCOR618/ UCCR618/ UIAR603	Industry Interface Programme III - GST Practical	UCOR615 UCCR615	1	1
		Core XXIV/ (DSC)	UCOM616/ UCCM616/ UIAM604	Goods and Services Tax	---	6	5
		Core XXV/ (DSC)	UCOM617/ UCCM617/ UIAM605	Service Marketing	---	5	4
		Viva Voce	UCOM607/ UCCM607/ UIAM606	Comprehensive Viva	---	-	1
		Major Elective/ (DSE)	UCOO609/ UCCO609/ UIAO608	Advertising and personal selling	UCOM602 UCCM602	5	4

			UCOO606/ UCCO606/ UIAO610	International Trade			
			UCOO607/ UCCO607/ UIAO609	Consumer Protection			
	III	Internship	UCOI601/ UCCI601/ UIAI601	Internship / Field Work / Field Project			-/1
	IV	SS/(SEC)				2	1
	V	Extension Activity	UROX601	Rural Outreach Programme			-/1
		Extension/ Physical Education				-	-/2
					TOTAL	**30**	**26/30**
					GRAND TOTAL	**192**	**148/162**

DEPARTMENT OF COMMERCE

PREAMBLE:

UG : Programme Profile and Syllabi of Courses Offered in Semester VI along with III and IV Evaluation Components (With effect from 2021 – 2024 Batch onwards) are presented in this Booklet.

PROGRAMME PROFILE: B.Com. (CA)

PROGRAM SPECIFIC OUTCOMES (PSO)

PSO No.	Upon completion of these courses the students would have
PSO-1	Understand the operative systems fundamental knowledge of software commonly used in academic and professional environments.
PSO-2	Develop business skills, positive attitude to meet the expectation in the industry at the national and global level.
PSO-3	Apply the statutory regulations that govern business of corporate sectors.
PSO-4	Discover e- business opportunities to create and manage social innovations for sustainable e-entrepreneurship and become socially responsible citizen. .
PSO-5	Adapt to recent office automation with computers and computer software applications
PSO-6	Build a professional career and/or further higher education in the specified areas of specialization.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact/ Week	Credit Min/Max
I	I	Part I Languages/ AECC-1I	UTAL107/ UTAL108 UHIL102/ UFRL102	Basic Tamil – I/ Advanced Tamil – I/ Hindi –I/ French – I/	UTAL103 UTAL104	5	3 / 4
	II	Part II Languages/ AECC-1	UENL109/ UENL110	English for Communication I English for Communication II	UENL106	5	3 / 4
	III	Core II/(DSC)	UCCM102/ UCOM104	Financial Accounting	UCOM103/ UCCM101	6	5
		Allied I/(DSC)	UCSA105	Multimedia	UCSA303	3	3
		Allied Practical I/ (GE)	UCSR111	Multimedia Lab	UCSR306	3	2
		Allied II/(GE)	UMAA112	Business Mathematics		6	4
		PE	UPEM101	Professional English I	--	6	4
	IV	Value Education/(SEC)		Family Life Education		2	1
				TOTAL		**36**	**25/27**
II	I	Part I Languages/ AECC-1I	UTAL207/ UTAL208/ UFRL202/ UHIL202	Basic Tamil – II/ Advanced Tamil –II/ French – II/ Hindi –II	UTAL205/ UTAL206	5	3 / 4
	II	Part II Languages/ AECC-1	UENL209/ UENL210	English for Communication I English for Communication II	UENL206	5	3 / 4

	III	Core III/(DSC)	UCCM203/ UCOM204	Business Correspondence	---	5	4
		Allied III/(GE)	UCSA205	C Programming	UCSA104	3	3
		Allied Practical II/(GE)	UCSR208	C Programming – Lab	UCSR110	3	2
		Core IV/(DSC)	UCCM206/ UCOM206/ UCCM407/ UCOM407	Management Accounting	UCOM507/ UCCM507/ UBAM408	5	3
		Core V/(DSC)	UCCR206/ UCOR206 UIAR203	Industry Interface Programme I – Banking and Insurance	UCCR205	1	1
	III	PE	UPEM201	Professional English II		6	4
	IV	NME/(SEC)				3	2
	IV	Internship	UCOM201/ UCCM201/ UIAM201	Internship / Field Work / Field Project			-/1
	V	Extension Activity/ Physical Education				-	1 / 2
				TOTAL		**36**	**27 /30**
III	III	Core VI/(DSC)	UCCM309 /UCOM309	Cost Accounting	UCCM501	5	4
		Core VII/(DSC)	UCCM30/ UCOM30/ UBAM308	Marketing Management	UCCM606	4	4
		Core VIII/(DSC)	UCCM308/ UCOM308	Accounting for Non - Trading Concerns	---	4	4
		Online		NPTEL/ Spoken Tutorial	---	3	1 / 2
		Allied IV/(GE)	UCSA306	Object Oriented Programming	UCSA204	3	3
		Allied Practical III/(GE)	UCSR310	Object Oriented Programming – Lab	UCSR207	3	2
		Allied /(GE)	UMAA309	Business Statistics	UMAA403	6	4
	IV	Value Education/(SEC)		Environmental Science		2	1
				TOTAL		**30**	**23/24**
IV	III	Core IX/(DSC)	UCCM413	e-Banking	---	4	4
		Core X/(DSC)	UCCM414/ UCOM414	Corporate Accounting	UCCM304	5	4
		Core XI/(DSC)	UCOM409/ UCCM409	Business Law	UCCM302	5	4
		Core XII/(DSC)	UCCR411/ UCOR413/ UIAR404	Industry Interface Programme II – Stock Market and Mutual Fund	UCCR410	1	1
		Core XIII/(DSC)	UCOM412 / UCCM412	Security Analysis & Portfolio Management	---	4	3

		Allied V/(GE)	UCSA408	Fundamentals of Block Chain Technology	UCSA305	3	3
		Allied Practical IV/(GE)	UCSR414	Block Chain Technology using Solidity – Lab	UCSR309	3	2
	IV	NME/(SEC)				3	2
		Soft skills/(SEC)		Personality Development		2	1
	IV	Internship	UCOM401/ UCCM401/ UIAM401	Internship / Field Work / Field Project			-/1
	V	Extension Activity				-	0 /2
				TOTAL		**30**	**24/27**
V	III	Core XV/(DSC)	UCOM506/ UCCM506	Company Law	UCOM503 / UCCM503	6	4
		Core XVI/(DSC)	UCCM509/ UCOM509/ UIAM503	Income Tax Law & Practice -I	UCCM502	6	5
		Core XVII/(DSC)	UCCM512/ UCOM512 UIAM512	Accounting Package- Theory	UCCM604	3	2
		Core Practical I	UCOR502/ UCCR502/ UIAR502	Accounting Package – Lab	UCCR605	3	3
		Allied VI/(GE)	UCSA510	Digital Marketing Analytics	UCSA406	3	3
		Allied Practical V/(GE)	UCSR513	Web Design using Microsoft Expression web4 – Lab	UCSR412	3	2
		Core XVIII/ (DSC)	UCOP501 UCCP501/ UIAP501/ UCOM511 UCCM511 UIAM511	Project / Research Methodology	---	4	4
	IV	Value Education/(SEC)				2	1
				TOTAL		**30**	**24/24**
VI	III	Core XIX/(DSC)	UCID601	Women Entrepreneurship	---	5	5
		Core XX/(DSC)	UCCM619/ UCOM619/ UBAM610	Financial Management	UCOM613/ UCCM613/ UBAM610	6	5
		Core XXII/(DSC)	UCCR618/ UCOR618/ UIAR603	Industry Interface Programme III – GST Practical	UCCR615/ UCOR615	1	1
		Core XXIII/(DSC)	UCCM616/ UCOM616/ UIAM604	Goods and Services Tax	---	6	5
		Core XXI/(DSC)	UCCM617/ UCOM617/ UIAM605	Service Marketing	---	5	4
		Viva Voce	UCCM607/ UCOM607/ UIAM606	Comprehensive Viva	---	-	1

		Internship	UCOI601/ UCCI601/ UIAI601	Internship / Field Work / Field Project			-/1
	IV	Major Elective/ (DSE)	UCOO609/ UCCO609/ UIAO608	Advertising and personal selling	---	5	4
			UCCO606/ UCOO606/ UIAO610	International Trade	UCCM602		
			UCCO607/ UCOO607/ UIAO609	Consumer Protection	---		
	IV	Soft skills/(SEC)				2	1
	V	Extension Activity	UROX601	Rural Outreach Programme			-/1
		Extension Activity				-	-/2
TOTAL						**30**	**26/30**
GRAND TOTAL						**192**	**148/162**

UG COURSES OFFERED TO OTHER DEPARTMENTS

Semester	Category	Course Code	Department	Course Title	Contact / Week	Credit	
						Min	Max
III	Allied III/(GE)	UCOA303	BCA	Financial Accounting	6	5	5
IV	Allied IV/(GE)	UCOA403/ UCOR403	BCA	Accounting Package -Theory Accounting Package – Lab	2 3	2 3	2 3

NON MAJOR ELECTIVE

These courses are offered to all major except B.Com. B.Com. CA, BBA and BCA

Semester	Category	Course Code	Course Title	Contact / Week	Credit
					Min / Max
II	Non Major Elective – I /(SEC)	UCCE202/ UCOE202 UIAE202	Individual Tax Planning	3	2
IV	Non Major Elective – II /(SEC)	UCOE401/ UCCE401 UIAE401	Women Entrepreneurial Development	3	2

EXTRA CREDIT EARNING PROVISIONS

Semester	Category	Course Code	Course Title	Contact/ Week	Credit	
					Min	Max
IV	Core XXVII/ XXV	UCOI401/ PCOI401	Summer Internship	-	-	2

SELF STUDY

Semester	Course code	Course Title	Contact /hours	Credit	
				Min	Max
V	UCOS501/ UCCS501	Business Ethics/ Corporate Governance	-		1
	UCOS502/ UCCS502	Business Analysis	-		1

EXPERIENTIAL LEARNING
(Only for Interested Students)

Semester	Category	Course Title	Contact/ hours	Credit	
				Min	Max
II	Core XXVIII/ XXVI /(DSC)	Accounting Package	-	1	1

Related Paper / Course Code	Work Experience			Collaborating Agency	Mode of Evaluation
	Nature of Institution	Proposed Duration of Training	Proposed Period		
Accounting Package UCOM510/UCCM510/ UCOM203/ UCCM202	ICAT Tally Training Institution, Pondicherry	5 Days	February	ICAT Tally Training Institute, Pondicherry	Written Test

WOMEN ENTREPRENEURSHIP
UCID601

Semester : VI **Credit : 05**
Category : Core XXI/XIX **Hours/Week : 05**
Class/Major : III B. Com/BBA/ B.com CA, B.Com (IAT) **Total hours : 65**

Course Objectives

CO No.	To enable the students
CO 1	Understand the financial concept of finance and its usage
CO 2	To Apprehend the various approaches of financial management namely cost of capital, capital structure theory etc.
CO 3	Apply the concept of capital budgeting decision practically
CO 4	Analyze and evaluate the management techniques (inventory, cash, and receivables) practically
CO 5	Synthesize the significant of financial management in real business word

UNIT I WOMEN ENTREPRENEURSHIP **13 Hours**

Women Entrepreneur- Significance of women entrepreneurship-Factors contributing to women entrepreneurship-challenges faced by women entrepreneur-Growth of women entrepreneurship – Entrepreneurship in sectors like Agriculture, Tourism, and Healthcare – Transport and allied services – Relationship between Entrepreneurship and empowerment – Achievements by Women Entrepreneurs.

UNIT II WOMEN EMPLOYMENT OPPORTUNITIES **12 Hours**

Livelihood support for women employment opportunities – Various agencies – Income Generating programmes – IRDP – Rural credit and Women SHGs – Skill development and Technology transfer – Technologies for women – Impact on Women's Development Programs and policy measures at International, National and State Levels.

UNIT III STRATEGIES FOR WOMEN DEVELOPMENT PROGRAMS **14 Hours**

EDP – Objectives – Evolution of women entrepreneur development programme – Special women and EDPs – Micro Enterprises and self-employment – Opportunities, Trends and patterns of Women Entrepreneurship – Non stereotyping women – Institution and schemes supporting women entrepreneurs: SIDO, DIC, EDI, NIESBUD, - Institutional infrastructure.

UNIT IV BASIC FASHION SKETHCING **13 Hours**

Fashion Croqui of Teens with Various Views-Basic pencil sketching- HB, COLOR PENCIL, WATER COLOR,FABRIC COLOR.- Different views such as Front, Back, Side & 3/4th.- Flesh figure,- Body Details-Drawing body details with different movements - Drawing arms, legs, feet, palm, & different positions- Face Details with Hair Styles- Drawing different face positions such 3/4th, front, side.- Facial details like eyes, nose ,lips and hair style

Unit V BASIC FASHION PAINTING METHODS **13 Hours**

- Fabric paint (3 types)
- Canvas paint (3types)
- Coffee paint (3types)

Text Books

- Gupta C.B & Srinivasan N.P, (2019), *Entrepreneurial Development*, Sultan Chand, Co, New Delhi.
- Charan S, (2020), *Entrepreneurial Development &Amp*; Small Business Enterprise, Pearson Education., New Delhi.
- Zeshu ,(2011) *Fashion Illustration Techniques*
- Anna Kiper ,(2011), *Takamura.Fashion Illustration: Inspiration and Technique*,

Reference Books

- Jayshree Suresh, (2019), *Entrepreneurial Development*, Margham Publications, Chennai.
- Sujata. V, (2019), *Entrepreneurial Development*, Cauvery Publications, Trichy.
- Prasanna Chandra, (2020*), Entrepreneurship Development*, Tata McGraw Hill, New

e-Resources

- https://www.wegate.eu/list-e-learning-materials-tools
- www.adam-europe.eu/prj/6726/project_6726_en.pdf
- www.uwcc.wisc.edu/info/women/escap2468.pdf

COURSE OUTCOMES

CO No.	The student will be able to	Bloom's Level
CO1	Understand and demonstrate the concepts of women entrepreneurship	K1, K2
CO2	Apply the statutory regulations and legal framework in women entrepreneurship	K3
CO3	Classify the various function of entrepreneurs and examine its scope	K4
CO4	Evaluate the changing environment and adapt to emerging Social Responsibility	K5
CO5	Develop innovative products in adherence to entrepreneurial strategies and become a successful women entrepreneur.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	2	2
CO 2	3	2	3	2	2	2
CO 3	3	3	3	3	2	2
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation : 70%
Moderate Correlation: 30%
Low Correlation : NIL

FINANCIAL MANAGEMENT
UCOM619/UCCM619/ UBAM615

Semester : VI **Credit :05**
Category : Core XXII/XX **Hours/Week :06**
Class/Major : III B.Com/B.Com(C.A)/ BBA **Total Hours :78**

Course Objectives

CO No.	To enable the students
CO 1	Understand the financial concept of finance and its usage
CO 2	Apprehend the various approaches of financial management namely cost of capital, capital structure theory etc.
CO 3	Apply the concept of capital budgeting decision practically
CO 4	Analyze and evaluate the management techniques (inventory, cash, and receivables) practically
CO 5	Synthesize the significant of financial management in real business word

UNIT I FINANCIAL MANAGEMENT - AN OVERVIEW 14 Hours

Financial Management, Meaning and Scope, - Objectives, Agency Problem – Emerging role of financial managers in India. Time Value of Money – Present value, Future value, Practical applications of Time value Techniques. Risk and Return – Types of risk, Types of returns, CAPM Model.

UNIT-II COST OF CAPITAL, LEVERAGES 16 Hours

Meaning – Significance - Types. Cost of Capital - Concepts- Importance-Classification: Cost of debt- Cost of Preference shares- cost of equity and cost of retained earnings and weighted average cost of capital. Leverages - Operating Leverage, Financial Leverage and Combined Leverage.

UNIT III CAPITAL STRUCTURE THEORIES 16 Hours

Meaning - Scope – Approaches: Net Income Approach- Net Operating Income approach - MM approach and Traditional approach.

UNIT IV CAPITAL BUDGETING 15 Hours

Concept - Importance – Methods: Payback period method- Discounted cash flow methods – NPV- present value index and IRR method; Return on Investment method.

UNIT V WORKING CAPITAL MANAGEMENT & DIVIDEND DECISIONS 17 Hours

Working Capital Management –Cash management – Inventory Management – Receivable Management- Dividend theories and policy, types – Factors influencing dividend policy.

Note-Theory 40%, Problem 60%

Text Books:

- Sharma R.K, (2020), *Financial Management,* Kalyani Publications. New Delhi.
- *Pandey I.M., (2020), FinancialManagement,*Vikas*Publishing*HousePvt.Ltd., New *Delhi.*

Reference Books:

- Maheswari S.N., (2019), *Financial Management,* Sultan Chand and Sons, New Delhi.
- Khan and Jain, (2019), *Financial Management,* Sultan Chand and Sons, New Delhi.

e-Resources:

- www.managementstudyguide.com/capital-structure.html
- www.managementstudyguide.com/financial-management.html
- www.sap.com/india/product/financial-mgmt.html

Course Outcomes

CO No.	The student will be able to	Bloom's Level
CO1	Recall and summarize the various financial concepts relating to time value of money, cost of capital, capital structure, capital budgeting, working capital management and dividend decision.	K1, K2
CO2	Choose a relevant accounting concept to prepare financial return.	K3
CO3	Analyze and carryout the various accounting treatments relating to Financial Management discipline.	K4
CO4	Judge the risk investment pattern and rate of return.	K5
CO5	Design a plan for optimum rate of return.	K6

Co – Pso Mapping

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	1	2	2	2
CO 2	3	2	3	2	2	2
CO 3	3	2	2	2	3	3
CO 4	3	2	2	3	3	3
CO 5	3	3	3	3	3	3

High Correlation : 53.33%
Moderate Correlation: 40%
Low Correlation :6.67%

INDUSTRY INTERFACE PROGRAMME III – GST PRACTICAL
UCOM618/UCCM618/UIAR603

Semester : VI **Credits : 1**
Category : Core XXIII/XXII **Hours/Week : 1**
Class : : III B. Com/ B.com CA,B.Com (IAT) **Total Hours : 13**

Course Objectives

CO No.	The student will be able to	Bloom's Level
CO 1	Understand and make use of knowledge of GST rules in Tax planning.	K1
CO 2	Gain working knowledge on GST and application of the same in the organizations.	K2
CO 3	Compute GST liability and Filling returns	K3
CO 4	Evaluate GST Computation for firm	K4
CO 5	Synthesize the E way bill and Tax invoice	K5

GST PRACTICAL

1. GST R – 1
2. GST R –2 A
3. GST R - 2
4. GST R - 3
5. GST R –3 B
6. GST R – 4 /CMP – 0.8
7. GST R – 5
8. GST R – 6
9. GST R – 7
10. GST R- 8
11. GST R – 9
12. E – way bill
13. Tax invoice
14. GST form Filing Through Tally Prime

Evaluation Pattern for Industry Interface Programme

CIA 60Marks

Daily Practical Assessment : 30 Marks
Test I : 10 Marks
Viva I : 05 Marks
Test II :10 Marks
Viva II : 05 Marks

ESE 40Marks

Record : 10 Marks
Exam : 20 Marks
(Students will be given blank Challans and forms to fill-up)
Viva voce : 10 Marks

100Marks

Course Outcomes

CO No.	Upon completion of these course, the students will be able to	Bloom's Level
CO1	Understand and relate the knowledge of GST rules in Tax planning.	K1,K2
CO2	Develop working knowledge on GST and application of the same in the organizations.	K3
CO3	Analyze GST liability and File returns	K4
CO4	Evaluate GST Computation for enterprise	K5
CO5	Design e-way bill through tally prime	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	2	2
CO 2	3	3	3	2	1	2
CO 3	3	3	3	2	2	2
CO 4	3	2	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation :66.67%
Moderate Correlation :30%
Low Correlation :3.33%

GOODS AND SERVICES TAX (GST)
UCOM616/UCCM616/ UIAM604

Semester : VI **Credit : 5**
Category : Core XXIII/XXIV **Hours/Week : 6**
Class : III B.Com & III B.Com CA/ B.Com. (IAT) **Total Hours :78**

Course Objectives

CO No.	To enable the students
CO 1	Understand the concept of GST Policy and Procedure
CO 2	Apply principles for practicing GST in the firm.
CO 3	Obtain knowledge on registration procedure, levy and collection of GST
CO 4	Identify appropriate GST payable
CO 5	Develop taxation skills

UNIT - I INTRODUCTION TO GOODS AND SERVICE TAX 16 Hours

GST - scope – Benefits – Salient features – GST Council – Important Terms - Minimal Interface– Input Tax Credit – Refund – Demands – Alternate Dispute Resolution Mechanism.

UNIT - II GOODS AND SERVICE TAX ACT 16 Hours

Goods and service tax - Central Goods and Service Tax - State Goods and Service Tax – Inter

Goods and service Tax – Integrated Goods and service Tax -Union Territory Goods and Services

UNIT - III COPUTATION PROCEDURES FOR GOODS AND SERVICE 16Hours

Goods and service Tax - Levy & Collection of tax – Time and Value of Supply – Input Tax Credit – Registration Tax Invoice - Debit and Credit Notes.

UNIT - IV AUDIT AND ACCOUNTS RELATED TO GOODS AND SERVICE TAX 14 Hours

Administration – Goods and service Tax Accounts and Records – Returns – Payment of tax – Refunds- Assessment – Audit – Inspection.

UNIT - V APPEALS AND PENALTYINGST 16 Hours

Demand and recovery – Liability to pay tax – Advance Ruling- Seizure and arrest – Appeals and revisions – offences and penalties

Text Books:

- Datey V.S., (2020), *All About GST, Taxmann Publications, New Delhi.*
- Vinod K Singania, (2020), *.Indirect Taxes, Taxman Publications*, New Delhi.

Reference Books:

- Bimal Jain & Isha Bansal, (2020), *GST Law and Analysis with Conceptual Procedures*, Young Global Publications, New Delhi.
- ArpitHaldia C.A., (2020),.*GST Made Easy-Answers to All Your Queries on GST,* Taxman Publications, New Delhi.

Course Outcomes

CO No.	The student will be able to	Bloom's Level
CO 1	Define and illustrate the concepts of GST Policy and relate the procedures.	K1, K2
CO 2	Apply the GST principles in Tax Planning.	K3
CO 3	Compare the various types of GST and categorize the file returns on GST.	K4
CO 4	Appraise the benefits of GST, justify the offences and penalties in GST.	K5
CO 5	Compile the GST rule according to Indian Tax System.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	2	2	2	2
CO 2	3	3	3	2	2	2
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation : 63.34%
Moderate Correlation: 33.33%
Low Correlation : 3.33%

SERVICES MARKETING
UCOM617/UCCM617/ UIAM605

Semester : VI **Credits : 5**
Category : Core XXV/XIV **Hours/Week : 5**
Class : III B.Com & III BCom CA/ B.Com. (IAT) **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO 1	Understand the nature and concepts of service.
CO 2	Analyze the different types of marketing of services
CO 3	Apply the concept of CRM in Service Marketing
CO 4	Evaluate elements of marketing mix in service marketing
CO 5	Develop service marketing skills

UNIT-IINTRODUCTION **13 Hours**

Growth of the Service Sector - Nature and Concept of Service - Classification of services - Characteristics of Services and their marketing implications.

UNIT-II SERVICE MARKETING PROCESS **13 Hours**

Marketing strategies for service firms with special reference to information, communication, consultancy, advertising, professional services, after sales service, recruitment training and tourism.- Essential Elements of marketing mix in Service marketing.

UNIT- III SERVICE MARKETING MIX **13 Hours**

Product support services - Pricing of services - Problems of Service quality management - Customer Expectations - Innovation in services

UNIT-IV - EXTENDED SERVICE MARKETING MIX **13 Hours**

People, Process, and physical evidence –- Nature - Types - Marketing of insurance - Mutual fund - marketing for non - profit firms - Growth of financial services in India.

UNIT-V - CRMINSERVICE MARKETING **13 Hours**

CRM - Identifying and Satisfying Customer needs - Relationship marketing - Customer Satisfaction - Managing Service Brands.

Text Books:

- Helen Wood Ruffe, (2020), *Services Marketing*, Macmillan India, New Delhi.
- Balaji B, (2019), *Services Marketing and Management*, S.Chand& Co., New Delhi.

Reference Books:

- Christopher Lovelock, (2018), *Services Marketing*, PearsonEducation. New Delhi.
- Bateson E.G., (2018), *Managing Service Marketing - Text and Readings*, Dryden press,Hinsdale, New York.
- Philip Kotler, (2019), *Marketing Professional Services*, Prentice Hall, New Jersey, USA.
- Payne, (2019), *The Essence of Service Marketing*, Prentice Hall, NewDelhi.

Course Outcomes

CO No.	The student will be able to	Bloom's Level
CO 1	Outline the concepts of service and classify the different types of service marketing.	K1, K2
CO 2	Choose the service marketing mix for different services.	K3

CO 3	Classify the different financial services available in India.	K4
CO 4	Justify the benefits of various services in India.	K5
CO 5	Adapt the CRM strategies to present scenario.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**3**	**2**	**2**	**2**	**2**
CO 2	**3**	**1**	**2**	**2**	**2**	**2**
CO 3	**3**	**3**	**3**	**3**	**3**	**3**
CO 4	**3**	**3**	**3**	**3**	**3**	**3**
CO 5	**3**	**3**	**3**	**3**	**3**	**3**

High Correlation : 70 %
Moderate Correlation: 26.67%
Low Correlation : 3.33%

CONSUMER PROTECTION
UCOO607/UCCO607/UIAO609

Semester : VI **Credits :5**
Category : Major Elective **Hours/Week :5**
Class : III B.Com & III B Com CA/ B.Com. (IA&T) **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO 1	Understand the rights and responsibilities as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights
CO 2	Obtain knowledge about organizational setup under the Consumer Protection Act
CO 3	Evaluate Indian Consumer Markets
CO 4	Analyze the concept of price in retail markets
CO 5	Apply the knowledge for filing a complaint and making appeal

UNIT - I CONSUMERANDMARKETS 13 Hours

Concept of consumer, Nature of Markets: Liberalization and Globalization of markets with special reference to Indian Consumer Markets, E commerce with reference to Indian Market, Concept of price in Retail and Wholesale, Maximum Retail Price (MRP), Fair price, GST, Labeling and packaging along with relevant laws, Legal Metrology.

UNIT -II CONSUMER PROTECTION LAW IN INDIA 13 Hours

Consumer Rights and UN Guidelines on Consumer protection, Con sumer goods, Defect in goods, spurious goods and services, service, deficiency in service, unfair trade practice, and restrictive trade practice.

UNIT-III ORGANIZATIONALSETUPUNDERTHECONSUMERPROTECTIONACT 13 Hours

Advisory Bodies: Consumer Protection Councils at the Central, State, and District levels: Adjudicatory Bodies: District Forums, State Commissions, National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of supreme Court under the CPA

UNIT -IV GRIEVANCE REDRESSAL MECHANISM UNDER THE INDIAN CONSUMER PROTECTIONLAW 13 Hours

Grounds of filing a complaint: Limitation period: Procedure for filing and hearing of a complaint: Disposal of cases , relief/Remedy available: temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences andpenalties.

Role of Industry Regulators in Consumer Protection

Banking: RBI and Banking Ombudsman - IRDA and Insurance Ombudsman – Tele communication: TRAI - Food products : FSSAI - Electricity supply, Electricity Regulatory Commission - Real Estate Regulatory Authority

UNIT - V CONTEMPORARY ISSUES IN CONSUMER AFFAIRS 13 Hours

Evolution of consumer Movement in India, Formation of consumer organization and their role in consumer protections, misleading Advertisements and sustainable consumption , National consumer Helping, Comparative product testing sustainable consumption and energy ratings.Quality and Stadardization : Voluntary and Mandatory standards: Role of BIS , Indian standards Mark(ISI), Ag mark, Hallmarking, Licensing and surveillance: role of International standards : ISO an overview.

Text Books

- Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and Aswathi, (2019), *Consumer Affairs*,
  Universities Press, New Delhi.
- Choudhary, Ram Naresh Prasad, (2019), *Consumer Protection Law Provisions and Procedure*,Deep and Deep Publications Pvt, Ltd., New Delhi.
- Ganesan and Sumathy, (2020), *Consumer Protection in India: Issues and Challenges,* Regal Publications, New Delhi.

Reference Books

- Suresh Misra and SapnaChadah, (2019), *Consumer Protection in India: Issues and Concern, S.Chand,* New Delhi.
- Rajalaxmi Rao, (2018), *Consumer is King*, Universal Law Publishing Company, New Delhi.
- Grimaji and Pushpa, (2019), *Consumer Rights for Everyone,* Penguin Books, UK.

e-Resources

- www.Consumereducation.in
- www.consumeraffairs.nic.in
- www.bis.org

Course Outcomes

CO No.	The student will be able to	Bloom's Level
CO 1	Relate the fundamental rights and responsibilities of consumers in the context of consumer protection.	K1, K2
CO 2	Utilize the consumer protection laws effectively.	K3
CO 3	Dissect organizational setup under consumer protection act.	K4
CO 4	Criticize the grievance redressal mechanisms in consumer protection act	K5
CO 5	Solve contemporary issues in consumer affairs	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	2	2
CO 2	3	3	3	2	2	2
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation : 76.67%
Moderate Correlation :23.33 %
Low Correlation :NIL

ADVERTISING AND PERSONAL SELLING
UCOO609/UCCO609/UIAO608

Semester : VI **Credits :5**
Category : Major Elective **Hours/Week :5**
Class : III B.Com & III B Com CA/ B.Com. (IA&T) **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO 1	Explain use of advertising and sales promotion as a marketing tool.
CO 2	Describe advertising and sales promotional appeals.
CO 3	Explain appropriate selection of media.
CO 4	Discuss means of testing effectiveness of advertising and sales promotion.
CO 5	Identify the different types of Professional Sales Personnel

UNIT I MEDIA PLANNING **13 Hours**

Definition – functions of media planning in advertising – Role of media planner – Challenges in media planning – Media planning process - Media planning for consumer goods – Media planning for industrial goods. Selecting suitable media options – TV, Radio, Magazine, Newspapers, Pamphlets and brochures, direct mail, outdoor media.

UNIT II – MEDIA SELECTION AND BUDGET **13 Hours**

Criteria for selecting media vehicles – frequency – GPRS – Cost efficiency. Media Timing, social media, Scheduling, Scheduling and budget allocation.

UNIT III –ADVERTISING EFFECTIVENESS **13 Hours**

Importance and difficulties in measuring effectiveness of advertising – pre testing method – Post testing method – Advertising agency – Reasons for having advertising agencies – selection of advertising agencies – Agency Commission and fees .

UNIT IV PERSONAL SELLING **13 Hours**

Nature, Characteristics and Importance of personal selling – Types of personal selling – Role of personal selling in marketing - Professionalizing salesmanship, Cost of advertising and cost of personal selling.

UNIT V TYPES OF MARKET, AIDA MODEL OF SELLING **13 Hours**

Selling situations, Types of sales person, Buyer, Seller Dyad, Diversity in Personal selling, Peddlers, Professional sales person, Peddler vs Professional sales person, Industrial sales person.

Text Books

- Jack Z Sissors and Jim Surnamek,(1976) *Advertising media planning crain books , New Delhi*
- S H. HKazmi, Satish K. Batra,(2002) "*Advertising and sales Promotion "(Advertising Management:* Concepts and Cases Manendra Mohan Tata McGraw Hill Education.

Reference Books

- Cundiff and Govoni, *,(2020), Sales force Management,*
- David Jobber & Geoff Laan caster (2018), *by Still* (*Selling and sales management* 6th Edition By David Jobber

Course Outcomes

CO No.	The student will be able to	Bloom's Level
CO1	Understand the concepts of advertising and personal selling.	K1, K2
CO2	Apply the concepts for the creation of an advertising campaign.	K3
CO3	Classify the selections of advertising agencies.	K4
CO4	Identify and examine the reasons for having advertising agencies.	K5
CO5	Design an advertising campaign consistent with the goals of an organization..	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	2	2
CO 2	3	3	3	2	2	2
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation : 76.67%
Moderate Correlation :23.33 %
Low Correlation :NIL

INTERNATIONAL TRADE

UCOO606/UCCO606/UIAO610

Semester : VI **Credits :5**
Category : Major Elective **Hours/Week :5**
Class : III B.Com & III B Com CA/ B.Com. (IA&T) **Total Hours : 65**

Course objective

CO No.	To enable the students
CO 1	Acquire knowledge on export practices, procedures and documentation in India.
CO 2	Understand the premise of export finance and the role of EXIM Bank
CO 3	Analyze the documents relating to excise clearance and customs clearances.
CO 4	Elucidate the documents required for preparation of bill of lading and its related concepts.
CO 5	Clear picture about the WTO and Indian Patent Law.

UNIT I INTRODUCTION TO INTERNATIONAL TRADE 13 Hours

Introduction to International Trade – Meaning, Definition, Characteristics, Importance, and Functions, Theories of Foreign Trade, Theories of Adam Smith, Ricardo, Haberior's Hechsher – Ohlin theory.

UNIT II BALANCE OF TRADE AND BALANCE OF PAYMENTS 13 Hours

Balance of trade, Balance of Payments – concepts – Causes of disequilibrium, Disequilibrium – Fixed and Floating Exchange rates – Dollar Marketing (An overview)

UNIT III EXPORT MANAGEMENT 13 Hours

Meaning – Export procedure and Documents – Export Finance – Export Promotion – Export Pricing.

UNIT IV INTERNATIONAL ORGANIZATIONS 13 Hours

International organizations – IMF, IDA, IBRD, ADB, UNCTAD UNIDO History, Growth, Culture and development.

UNIT V – WTO AND TRADE LIBERALISATION 13 Hours

Liberalization of trade in Manufacturing and in Agricultural trade – TRIPS, TRIMS – Indian Patent Law.

Text Books

- Subha Rao,(200) *International Business*, Texts and Cases – Himalaya Publishing House Pvt Ltd., Mumbai
- V. K. Bhalla (2017), *International Business.* S. Chand & Company Pvt ltd, New Delhi

Reference Books

- K. Aswathappa,(2018) *International Business*, TATA McGraw Hill Publishing Company Limited, New Delhi.
- Kotler P(1996) *Marketing analysis*, Planning and Control Noida, Uttar Pradesh: Pearson Education

Course Outcomes :

CO No.	The student will be able to	Bloom's Level
CO1	Understand and demonstrate the concepts of international trade.	K1, K2
CO2	Apply the procedure of trade and balance of payments in an International trade.	K3

CO3	Classify the various schemes of International trade.	K4
CO4	Evaluate the liberalization of trade in manufacturing and in agricultural trade	K5
CO5	Develop the communications skills through the presentation of the work, and interactions with the society.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	2	2
CO 2	3	3	3	2	2	2
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation : 76.67%
Moderate Correlation : 23.33 %
Low Correlation :NIL

III & IV EVALUATION COMPONENTSOF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
VI	Core XXI(DSC)	UIAD601	Women Entrepreneurship	Case Study	Album Making for Fabric Painting
	Core XXII(DSC)	UCOM619/ UCCM619/ UBAM615	Financial Management	Problem Solving	Financial Statement
	Core XXIV(DSC)	UCOM616/ UCCM616/ UIAM604	Goods Services Tax	Assignment	GST Form Filling
	Core XXV(DSC)	UCOM617/ UCCM617/ UIAM605	Service Marketing	Assignment	Case study
	Major Elective	UCOO609/ UCCO609/ UIAO608	Advertising and Personal Selling	Album Making	Making Social Media Advertising
		UCOO606/ UCCO606/ UIAO610	International Trade	Assignment	Group Discussion
		UCOO607/ UCCO607/ UIAO609	Consumer Protection	Poster presentation	Open book quiz

DEPARTMENT OF PHYSICS

PREAMBLE

UG: Programme Profile and Syllabi of Courses offered in the VI Semester along with Evaluation Components III & IV (With effect from 2021-2024 batches onwards).

PROGRAM PROFILE: B.Sc., Physics

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	Upon completion of these courses the undergraduate would have
PSO-1	Understand the core knowledge in Physics, including the major premises of Classical Mechanics, Electricity and Magnetism and Modern Physics.
PSO-2	Develop proficiency in mathematics derivatives and the mathematical concepts needed for a proper understanding of Physics.
PSO-3	Apply advanced tools, equipments and laboratory skills in Physics experiments draw logical conclusions and interpret the results into a research report.
PSO-4	Enhance their oral and written scientific communication, and will prove that they can think critically and work independently.
PSO-5	Adapt physics concepts to solve simple problems in electronic devices and perform jobs in the relevant field.
PSO-6	Establish themselves in research and technology through mini project, projects, working models, demonstrations, etc.,

Semester	Part	Category	Course code	Course Title	Previous Course Code	Contact Hours/ Week	Credit Min/ Max
I	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL107/ UTAL108	Basic Tamil I/ Advanced Tamil I	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3/4
	II	Communicative English /AECC – I	UENL109/ UENL110	English for Communication (Stream – I)/ English for Communication (Stream – II)	UENL107/ UENL108	5	3/4
	III	Major Core (DSC) – I	UPHM106	Properties of Matter	-	4	4
		Major Core (DSC) – II	UPHM107	Mechanics	UPHM103	5	5
		Major Core (DSC) – III	UPHR102/ UPHR202	Major Practical I	-	3	2
		Allied (GE) – I	UMAA114	Allied Mathematics I	UMAA104	6	5
		PE	UPEM101	Professional English I	-	6	4
	IV	Value Education SEC)			-	2	1
					TOTAL	**36**	**27/29**

II	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL20/ UTAL208	Basic Tamil I/ Advanced Tamil I	UTAL205/ UTAL206 UHIL201/ UFRL201	5	3/4
	II	Communicative English /AECC – I	UENL209/ UENL210	English for Communication (Stream – I)/ English for Communication (Stream – II)	UENL207/ UENL208	5	3/4
	III	Major Core (DSC) – IV	UPHM204	Thermal and Statistical Physics	UPHM203	4	4
	III	Major Core (DSC) – V	UPHM205	Optics	UPHM302/ UPHM406	4	4
	III	Major Core (DSC) – VI	UPHR203/ UPHR101	Major Practical II	-	3	2
	III	Allied (GE) - I	UMAA222	Allied Mathematics II	UMAA212	6	5
	III	PE	UPEM201	Professional English I	-	6	4
	III	Internship	UPHI201	Internship / Field Work / Field Project	-	-	-/1
	IV	NME (Skill Enhancement Course)			-	3	2
	V	Extension Programme/ Physical Education/NCC	-	-	-	-	1/2
					TOTAL	**36**	**28/32**
III	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL307/ UTAL308	Basic Tamil I/ Advanced Tamil I	UTAL305/ UTAL306/ UHIL301/ UFRL301	5	3/4
	II	Communicative English /AECC – I	UENL309/ UENL310	English for Communication (Stream – I)/ English for Communication (Stream – II)	UENL307/ UENL308	5	3/4
	III	Major Core (DSC) – VII	UPHM305	Electricity and Magnetism	UPHM402	5	4
	III	Major Core (DSC) – VIII	UPHM304	Mathematical Physics	UPHM509	4	3
	III	Major Core (DSC) – IX	UPHR305	Major Practical III	-	3	2
	III	Allied (GE) - III	UCSA306	Computational Physics with Python	-	3	3
	III	Allied (GE) - IV	UCSR310	Computational Physics with Python Lab	-	3	2
	IV	Value Education(SEC)	-	-	-	2	1
					TOTAL	**30**	**21/23**

IV	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL407/ UTAL408	Basic Tamil I/ Advanced Tamil I	UTAL405/ UTAL406/ UHIL401/ UFRL401	5	3/4
	II	Communicative English /AECC – I	UENL409/ UENL410	English for Communication (Stream – I)/ English for Communication (Stream – II)	UENL407/ UENL408	5	3/4
	III	Major Core (DSC) – X	UPHM407	Atomic Physics	-	6	4
	III	Major Core (DSC) – XI	UPHR405	Major Practical IV	-	3	3
	III	Allied (GE) -V	UCHA401/ UCHA402/ UCHA403	Chemistry for Physics	-	3	3
	III	Allied (GE) - VI	UCHA402/ UCHR403	Volumetric and Organic Analysis-I	-	3	2
	III	Internship	UPHI401	Internship / Field Work / Field Project	-	-	-/1
	IV	NME (Skill Enhancement Course)			-	3	2
	IV	Soft Skill (SEC)			-	2	1
	V	Extension Programme/ Physical Education/NCC			-	-	-/2
					TOTAL	**30**	**21/26**
V	III	Major Core (DSC) – XII	UPHM507	Quantum Mechanics	UPHM501	5	5
	III	Major Core (DSC) – XIII	UPHM508	Basic Electronics	UPHM505	4	4
	III	Major Core (DSC) – XIV	UPHM509	Solid State Physics	UPHM506/ UPHM608	4	4
	III	Major Elective (Discipline Specific Elective) - XV	UPHO501 / UPHO502	Medical Physics / Energy Physics	-	4	4
	III	Major Core Practical (DSC) – XVI	UPHR503	Major Practical V	-	3	3
	III	Major Core (DSC) – XVII	UPHP501/ UPHP502	Project / Instrumentation Techniques	-	5	4/5
	III	Online Course		NPTEL	-	3	1/2
	IV	Value Education (SEC)			-	2	1
					TOTAL	**30**	**26/28**

VI	III	Major Core (DSC) – XVIII	UPHM614	Numerical methods and Basic Computational Physics	-	5	4
	III	Major Core (DSC) – XIX	UPHM611	Nuclear and Radiation Physics	-	5	4
	III	Major Core (DSC) – XX	UPHM615	Materials Science	-	5	4
	III	Major Core (DSC) – XXI	UPHM616	Digital Electronics and Microprocessor	-	5	4
	III	Major Core (DSC) – XXII	UPHR606	Major Practical VI	-	3	2
	III	Major Elective (Discipline Specific Elective) - XXIII	UPHO604/ UPHO605/ UPHO603	Nanophysics/ Astrophysics/ Functional Materials	-	5	4
	III	Viva Voce	UPHM610	Comprehensive Viva Voce	-	-	1
	III	Internship	UPHI601	Internship / Field Work / Field Project	-	-	-/1
	IV	Soft Skill (SEC)			-	2	1
	V	Extension Program -me/Physical Education/NCC			-	-	-/2
	V	Extension Programme	UROX601	Rural Outreach Programme	-	-	-/1
					TOTAL	**30**	24/**29**
					GRAND TOTAL	**192**	**147/167**

LIST OF COURSES OFFERED TO OTHER DEPARTMENTS
NON-MAJOR ELECTIVES

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hours/ Week	Credit Min/Max
II	IV	Non Major Elective (Skill Enhancement Course)	UPHE202	Applied Physics	-	3	2
			UPHE203	Biomedical Instrumentation	-	3	2
			UPHE204	Electrical Appliances	-	3	2
			UPHE205	Telecommunication System	UPHE304/ UPHE503	3	2
			UPHE206	Servicing and maintenance of home appliances	UPHE303	3	2

ALLIED

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hours/ Week	Credit Min/ Max
III	III	Allied(GE) – V	UPHA305	Electronics for Computer Science	-	3	3
III	III	Allied(GE) – VI	UPHR305	Electronics Practical for Computer Science	-	3	2
IV	III	Allied(GE) – VII	UPHA402	Electronics for Mathematics	-	3	3
IV	III	Allied(GE) – VIII	UPHR402	Electronics Practical for Mathematics	-	2	2
IV	III	Allied (GE) – IX	UPHA403	Digital Electronics for Computer Science	-	3	3
IV	III	Allied (GE) – X	UPHR403	Digital Electronics Practical for Computer Science	-	3	2

Experiential Learning (Mandatory)

CO-PSO MAPPING				Collaborating Agency - MSME		
Semester	Course Code	Course Title	Assessment	Course Title	Hour / Days/ Month	Mode of Evaluation
V	UPHM508	Basic Electronics	Component IV	PCB Designing	4 Days	Reflection

NUMERICAL METHODS AND BASIC COMPUTATIONAL PHYSICS

UPHM614

Semester : VI **Credits : 4**
Category : Major Core (DSC) – XVIII **Hours/Week : 5**
Class &Major: III B.Sc. Physics **Total Hours : 65**

Course Objectives

Co. No.	To enable the students
CO-1	Categorize Different Numerical Methods and their Applications.
CO-2	Understand the Interpolation and Curve fitting.
CO-3	Apply the Computational Techniques for Simple Physics Applications.
CO-4	Interpret the Knowledge about Basic Computing.
CO-5	Solve the ordinary differential equations.

UNIT I NUMERICAL SOLUTION OF LINEAR AND NONLINEAR EQUATIONS

10 Hours

Newton– Raphson Method; Iterative Rule - Jordan Method – Jordan's Modification — Termination Criteria–Rate of Convergence – Drawbacks –Simultaneous Linear Algebraic

Equations: Augmented Matrix – Gauss Elimination — Inverse of a Matrix by Gauss.

UNIT II INTERPOLATION AND CURVE FITTING 12 Hours

Interpolation: Newton's Interpolation – Linear Interpolation–Error in Interpolation– Lagrange Interpolation– Higher Order Polynomials – Divided Differences – Gregory–Newton Forward and Backward Interpolation Formulae.

Curve Fitting: Method Least– Squares–Normal Equations–Straight Line, Exponential Fits and Power – Law Fits.

UNIT III NUMERICAL DIFFERENTIATION, INTEGRATION AND ODE 10 Hours

First and Second-Order Derivatives: Central Difference Formulae **Numerical integration:** Trapezoidal, Simpson's 1/3 Rules–Truncation Error – Composite Trapezoidal, and Simpson's 1/3 Rules–**ODE:** Euler and Fourth–Order Runge – Kutta Methods for First Order ODE.

UNIT IV PROGRAMMING IN C 16 Hours

Programming Methodologies – Scientific Programming Languages– Programming in C– Variables– Expressions and Statement–Operators–Library Function–Data Input and Output – Structure of C Programming–Control Statements–Functions–Global Variables– Arrays– Character-Strings – Structures.

UNIT V NUMERICAL SOLUTION AND ORDINARY DIFFERENTIAL EQUATION 17 Hours

N^{th} order Ordinary Differential Equations – Power Series Approximation – Point Wise Method – Solutions of Taylor Series – Euler's Method – Improved Euler's Method–Runge Kutta Method for solving First Order Differential Equations–C Programming for Lagrange's Interpolation – C Program for solving Ordinary Differential Equations using RK Method.

Text Books

- Balagurusamy, E. (2019). *ANSI C*. McGraw Hill Education.
- Veerarajan, (2006). *Numerical Methods in C and C++*. S.Chand. New Delhi.

Reference Books

- Sastry, S.S. (2003). Introductory Methods of Numerical Analysis. PHI. New Delhi.
- Sankara Rao, K. (2012). Numerical Methods for Scientist and Engineers. (3^{rd} Ed.,) PHI Learning Private Limited.
- Flannery, B.P., Teukolsky, S.A. Vetterling, W.T. (1996). Numerical Recipes in C. W.H. Press. Cambridge University.

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- https://books.google.co.in/books/about/Basic_Concepts_in_Computational_Physics.html ?id=qgXNCwAAQBAJ&redir_esc=y
- https://www.amazon.in/Numerical-Methods-Physics-Alejandro-Garcia/dp/1514136686

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Learn about the conception of linear algebraic equations.	K1, K2
CO – 2	Applying the concepts for interpolation and curve fitting.	K3
CO – 3	Analyze the trapezoidal, and Simpson's 1/3 rules.	K4
CO – 4	Importance of scientific programming languages, specifically C, in various applications.	K5
CO – 5	Exposure to write scientific programming using C and apply for various techniques studied.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	3	2	3	1	3
CO-2	3	3	2	3	1	3
CO-3	3	3	2	3	1	3
CO-4	3	3	2	3	3	3
CO-5	3	3	2	3	3	3

High Correlation- 73%
Moderate Correlation- 17%
Low Correlation – 10%

NUCLEAR AND RADIATION PHYSICS
UPHM611

Semester : VI **Credit : 4**
Category : Major Core (DSC) – XIX **Hours/Week : 5**
Class & Major : III B.Sc Physics **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	Remember the Nucleus and its Various Models.
CO – 2	Understand the Principles of Particle Accelerators and Nuclear Fission and Fusion.
CO – 3	Apply the different Radiations in Radiation Therapy.
CO – 4	Distinguish the Electromagnetic Radiations and Nuclear Reactors.
CO – 5	Review the ideas of Radiation Measurement by GM Counter.

UNIT I NUCLEAR STRUCTURE **14 Hours**

General Properties of Nucleus – Size, Mass and Charge–Proton – Electron Theory – Proton – Neutron Theory – Nuclear Size –Experimental Measurement of Nuclear Radius – Mirror Nuclei Method –Meson Theory of Nuclear Forces – Basic Ideas of Nuclear Models – Liquid Drop Model –Semi-empirical mass formula - Nuclear Shell Model.

UNIT II NUCLEAR DETECTORS AND ELEMENTARY PARTICLES **14 Hours**

Principle and Working – Solid State Detector – **Linear Accelerator** - Proportional Counter –Wilson's Cloud Chamber – Scintillation Counter – Accelerators: The cyclotron – Synchrotron – –Proton Synchrotron –Betatron Cosmotron.

Elementary Particles – **Fundamental Inter atoms -** Elementary Particles– Particle Quantum Numbers – Baryon Number –Lepton Number – Strangeness Number – Hyper Charge –Isospin Quantum Number–Conservation of Laws **and Symmetry- Quantum Models**.

UNIT III NUCLEAR FISSION AND FUSION 13 Hours

Introduction– Bohr's Theory of Nuclear Disintegration – Q value Equation for a Nuclear Reaction – Threshold Energy – Types of Nuclear Reaction – Threshold Energy of an Endoergic Reaction– Nuclear Fission – Bohr Wheeler Theory – Chain Reaction – Critical Size and Critical Mass – Nuclear Fission Reactor – Nuclear Fusion – Source of Stellar Energy – Carbon – Nitrogen Cycle – Proton – Proton Cycle –Thermo Nuclear Reaction.

UNIT IV ELECTROMAGNETIC RADIATIONS 12 Hours

Electromagnetic Spectrum–Classification – Ionizing Radiation and Non ionizing Radiation–Source of Radiation–Radio Frequency, Microwaves, Infrared, Visible, Ultraviolet and X–Ray, Gamma Ray Radiation (Qualitative)–Production –Physical Properties.

UNIT V RADIATION INSTRUMENTATION AND RADIATION THERAPY 12 Hours

Radiological Imaging–Digital Radiography–Computer Tomography Scanner– X – Ray Detection Method–Gamma Camera-Radiation Measurement by GM Counter.

Radiotherapy–Deep Therapy Machine–Basics of Teletherapy Units–Deep X – Ray, Telecobalt Units– Heavy Ion Therapy– Carbon Ion Therapy–Neutron Therapy.

Text Books

- Murugesh, R. and Kiruthiga, S. (2016). *Modern Physics*. S. Chand & Company Ltd.New Delhi.
- Thayalan, K. (2009). *Basic Radiological Physics.* Medical Publishing PVT, Ltd. New Delhi.

Reference Books

- Glasstone, S. (2014). A Source Book on Atomic Energy. Krieger Publishing Company. (3rd Revised Ed.).
- Little Field, T.A. and Thorley, N. (2013). Atomic and Nuclear Physics. Medtec. New Delhi.
- Srivatsava, B.N. (2011). Basic Nuclear Physics and Cosmic Rays. Pragti Prakashan Publishers. Meerut.
- Arumugam, M. (2017). Biomedical Instrumentation. Anuradha Publications.

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- https://www.worldscientific.com/worldscibooks/10.1142/8982
- http://www.ichtj.waw.pl/ichtj/publ/monogr/sun2017/sun-chapter1.pdf
- http://www.sfu.ca/~mxchen/phys1021003/P102LN34.pdf

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Classify about the basics of nuclear size, properties, and various nuclear models.	K1, K2

CO-2	Identify the working principle of detectors and elementary particles.	K3
CO-3	Analyze the nuclear fission and nuclear fusion reactor.	K4
CO-4	Evaluate the given electromagnetic spectrum.	K5
CO-5	Create the ideas about radiation instrumentation and radiation therapy.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	3	3	3	1	3
CO-2	3	3	3	3	1	3
CO-3	3	3	3	3	1	3
CO-4	3	2	3	3	1	3
CO-5	3	2	3	3	2	3

High Correlation- 77%
Moderate Correlation- 10%
Low Correlation – 13%

MATERIALS SCIENCE
UPHM615

Semester : VI **Credit : 4**
Category : Major Core (DSC) – XX **Hours/Week: 5**
Class &Major : III B.Sc Physics **Total Hours :65**

Course Objective:

Co. No.	To enable the students
CO-1	Find the types of Chemical Bonds.
CO-2	Compare the Applications of Nanomaterials.
CO-3	Classify the techniques of Crystal Growth.
CO-4	Analyze the theories of Thin films.
CO-5	Expose the concept of Advanced materials.

UNIT I CHEMICAL BONDS **12 Hours**

Review of Atomic Structure – Interatomic Potentials– Different Types of Chemical bonds – Ionic, Covalent Bond– Van der Waals bond –Metallic Bond –Hydrogen Bond– Binding Energy of a Crystal – Elastic Properties.

UNIT II NANOMATERIALS **12 Hours**

Introduction–Techniques for Synthesis of Nanophase Materials–Sol–Gel Synthesis– Electro deposition–Inert Gas Condensation–Mechanical Alloying–Properties of Nanophase Materials–Applications of Nanophase Materials, Composite Materials: Introduction-Types.

UNIT III CRYSTAL GROWTH **14 Hours**

Classical theory of Nucleation - Growth Kinetics - Solution Growth Technique – Constant Temperature bath and Crystallizer – Seed Preparation and Mounting - Slow Cooling- Solvent

Evaporation Methods - Gel Growth Technique - Single and Double Diffusion Method – Melt Growth: Bridgman Technique - Czochralski Technique - Vapour Growth: Physical Vapour Deposition – Chemical Vapour Deposition.

UNIT IV THIN FILMS **14 Hours**

Introduction- Thin film growth stages- Properties of Thin Films – Deposition Techniques - Physical Methods– Chemical Methods - Resistive Heating, Electron beam Gun, Laser Gun Evaporation and Flash Evaporations, Sputtering - Reactive Sputtering, Radio-Frequency Sputtering - Chemical Methods – Spray Pyrolysis – Application of Thin Films.

UNIT V ADVANCED MATERIALS **13 Hours**

Metallic Glasses–Introduction-Composition, Properties and Applications– Shape Memory Alloys: Introduction–Examples–Application of SMA–Advantages and Disadvantages. Biomaterials: Introduction– Metals and Alloys in Biomaterials – Ceramic Biomaterials, Composite Biomaterials.

Text Books

- Pradeep, T. (2007). *Nano: The Essentials in Understanding Nano Science and Nanotechnology*. Tata McGraw Hill. New Delhi.
- Krishna Seshan. (2002). Handbook of Thin-Film Deposition Processes and Techniques Principles, Methods, Equipment and Applications. William Andrew Publishing. Norwich. New York. U.S.A.

Reference Books

- Bhattacharya, S. (2013). *A Text Book of Nano Science and Nanotechnology*. Wisdom Press.
- Shanmugam, S. (2010). *Nanotechnology*. MJP Publishers. (New Delhi, India).
- Shan, M.A. Ahmad, T. (2010). *Principle of Nanoscience and Nanotechnology*. Narosa.
- Pillai, S.O. (1997). *Solid State Physics*. New age International. New Delhi.
- Arumugam, M. (2018). *Material Science.* Anuradha Agencies.
- Santhana Ragavan, P. and Ramasamy, P. (2006). *Crystal Growth Processes and Methods*. KRU Publications. Kumbakonam.

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- http://www.issp.ac.ru/ebooks/books/open/Materials_Science_and_Technology.pdf
- https://www.pdfdrive.com/materials-science-and-engineering-an-introduction-e7853330.html
- https://arshadnotes.files.wordpress.com/2018/02/the_materials_science_of_thin_films.pdf
- https://ia802907.us.archive.org/21/items/introduction-to-nanotechnology_202005/Introduction%20to%20Nanotechnology.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Ideas about the different types of chemical bonds.	K1, K2
CO – 2	Identify the properties and application of nanomaterials.	K3
CO – 3	Analyze the different techniques for crystal growth.	K4
CO – 4	Examine the various techniques of thinfilms.	K5
CO – 5	Develop ideas about the synthesis of biomaterials and their applications.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	3	3	3	1	3
CO-2	3	3	2	3	1	3
CO-3	3	3	3	3	1	3
CO-4	3	3	3	3	1	3
CO-5	3	3	2	3	1	3

High Correlation- 77%,
Moderate Correlation- 7%,
Low Correlation – 16%

DIGITAL ELECTRONICS AND MICROPROCESSOR

UPHM616

Semester : VI **Credit :4**
Category : Major Core (DSC) – XXI **Hours/Week : 5**
Class & Major : III B.Sc Physics **Total Hours : 65**
Course Objectives:

CO No.	To enable the students
CO-1	Understand the concepts of Fundamentals In Logic Gates.
CO-2	Demonstrate the Simplification of Boolean Equations.
CO-3	Construct the Flip-flop and counters.
CO-4	Realize the functions of Microprocessors.
CO-5	Develop the Assembly Language using Microprocessor, Number System and Basic gates.

UNIT I NUMBER SYSTEM AND BASIC GATES **13 Hours**

Binary Number System–Decimal and Binary Conversion–Binary to Decimal Conversion–Octal Number System–Hexadecimal Number System– Codes–BCD Code–ASCII Code–ASCII code – Grey code – Excess three code - Binary Arithmetic–Binary Addition–Subtraction, AND,OR Circuits using Diodes–NOT using Transistors–NAND,NOR and EXOR–Functions and their Truth Tables– NAND and NOR as Universal Gates.

UNIT II BOOLEAN ALGEBRA AND ITS SIMPLIFICATION **13 Hours**

Boolean Algebra–De Morgan's Theorem and its Circuit–Duality Theorem, Simplification of Boolean Equations–Karnaugh Map–Pairs, Quads, Octets– Multiplexers – Demultiplexer– Decimal to BCD Encoder – BCD to Seven Segment Decoder.

UNIT III FLIP – FLOPS & COUNTERS **13 Hours**

Half Adder–Full Adder–Half Subtractor–Full Subtractor–Digital Computer–Parity Checker- Flip – Flops–RS Flip – Flops– Clocked RS Flip – Flops –D Flip – Flops–JK Flip – Flops – JK Master Slave Flip Flops – Shift registers – Counters–Asynchronous Counters– Omitted States–Modulus Counters–BCD Counters – Up Down Counters–Synchronous Counter– Decayed Counter.

UNIT IV INTRODUCTION TO MICROPROCESSORS **13 Hours**

Introduction to Microcomputers – Microprocessors and Assembly Languages – Microprocessor 8085 – Internal Architecture and its Operations – Programming Techniques such as Looping, Counting, and Indexing–Addressing Modes – Types of Instruction.

UNIT V ASSEMBLY LANGUAGE PROGRAMMING **13 Hours**

BCD to Binary and Binary to BCD Conversions–BCD to HEX and HEX to BCD Conversions–ASCII to BCD and BCD to ASCII Conversions– Multi Byte Addition– Muti Byte Subtraction–BCD Addition–BCD Subtraction–Multiplication and Division-Square- Square Root-Largest and Smallest Numbers- Ascending and Descending order of Arrays.

Text Books

- Malvino and Leech. (2003). *Digital Principles and Application*. (4th Ed.,). TataMcGraw Hill. New Delhi.
- Vijayendran, V. (2004). *Fundamental of Microprocessor 8085*. S. Viswanathan Publishers. Chennai.

Reference Books

- Bhatti, S. S. Rahul Malhotra. (2011). A Textbook of Digital Electronics. I K International Publishing House Pvt. Ltd.
- Nokh Singh and Chabra, A.K. (2005). Fundamentals of Digital Electronics and Microprocessors. (2nd Ed.). S. Chand & Co Ltd. New Delhi.
- Metha,V.K. (2001). Principle of Electronics. S. Chand & Company Ltd. New Delhi
- Vijayendran, V. (2015). Introduction to Integrated Electronics: Digital and Analog. Viswanathan, S., Printers & Publishers Pvt Ltd.

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- https://www.amazon.in/Textbook-Digital-Electronics-S-S-Bhatti/dp/9381141517
- https://www.shahucollegelatur.org.in/Department/Studymaterial/sci/it/BCA/FY/digielec.

Course Outcome:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Acquire knowledge on the basics of number system.	K1, K2
CO – 2	Identify multiplexers and a de multiplexer.	K3
CO – 3	Construct registers and counters implemented with flip-flops.	K4
CO – 4	Compare programming techniques, such as looping and counting.	K5
CO – 5	Execute the assembly language programming.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	3	3	2	3	3
CO-2	3	3	3	2	3	3
CO-3	3	3	3	2	3	3
CO-4	3	2	3	2	3	3
CO-5	3	2	3	1	3	3

High Correlation- 77%
Moderate Correlation- 20%
Low Correlation – 03%

MAJOR PRACTICAL VI

UPHR606

Semester : VI **Credit : 2**
Category : Major Core (DSC) - XXII **Hours/Week : 3**
Class & Major : III B.Sc Physics **Total Hours : 39**

Course Objectives:

CO No.	To enable the students
CO-1	Remember the theoretical concepts of electronics by experiments
CO-2	Understand the concepts of Fundamentals In Logic Gates.
CO-3	Develop the Program for Code Conversion.
CO-4	Realize the working functions of Microprocessors.
CO-5	Evaluate the simple real time programs using microprocessor 8085.

List of Experiments

1. AND, OR, NOT Gates-Verification of Truth Tables.
2. Construction of RS Flip Flop.
3. Construction of JK Flip Flop.
4. Construction of D Flip Flop.
5. Verify (Binary to Gray) Conversion using NAND gates.
6. Verify (Gray to Binary) Conversion using NAND gates.
7. Design and construct Half Subtractor and Full Subtractor circuit and verify the truth table

using NAND gate.

8. Design and construct Half Subtractor and Full Subtractor circuit and verify the truth table using NOR gate.
9. Program for 8-bit Subtraction using 8085.
10. Program for 16-bit Subtraction using 8085.
11. Program 8-bit Addition using 8085.
12. Program 16-bit Addition using 8085.
13. Find the Largest and smallest of the given numbers.
14. Find the Ascending and Descending order of Array.
15. Find the 1's Complement.
16. Study the 2's Complement.

Text Books

- Srinivasan, N. Balasubramanian, S. and Ranganathan, R. (2006). *The Text Book of Practical Physics.* Sultan Chand & Sons.

Reference Books

- Ouseph, C.C. and Rangarajan,G. (2002). *A Text Book of Practical Physics.* Viswanathan Publishers – Part I.
- Gaonkar, R.S. (2003). *Microprocessor Architecture. Programming and Applications with 8085/8080A.* Wily Eastern Limited.

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- https://www.amazon.in/Practical-Digital-Electronics-Technicians-Kimber-ebook/dp/B01D8SXIHW
- https://www.amazon.in/Digital-Electronics-Practical-Approach-VHDL/dp/0132543036

Course Outcome:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Understand the concept of nanophysics.	K1, K2
CO – 2	Make use of nanoparticles and quantum dots.	K3
CO – 3	Conduct an examination on the synthesis of nanostructured materials.	K4
CO – 4	Explain the nano level spectroscopic techniques.	K5
CO – 5	Develop a model to extract detailed information from the applications of nanoparticles in solar cells, LEDs, and transistors.	K6

CO-PSO MAPPING:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	1	3	3	3	3
CO-2	3	1	3	3	3	3
CO-3	3	1	3	3	3	3
CO-4	3	2	3	3	3	3
CO-5	3	2	3	3	3	3

High Correlation- 83%
Moderate Correlation- 07%
Low Correlation – 10%

NANOPHYSICS
UPHO604

Semester : VI **Credit :4**
Category : Major Elective (DSE) - XXIII **Hours/Week : 5**
Class & Major : III B.Sc Physics **Total Hours : 65**

Course Objectives:

Co. No.	To enable the students
CO-1	Recall the Size Effect and Properties of Nanostructure.
CO-2	Differentiate the Nanoparticles and Quantum Dots.
CO-3	Sketch the basic knowledge of synthesizing Nanoparticles.
CO-4	Study the various characterization Techniques.
CO-5	Grasp the knowledge of application in Nanoparticles.

UNIT-I NANOSCALE SYSTEMS **10 Hours**

Introduction to Nanoscale – Nanoscale Catalysis– Nanostructures: Size Effect and Properties of Nanostructures–Classification of Top Down and Bottom Up Approach.

UNIT-II QUANTUM DOTS **14 Hours**

Excitons and Excitonic Bohr Radius – Difference between Nanoparticles and Quantum Dots – Preparation through Colloidal Methods – Epitaxial Methods– MOCVD and MBE Growth of Quantum Dots –Current and Voltage characteristics.

UNIT-III SYNTHESIS OF NANOSTRUCTURE MATERIALS **14 Hours**

Gas Phase Condensation –-Physical Vapor Deposition (PVD) - Chemical Vapor Deposition (CVD) - Sol-Gel- Ball milling –Spray Pyrolysis – Plasma based Synthesis Process (PSP) - Hydrothermal Synthesis - Etching Technologies: Wet and Dry Etching - Photolithography – Electron Beam Lithography **–** Ion Beam Lithography Purification –Synthesis of Carbon Nanotubes.

UNIT-IV CHARACTERIZATION OF NANOMATERIALS **14 Hours**

Scanning Electron Microscopy (SEM) - Transmission Electron Microscopy (TEM), and HRTEM– Principle and Working of Atomic Force Microscopy (AFM) and Scanning Tunneling Microscopy (STM) –Near Field Scanning Optical Microscopy

UNIT-V APPLICATION OF NANOTECHNOLOGY **13 Hours**

Applications of Nanoparticles, Quantum Dots, Nanotubes and Nanowires for Nano Device Fabrication – Nanoparticles based Solar Cells and Quantum Dots based white LEDs – CNT based Transistors.

Text Books

- Klaus D. Sattler. (2010). *Hand Book of Nanophysics*. CRC Press.
- M.A. Shan, T. Ahmad. (2010). *Principle of Nanoscience and Nanotechnology*. Narosa Publications.

Reference Books

- Hari Singh, N. (2002). *Nano Structured Materials and Nanotechnology*. Concise Edition.

Academic Press. USA.

- Dinardo, J. Weinheim, (2000). *Nanoscale Characterization of Surfaces & Interfaces*. Wiley-VCH. (2nd Ed.,). Cambridge.
- Edward L. Wolf. (2006). *Nanophysics and Nanotechnology: An Introduction to Modern Concepts in Nanoscience.* Wiley VCH. (2nd Ed.,).
- Shanmugam, S. (2019). *Nanotechnology*. MJP Publisher.

e-Resources

- http://www.fulviofrisone.com/attachments/article/403/handbook%20of%20naophysics.pdf
- https://utdallas.primo.exlibrisgroup.com/discovery/fulldisplay?vid=01UT_DALLAS:UTDALMA&tab=catalog&docid=alma9927565477301421&context=L&lang=en

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Understand the concept of Nanophysics.	K1 & K3
CO – 2	Distinguish Nanoparticles and Quantum Dots.	K3
CO – 3	Create the thoughts about the Synthesis of Nanostructure Materials.	K1 & K2
CO – 4	Examine the Nano level Spectroscopic Techniques.	K5
CO – 5	Elaborate the applications of nanoparticles in solar cells and LEDs & Transistors.	K6

CO-PSO MAPPING:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	1	3	3	3	3
CO-2	3	1	3	3	3	3
CO-3	3	1	3	3	3	3
CO-4	3	2	3	3	3	3
CO-5	3	2	3	3	3	3

High Correlation- 83%
Moderate Correlation- 07%
Low Correlation – 10%

ASTROPHYSICS

UPHO605

Semester : VI **Credit :4**
Category : Major Elective (DSE) – XXIII **Hours/Week:5**
Class & Major: III B.Sc Physics **Total Hours :65**

Course Objective:

CO No.	To enable the students
CO – 1	Understand the basics of Astrophysics.
CO – 2	Illustrate the concept of Astrophysics and its measurements.
CO – 3	Gain the knowledge of Solar systems.
CO – 4	Emphasize the Stellar Evolution and Astro objects
CO – 5	Describe the theories of Universe, Galaxies and their formations.

UNIT-I NATURE OF ASTROPHYSICS **13 Hours**

The Nature of Astrophysics, Scale of the Universe, Angular Measure, Parallax, Inverse Square Law of Light and the Definition of Flux, Relationship between Stellar Parallax and Distance.

UNIT-II BASICS OF ASTRONOMY **15 Hours**

Brightness and Luminosity - Relationship between Luminosity, Brightness and Distance – Apparent Magnitude and Brightness Ratio – Relationship between Apparent Magnitude and Absolute Magnitude – Color and Temperature of Stars – Size and mass Stars- of Hertzsprung-Russell (H-R) diagram and Stellar Radius – H-R Diagram and Stellar Luminosity – H-R Diagram and Stellar Mass.

UNIT-III SOLAR SYSTEM **12 Hours**

Surface Features of the Sun in White and Monochromatic Light, Internal Structure, Photosphere – Sunspots and Magnetic Fields on the Sun –Solar Activity, Planets and their Satellites –Surface Features, Internal Structure, Atmosphere and Magnetic Fields of Earth, Moon and Planets.

UNIT-IV STELLAR EVOLUTION **12 Hours**

Stellar Structure, Nuclear Reactions, HSEQ, Radiation Transport –Stellar Evolution, Degeneracy Pressure, Mass– Limits for Stars – More Stellar Evolutions – High Mass Stars and Compact Objects**,** Supernova and Stellar Clusters, Inter Stellar Medium- White dwarf evolution– Supernova remnants – Supernova types – Pulsars and Neutron Stars.

UNIT-V THEORIES OF UNIVERSE **13 Hours**

The Milky Way –Black Holes - White Dwarfs and Neutron Stars – Other Galaxies – Clusters of Galaxies, the Hubble Law – Cosmology and the Big Bang Theory - Active Galaxies and Active Galactic Nuclei (AGN) – Gravitational Lensing.

Text Books

- Krishnasamy, K.S. (2002). *Astrophysics a Modern Perspectives*. Reprint New Age International (P) Ltd. New Delhi.
- Murugasen, R. (2003). *Modern Physics*. S. Chand & Co Ltd. (11th Revised Ed.). New Delhi.

Reference Books

- Bradley W. Carroll, Dale A. Ostlie. (2006). An Introduction to Modern Astrophysics. Pearson. (2nd Ed.,).
- Gary A. Glatzmaier. (2013). Introduction to Modeling Convection in Planets and Stars: Magnetic Field, Density Stratification, Rotation. Princeton Series in Astrophysics.

e- Resources

- https://www.open.ac.uk/science/physical-science/sites/www.open.ac.uk.science.physical-science/files/files/book0_2016.pdf
- https://heptapolis.com/sites/default/files/a._norton_introd.to_astrol_cosmology_.pdf
- http://www.solvayinstitutes.be/pdf/Proceedings_Physics/2014.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Recall the ideas of astrophysics.	K1, K2
CO-2	Develop and concepts of H-R diagram.	K3
CO-3	Analyze the solar system and its given structure.	K4
CO-4	Enumerate the evolution of the given stellar objects.	K5
CO-5	Generate innovative research ideas for the classification of galaxies and the universe	K6

CO-PSO MAPPING:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	1	3	3	2	3
CO-2	3	1	3	3	2	3
CO-3	3	1	3	3	2	3
CO-4	3	1	3	3	1	3
CO-5	3	1	3	3	1	3

High Correlation- 67%
Moderate Correlation- 10%
Low Correlation – 23%

FUNCTIONAL MATERIALS

UPHO603

Semester : VI **Credits : 4**
Category : Major Elective (DSE) - XXIII **Hours/Week : 5**
Class & Major : III B.Sc Physics **Total Hours : 65**

Course Objective:

CO No.	To enable the students
CO – 1	Acquire the Knowledge about the Properties of Functional Materials.
CO – 2	Analyze the Properties Associated with the Different Materials.
CO – 3	Gain the knowledge of Dielectric Materials and their applications.
CO – 4	Emphasize the Physiochemical Parameters of Biomaterials
CO – 5	Describe the theories Particle and Fibre Reinforced Composite Materials and its Applications..

UNIT - I OPTICAL MATERIALS **11 Hours**

Introduction to Optical Materials – Absorption and Emission Process – Luminescence – Types of Luminescence (Qualitative) – Mechanism of Fluorescence and Phosphorescence Process – Quantum Efficiency (Statement only) - Phosphors – LED (Principle, Construction and Working) – White LED – Applications.

UNIT – II SUPERCONDUCTING MATERIALS **14 Hours**

Introduction to Superconductivity – Occurrence of Superconductivity – Transition

Temperature – Properties – BCS Theory – Type I and II Superconductors – High Temperature Superconductors – Structure and Properties of $YBa_2Cu_3O_{9-X}$ and $HgBa_2CaCuO_6$ Compounds – Applications – SQUID, Cryotron, Magnetic Levitation – Other Applications.

UNIT – III DIELECTRIC MATERIALS **14 Hours**

Dielectric Materials – Types – Local (Internal) Field – Classsius – Mossotti Relation – Dielectric Breakdown – Dielectric Loss – Piezoelectric, Pyroelectric, Ferroelectric, Thermoelectric Materials – Applications – Super capacitors and Transformer.

UNIT – IV BIOMATERIALS **13 Hours**

Introduction to Biomaterials – Physiochemical Parameters of Biomaterials – Concepts of Biocompatibility – Types – Biometals and Alloys – Bio Glass and Bioglass Ceramics – Biopolymer and Bio Composites – Hydroxyapatite and Tricalcium Phosphate - Properties and Application.

UNIT –V MODERN FUNCTIONAL MATERIALS **13 Hours**

Properties and applications of Electro – Optic Materials – Magneto – Optic Materials – Photoconductive Polymers – Carbon Nanotubes (Single and Multi-Walls) – Composite Materials – Particle and Fibre Reinforced Composite Materials and its Applications.

Text Books

- Rajendiran, V. (2015). *Material Science*. Tata McGraw Hill.
- Ragavan, V. (2013). *Materials Science and Engineering*. PHI Learning private Ltd.

Reference Books

- Kasab, S.O. (2015). *Principles of Electronic Devices.* Tata McGraw Hill.
- William D. Callister, David G. Rethwisch, (2013). *Materials Science and Engineering.* Wiley-India.
- Palanisamy, P.K. (2010). *Materials Science*. Scitech Publications (India).

e-Resources

- https://www.ideals.illinois.edu/items/8272/bitstreams/28225/stream
- http://l03.iphy.ac.cn/l03/papers/32.pdf
- https://www.sciencedirect.com/science/article/pii/S0022369720328122.pdf
- https://www.ae.utexas.edu/~landis/Landis/Research_files/JAM2005.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the mechanism of the fluorescence and phosphorescence processes.	K1, K2
CO-2	Identify the structure and properties of $YBa_2Cu_3O_{9-X}$ and $HgBa_2CaCuO_6$ compounds	K3
CO-3	Analyze the properties of capacitors and transformers.	K4
CO-4	Evolution of the properties and applications of biomaterials	K5
CO-5	Develop the properties and applications of electro and optic materials.	K6

CO-PSO MAPPING:

CO\PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO-1	3	1	3	3	1	3
CO-2	3	1	3	3	1	3
CO-3	3	1	3	3	2	3
CO-4	3	1	3	3	2	3
CO-5	3	1	3	3	3	3

High Correlation- 70%
Moderate Correlation- 07%
Low Correlation – 23%

III & IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component-III	Component-IV
VI	Major Core (DSC) – XVIII	UPHM614	Numerical Methods and Basic Computational Physics	Assignment	Problem solving
	Major Core (DSC) – XIX	UPHM611	Nuclear and Radiation Physics	Poster Presentation	Assignment
	Major Core (DSC) – XX	UPHM615	Material Science	Poster Presentation	Poster Presentation
	Major Core (DSC) – XXI	UPHM616	Digital Electronics and Microprocessor	Design and Poster	Model Display
	Major Elective (Discipline Specific Elective) - XXIII	UPHO604/ UPHO605/ UPHO603	Nanophysics / Astrophysics/ Functional Materials	Assignment	Quiz

PG AND RESEARCH DEPARTMENT OF CHEMISTRY

PREAMBLE

UG: Programme Profile and the Syllabi of Courses Offered in Semester VI Along with III and IV Evaluation Components (With Effect from 2021– 2024 Batch Onwards)

PROGRAMME PROFILE B.Sc., (Chemistry)

PROGRAMME SPECIFIC OUTCOMES

PSO No.	Upon completion of these courses the students will be able to
PSO-1	Understand the fundamental concepts in Organic, Inorganic, Physical, Theoretical, Nano, Bioinorganic, Polymer and Forensic Chemistry.
PSO-2	Identify and Estimate the component of organic and Inorganic chemical using classical and modern methods, and to determine the physical properties of compounds.
PSO-3	Predict the structures of compounds, separate and characterize them and understand the mechanism of reactions of chemical compounds and their synthesis through Practical & Project.
PSO-4	Apply chemical techniques relevant to academia and industry, generic skills and global competencies to complete the competitive World
PSO-5	Demonstrate importance of Advanced Material, pharmaceutical Drug and polymer material and Devise chemical processes with Green approach in Society needs.
PSO-6	Develop problem solving abilities for successful career in pharmaceuticals, chemical industry, teaching, research, environmental monitoring, product quality, consumer goods industry, food products, cosmetics industry etc.

Semester	Part	Category	Course code	Course Title	Pervious course code	Contact Hrs/ Week	Credits Min/Max
I	I	Languages/AECC-II Tamil/ Hindi/ French	UTAL107/ UTAL108/ UHIL101/ UFRL101	Basic Tamil-I/ Advanced Tamil-I/ Hindi-I/ French-I	UTAL103/ UTAL104	5	3/4
	II	English/AECC-I	UENL109/ UENL110	English for Communication (Stream – I)/ English for Communication (Stream – II)		5	3/4
		Core I/ DSC-I	UCHM108	Inorganic Chemistry-I	-	5	5
		Core II/ DSC-II	UCHM109	Analytical Chemistry	-	4	4
		Core Practical I/ DSC Practical-I	UCHR101	Volumetric Practical	-	3	2
		Allied I/GE	UPHA102	Allied Physics - I	-	3	2
		Allied Practical I/GE Practical-I	UPHR103	Allied Physics Practical-I	-	3	2
		Core III/ DSC-III	UPEM101	Professional English I		6	4
	IV	Value Education				2	1
					Total	**36**	**26/28**

II	I	Languages/AECC-II Tamil/ Hindi/ French	UTAL207/ UTAL208/ UHIL201/ UFRL201	Basic Tamil-II/ Advanced Tamil-II/ Hindi-II/ French-II	UTAL203/ UTAL204	5	3/4
	II	English/AECC-I	UENL209/ UENL210	English for Communication (Stream – I)/ English for Communication (Stream – II)		5	3/4
	III	Core IV/ DSC-IV	UCHM203	Organic Chemistry-I		5	5
		Core V/ DSC-V	UCHM204	Nuclear & Radiation Chemistry	-	3	3
		Core Practical II/ DSC Practical II	UCHR206	Organic Practical	-	3	2
		Allied II/GE	UPHA201	Allied Physics II	-	3	2
		Allied Practical II / GE Practical II	UPHR202	Allied Physics Practical-II	-	3	2
		Core VI/ DSC-VI	UPEM201	Professional English II		6	4
		Internship	UCHI201	Internship / Field Work / Field Project			/1
	IV	NME			-	3	2
	V	Extension Programme/ Physical Education/NCC			-	-	1/2
					Total	**36**	**27/31**
III	I	Languages/AECC-II Tamil/Hindi/French	UTAL307/ UTAL308/ UHIL301/ UFRL301	Basic Tamil-III/ Advanced Tamil-III/ Hindi-III/ French-III	UTAL303/ UTAL304	5	3/4
	II	English/AECC-I	UENL309/ UENL310	English for Communication (Stream – I)/ English for Communication (Stream – II)	UENL306	5	3/4
	III	Core VII/ DSC-VII	UCHM307	Physical Chemistry - I	-	4	4
		Core VIII/ DSC-VIII	UCHM308	Electrochemistry	-	3	2
		Core Practical III / DSC Practical III	UCHR404/ UCHR405	Semi micro Qualitative Inorganic Analysis		3	-
		Allied/GE	UMAA304	Algebra, Differential Calculus and Trigonometry	-	5	4

	IV	Online Course		Online Course (NPTEL/ST)		3	1/2
		Value Education				2	1
					TOTAL	**30**	**18/21**
IV	I	Languages/AECC-II Tamil/ Hindi/ French	UTAL407/ UTAL408/ UHIL401/ UFRL401	Basic Tamil-IV/ Advanced Tamil-IV/ Hindi-IV/ French-IV	UTAL403/ UTAL404	5	3/4
	II	English/AECC-I	UENL409/ UENL410	English for Communication (Stream – I)/ English for Communication (Stream – II)	-/ UENL406	5	3/4
	III	Core IX/ DSC-IX	UCHM407	Molecular Spectroscopy & Photochemistry	-	4	4
		Core X/ DSC-X	UCHM408	Research Methodology	-	3	2
		Core Practical III / DSC Practical III	UCHR404/ UCHR405	Semi micro Qualitative Inorganic Analysis	-	3	4
		Allied/GE	UMAA406	Integral Calculus, Laplace Transform & Ordinary Differential Equation	-	5	4
		Internship	UCHI401	Internship / Field Work / Field Project			/1
	IV	NME				3	2
		Soft skill	USKS401			2	1
	V	Extension Programme/ Physical Education/NCC				-	-/2
					Total	**30**	**23/28**
V	III	Core XI/ DSC-XI	UCHM510	Inorganic Chemistry – II	-	5	5
		Core XII/ DSC-XII	UCHM511	Organic Chemistry – II	-	5	5
		Core XIII/ DSC-XIII	UCHM512	Physical Chemistry –II	-	5	5
		Major Elective / DSE-I	UCHO501 UCHO502 UCHO503	Organometallics and Bioinorganic Chemistry Heterocyclic Chemistry Organic Spectroscopy	-	5	4
		Core Practical IV / DSC Practical IV	UCHR501	Gravimetric Analysis	-	3	2
		Core XIV/ DSC-XIV	UCHP501	Project	-	5	5
	IV	Value education				2	1
					Total	**30**	**27**

VI	III	Core XV/ DSC-XV	UCHM614	Inorganic Chemistry -III	-	5	4
		Core XVI/ DSC-XVI	UCHM615	Organic Chemistry- III	-	5	5
		Core XVII/ DSC-XVII	UCHM616	Physical Chemistry- III	-	5	4
		Core XVIII/ DSC-XVIII	UCHM617	Advanced Material Chemistry		3	2
		Major Elective/ DSE-II	UCHO602 UCHO603 UCHO604	Polymer Chemistry Medicinal Chemistry Forensic Chemistry	-	4	4
		Core Practical V / DSC Practical V	UCHR605	Physical Chemistry Practical	-	3	2
		Core Practical VI / DSC Practical VI	UCHR606	Organic Analysis and Preparation	-	3	2
		Viva –Voce	UCHM605	Comprehensive Viva-Voce	-	-	1
		Internship	UCHI601	Internship / Field Work / Field Project			/1
	IV	Soft Skill	USKS601		-	2	1
	V	Extension Programme/ Physical Education			-	-	-/2
Total						**30**	**27/30**
Grand Total						**192**	**148/165**

INORGANIC CHEMISTRY– III
UCHM614

Semester : VI **Credits : 4**
Category : Core XIV **Hours/Week : 5**
Class& Major : III B.Sc., Chemistry **Total Hours : 65**

Course objectives:

CO No.	To enable the students
CO-1	Understand the concept of Coordination chemistry and Bioinorganic Chemistry
CO-2	Discover the magnetic properties and Complexation behaviour of Lanthanides and Actinides
CO-3	Analyse the principle and applications of acids and bases concepts
CO-4	Prioritize the preparations of inter halogen compounds, their structure and applications
CO-5	Develop the calculation of CFSE and valence bond theory and their applications

UNIT I LANTHANIDES & ACTINIDES **12 Hours**

Lanthanides: General study involving electronic configuration, Oxidation state,

Magnetic propertiesand complexation behaviour - Lanthanide contraction –**Actinides:** General study involving electronic configuration, Oxidation state, Magnetic propertiesandcomplexation behaviour - Actinide contraction - Comparative study of lanthanides andactinides.

UNIT II ACIDS & BASES **12 Hours**

Arrhenius concept - Lowry-Bronsted concept - Lux-flood concept - The solventsystem concept - The Lewis concept - Hard & soft acids and bases - Pearson's concept - HSABprincipleand its applications.

UNIT III INTERHALOGEN COMPOUNDS **12 Hours**

Introduction, preparation, Types, structure, application of ClF_3, BrF_5, IF_5, IF_7. Xenon and its compounds- introduction, preparation, structure and application of XeF_2, $XeOF_4$, XeO_3, XeO_2F_2

UNITIV COORDINATION CHEMISTRY **14 Hours**

Types of ligands – Chelation's & effects of chelation- Applications of complexes- IUPAC nomenclature-Theories of coordination compounds – Valence bond theory and its application crystal field theory – Splitting of d-orbitals on Oh, Td & square planar complexes – CFSE- calculation of CFSE in Oh & Td complex. Stability of complexes - Factors affecting stability. Unimolecular and bimolecular nucleophilic substitution reactions in octahedral and square planar complexes - Trans effect. Application of coordination compounds.

UNIT-VBIOINORGANIC CHEMISTRY **15 Hours**

Biologicallyimportantcoordinationcompounds-Chlorophyll,hemoglobinandvitamin b_{12}- Structure and applications (elucidation not required). metalcarbonyls- Monoand polynuclear carbonyls of Ni, Fe, Cr, Co and Mn- synthesis, reaction, structure and uses.nitrosyl compounds - Classification, preparation and properties - Structure of nitrosyl chlorideandsodium nitroprusside.

Text Books

- Madan,R.D.(2008).ModernInorganicChemistry.(2nded.,).S.ChandandCompanyLtd.New Delhi.
- Puri, B. R. Sharma, L.R. & Kalia. K. C. (2011-12). Principles of Inorganic Chemistry. (31sted.,).

Reference Books

- Soni, P. L. and Mohan Katya. (2007). Text Book of Inorganic Chemistry. (20th ed.,). Sultan Chand & Sons. New Delhi.
- Lee, J. D. (1991). Concise Inorganic Chemistry. ELBS. (4th ed.,)

E-Resources

- https://chandand.weebly.com/uploads/9/2/2/7/92278224/_inorganic_chemistrya_textbook _series lawrance_g.a.introduction_to_coordination_chemistrywiley__2010_. pdf
- https://fns.uniba.sk/fileadmin/prif/chem/kag/Bakalar/vch_noga/GEN_INORG_CHEM 15.pdf
- http://www.rbmcollege.ac.in/sites/default/files/files/reading%20material/hard-and-soft-

acids-and-bases.pdf

- http://downloads.hindawi.com/journals/ijp/2001/107129.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Classify the HSAB, Arrhenius, pearson's concept and bioinorganic compounds	K1, K2
CO-2	Interpret the ligands, Chelation and f block elements	K3
CO-3	Illustrate the stability of complexes in coordination chemistry and factors affecting the nucleophillic substitution	K4
CO-4	Criticize the inter halogen compounds and comparative study of lanthanides and actinides, prioritize Chlorophyll, hemoglobin and vitamin b_{12} based on the structure and applications	K5
CO-5	Elaborate the importance of bioinorganic compounds and their properties. Calculation of CFSE in Oh & Td complex.	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	2	3	1	3
CO 3	3	3	3	3	1	3
CO 4	3	3	3	3	3	3
CO 5	3	3	2	3	3	3

High Correlation: 86.7%
Moderate Correlation: 6.7%
Low Correlation : 6.7%

ORGANIC CHEMISTRY–III
UCHM615

Semester : VI **Credit : 5**
Category : Core XV **Hours/Week : 5**
Class &Major : III B.Sc., Chemistry **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO-1	Classify the peptides, proteins and nucleic acids of the amino acids
CO-2	Explain the synthesis of heterocyclic compounds
CO-3	Acquire knowledge about the molecular rearrangement
CO-4	Analyze the natural products of alkaloids, terpenoids and their classification
CO-5	Justify the oxidizing and reducing reagents and their applications

UNIT I HETEROCYCLIC COMPOUNDS 13 Hours

Aromatic characteristics and basicity of heterocyclic compounds. Five membered heterocyclic systems - preparation, properties and uses of furan, pyrrole, thiophene. Electrophilic Substitution reactions of furan, pyrrole, thiophene and Six membered heterocyclic systems-structure, synthesis and reactions of pyridine, piperidine, Comparative basic characters of pyrrole, pyridine, piperidine with amines. Fused rings- Synthesis of Quinoline, isoquinoline and indole by Skraup, Bischler Napieralski and Fischer Indole synthesis respectively and their reactions.

UNIT II NATURAL PRODUCTS 13Hours

Occurrence of terpenoids and alkaloids. Terpenes - Definition - General properties – Isoperenerule– Structural elucidation of citral, Geraniol, A-Terpenol and Camphor. Alkaloids-Definition– General properties – Classification – Isolation – Structure determination of conine, piperine and nicotine.

UNIT III AMINOACIDS, PEPTIDES, PROTEINS ANDNUCLEICACIDS 13 Hours

Aminoacids: Classification, Structure and stereochemistry of aminoacids, Isoelectric point of amino acids. Preparation and properties of amino acids -Tests for amino acids.

Peptides: Structure and nomenclature, Synthesis of polypeptides (General methods). Solid phase peptide synthesis. Structure determination of polypeptides- Endgroup analysis.

Proteins: Classification of protein, Structure of protein (Determination of structure are not required). Proteinde- naturation and re-naturation.

NucleicAcids: Introduction, Constituents of nucleic acid, RNA and DNA, Types of RNA, Structure of DNA.

UNIT IV REAGENTS AND THEIR APPLICATIONS 13 Hours

Oxidizing Reagents– MnO_2, PCC, PDC, Colins reagent, Jones reagent, SeO_2, mCPBA, Ag_2O.

Reducing Reagents - Grignard reagent, DIBAL-H, H_2/Pd- $BaSO_4$, Zn/ Hg- HCl, DDQ, DCC, LAH and $NaBH_4$

UNIT V MOLECULAR REARRANGEMENT 13 Hours

Classification – Types of skeletal rearrangements - Anionotropic and cationotropic, Inter molecular and intra molecular rearrangements - Mechanisms, Migratory aptitude, Inter or intramolecular of the following rearrangements: Hofmann rearrangement, Beckmann rearrangement, Benzil- Benzilic acid rearrangement, Baeyer- Villiger, Fries rearrangement, Claisen rearrangement, Benzidine rearrangement, Curtius rearrangement, Wagner-Meerwein rearrangement and Wolff rearrangement.

Text Books

- Soni,P.L.(2010).*TextBookofOrganicChemistry*.Sultan Chand.
- Bahland ArunBahl(2014).*AdvancedOrganicChemistry*.S. Chand.

- GurdeepChatwal.(2010).*ChemistryofNaturalProducts*.HimalayaPublishingHouse.
- Finar, I.L(Volume-I)(2010).*NaturalProductsinStereoChemistry*.(VIed.,).

Reference Books

- *Morrison and Boyd, R.T. (2010). Organic Chemistry. VI Edition – Prentice Hall of India. New Delhi.*
- *Ahluwalia and Rakesh Kumar Parashar, V.K. (2011). Organic Reaction Mechanisms. Narosa Publishing House.*

E-Resources

- https://www.alchemyst.co.uk/pdf/Organic/rearrangements.pdf
- https://nptel.ac.in/content/storage2/courses/104101005/downloads/LectureNotes/chapter%2011.pdf
- https://application.wiley-vch.de/books/sample/3527317864_c01.pdf
- https://www.weizmann.ac.il/plants/aharoni/sites/plants.aharoni/files/uploads/june192007.pdf
- https://application.wiley-vch.de/books/sample/3527332014_c01.pdf
- http://www.chem.gla.ac.uk/staff/stephenc/teaching/HeterocycleLectures2011_2C12. pdf

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Acquires the cognizance about Anionotropic, cationotropic, Inter and intra molecular rearrangements	K1, K2
CO-2	Justify the Six membered heterocyclic systems and fused rings	K3
CO-3	Devise the knowledge of citral, Geraniol -Terpenol and Camphor compounds	K4
CO-4	Prioritize the constituents of nucleic acid and Grignard reagent	K5
CO-5	Compare and contrast the aromatic characteristics and basicity for heterocyclic compounds.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	2	3
CO 2	3	3	3	3	3	3
CO 3	3	3	2	3	2	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation: 90%
Moderate Correlation: 10%

PHYSICAL CHEMISTRY-III
UCHM616

Semester :VI **Credits : 4**
Category : CoreXVI/ DSC XVII **Hours/Week: 5**
Class& Major :III-B.Sc., Chemistry **Total Hours : 65**

Course objectives:

CO No.	To enable the students
CO-1	Understand the behaviour colligative properties and colloidal properties
CO-2	Outline the concepts of isotonic solutions, dialysis and solution curves
CO-3	Acquire the knowledge of the solubility of gas and morse frazer method
CO-4	Categorize the types of actinometer and photochemistry
CO-5	Estimate the vapour pressure and osmotic pressure

UNIT-I GROUP THEORY **12 Hours**

VSEPR theory - Symmetry operations and symmetry elements (E, C_n, Σ, S_n, I) -Productsof symmetryoperations -Groupsand propertiesofagroups-Classesand subgroups -Groupmultiplication table-Pointgroups – Introduction of character table-Great Orthogonality Theorem (GOT)

UNIT-II PHOTO CHEMISTRY **13Hours**

Chemical – Photochemical reactions –Quantumefficiency (or) Quantumyield – primary quantum yield – Primary process and molecular Spectra – Actinometry – Potassium ferri oxalate actinometer – Chemical actinometer – Uranyl oxalate actinometer – Photo Chemical equilibrium(PhotoStationary State) – Photo inhibitors – Radiation Chemistry – Difference between photo chemistry and Radiation chemistry

UNIT-III COLLIGATIVE PROPERTIES OF DILUTE SOLUTION **15 Hours**

Colligative properties – static Method differential manometer – Dynamic Method (Oswald and Walker method) – Elevation of Boiling point – Determination of Molecular weight(Beckmann Method) – Cottrell Method – Depression of freezing point – Measurement of osmostic pressure(Preffer's method) - Morse and Frazer Method – Method of Berkeley and Hartley – Law of osmotic pressure – Isotonic solutions – Relationship between Lowering of vapour pressure and osmotic pressure.

UNIT-IVCOLLOIDAL STATE **12 Hours**

Types of Colloidal solution – Condensation Methods – Dispersion Methods – Bredig's Arc method copper solution – Peptisation – Dialysis – Electrodialysis – Ultra filtration – Properties of colloidal solutions – iso- ionic point – Electrical Helmholtz Double layer (Zeta Potential) – Electrophoresis – Electro osmosis stability of colloids – Liesegang rings Donnan's Effect (or) Donnan law – Applications of colloidal system.

UNIT-V SOLUTIONS **13 Hours**

Concentrations of solutions – Factors affecting the Solubility of the gas – Influence of temperature on solubility – Determination of solubility of highly soluble gases – Influence of pressure on solubility – (Henry's Law) –Determination of solubility of solids – Influence of temperature on the solubility of solids in Liquids(Solution curves) – Uses of solubilities curves –

influence of solute and solvent in solubilities – Solutions of liquids in liquids (Ideal System and Raoult's Law)-Real and non ideal solutions types of deviations.

Text Books

- Puri,SharmaandPathania.(2010).Principles of Physical Chemistry.Shoban Lal Nagin Chand &Co. Jalandhar.
- Soni,P.L.(2011).TextBook of Physical Chemistry. SultanChand.
- Colin,N.Banwell&ElaineM.McCash.(2012).Fundamentals of Molecular Spectroscopy. (4thed.,) TataMcGraw Hill Education Pvt. Ltd.

Reference Books

- NegiandAnand.(2010).PhysicalChemistry.NewAgeInternationalPublishers.
- KunduandJain. (2010). PhysicalChemistry.S. Chand.
- Atkins, P. de Paula, J and Keeler. J (2006) "Atkins' Physical Chemistry", 8th ed.,
- Barrow G.M. (2006) Physical Chemistry, Tata McGraw Hill. 5th ed.,
- Cotton, F.A.(2020) *Applications of Group Theory*. Wiley Eastern Ltd. United States.

E-Resources

- https://www.nios.ac.in/media/documents/313courseE/L6.pdf
- https://www.cpp.edu/~pbsiegel/supnotes/nts1323.pdf
- https://uou.ac.in/sites/default/files/slm/BSCPH-201.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Define an expression for photo-physical processes and the concentrations of solution	K1, K2
CO-2	Relate the Raoult's law, Cottrell method and osmatic pressure.	K3
CO-3	Point out and determine the solubility of highly soluble gases in ideal system	K4
CO-4	Analyze the Group multiplication table, Great Orthogonality Theorem and Point groups.	K5
CO-5	Design the various methods to prepare the colloidal particles	K6

CO-PSO MAPPING :

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	1	2	1	0	3
CO 5	3	3	3	3	3	3

High Correlation: 86.7%
Moderate Correlation: 3.3%
Low Correlation : 10

ADVANCED MATERIAL CHEMISTRY
UCHM617

Semester : VI **Credits : 2**
Category : Core XVI/ DSC XVII **Hours/Week : 3**
Class& Major : III-B.Sc., Chemistry **Total Hours : 39**

Course Objectives:

CO No.	To enable the students
CO-1	Relate knowledge about the polymeric, conducting and nanomaterials
CO-2	Demonstrate the instrumentation of SEM, TEM and EDS
CO-3	Construct the polymers and ceramic conducting polymers
CO-4	Information about the texture, functionality and nomenclatures of polymers
CO-5	Importance of the Techniques and bio-nanocomposites

UNIT-I BASICS OF MATERIAL **8 Hours**

Introduction: Materials and their importance. Classification of Materials, Advanced materials and their need. Types of Materials: Metals, ceramics, polymers and composites; Nature of bonding (Type of bond present). Types and applications of metal alloys: Classification- ferrous and non-ferrous alloys and their applications.

UNIT-II POLYMERIC MATERIAL **8 Hours**

Polymeric Materials and their Functionality Different schemes of classification of polymers, polymer nomenclature, molecular forces and chemical bonding in polymers, texture of polymers. Criteria for synthetic polymer formation, classification of polymerization processes, relationships between functionality, extent of reaction and degree of polymerization.

UNIT-III NANO MATERIALS **7 Hours**

Nanomaterials: Overview of nanostructures and nanomaterials; classification. Preparation of gold and silver metallic nanoparticles. Carbon nanotubes and inorganic nanowires. Bioinorganic nanomaterials, natural and artificial nanomaterials, bio-nanocomposites.

UNIT-IV CONDUCTING POLYMERS **8 Hours**

Specialty Polymers and Ceramics Conducting polymers-Introduction, conduction mechanism, polyacetylene, polyparaphenylene and polypyrrole, applications of conducting polymers. Polymer-matrix composites, fibrere inforced composites, environmental effects on composites, applications of composites.

UNIT-V MATERIAL TECHNIQUES **8 Hours**

Material Characterization Techniques Electron microscopy: Scanning electron microscopy (SEM), Instrumentation, Electron beam specimen interaction, Specimen preparation, Energy dispersive spectroscopy (EDS) in electron microscopes; Transmission electron microscopy (TEM) - Basics of TEM, Electron sources, Specimen preparation.

TextBooks

- Kakani, S. L.; Kakani, A., Material Science, 3rd Ed., New Age International Publishers,

New Delhi (2016).
- Material Science by Kakani and Kakani New Age International Pvt Ltd, 2004.
- Thiruvadigal, J. D., Ponnusamy, S. and C.P.Kala and Krishna Mohan.M., Materials Science, Vibrant Publications, 2012.

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	List out the material characterization and recognize their applications for composites	K1, K2
CO-2	Justify the functionality of polymeric materials and the preparation of nanomaterials	K3
CO-3	Categories the metals, ceramics, polymers, and composites	K4
CO-4	Develop the techniques in industrial polymers preparations by polymerization method	K5
CO-5	Choose the characterization techniques for advanced materials	K6

CO-PSO MAPPING:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation: 100%

PHYSICAL CHEMISTRY PRACTICAL
UCHR605

Semester : V & VI **Credit : 2**

Category : Core Practical- IV **Hours/Week: 3**

Class& Major: III- B.Sc., Chemistry **Total Hours: 39**

Course Objectives:

CO No.	To enable the students
CO-1	Relate the Phenol – water system by heterogeneous equilibrium
CO-2	Know the kinetics of acid hydrolysis of ester
CO-3	Experiment with the concept of partition co-efficient
CO-4	Recall the basic concepts of conductometric and potentiometric titrations
CO-5	Interpret the experimental results.

1. **Distribution law:**

a) Determination partition coefficient of iodine between carbon tetra chloride and water.

b) Equilibrium constant of the reaction KI + I_2 = KI_3

2. **Kinetics:**

   Determination of the orders of the following reactions.
   a) Acid catalyzed hydrolysis of an ester (Methyl or Ethyl Acetate).

3. **Molecular Weight of Solute** – Rast method using Naphthalene, Meta Dinitrobenzene and Diphenyl as solvents.

4. **Heterogeneous Equilibria:**

   Phenol – water system CST.

5. **a) Effect of Impurity** – 1 % Nacl or 2% Succinic acid solutions on phenol determination of the concentration of the given solution.

   b) Determination of the Transition Temperature of the Given Salt Hydrate.
   $Na_2S_2O_3.5H_2O$, $CH_3COONa.H_2O$, $SrCl_2.6H_2O$, MnCl2.4H2O.

6. **Electrochemistry: Conductivity**

   a) Determination of cell constant.

   b) Conductometric titration of a strong acid against a strong base.

7. **Potentiometric Titration**

   a) Strong acid against a strong base.

8. **Calorimetric Titration.**

9. **Polarimetric – Inversion of sugar.**

Text Books

- Venkateswaran. V, Veerasawamy. R. & Kulandaivelu, A. R. (1998). *Basic Principles of Practical Chemistry.*S. Chand & Sons Publications.

Reference Books

- Vogel's. (1989). *Text Book of Quantitative Chemical Analysis.* (5^{th}ed.,). ELBS/ Longman. England.
- Thomas, O. (2000). *Practical Chemistry.* Scientific Book Center. Cannanore.
- Sundaram, S. (1999). *Practical Chemistry.*(3^{rd}Vol).

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Define the practical knowledge about the chemical kinetics	K1, K2
CO-2	Understand the conductivity experiments	K2
CO-3	Apply potentiometric titrations in identification of acids	K3
CO-4	Analyze the experimental data from the Calorimetric titration	K4
CO-5	Develop the partition co-efficient of new compounds in a mixture of two immiscible solvents	K6

CO-PSO MAPPING :

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	3	3	0	3
CO 2	3	1	3	3	1	3
CO 3	3	3	3	3	1	3
CO 4	3	3	3	3	1	3
CO 5	3	2	3	3	0	3

High Correlation: 73.3%
Moderate Correlation: 6.7%
Low Correlation : 20%

POLYMER CHEMISTRY
UCHO602

Semester : VI **Credit : 4**
Category : Major Optional **Hours/Week : 4**
Class and Major : III B.Sc., Chemistry **Total Hours : 52**

Course Objectives:

CO No.	To enable the students
CO-1	Relate the concepts of polymer and industrial polymers
CO-2	Determine the techniques like photo degradation and photo stabilizers
CO-3	Analyse the compounds related to the polymer additives and plasticizer
CO-4	Criticize the chain growth polymerization and step growth polymers
CO-5	Develop the Cohesive energy and decomposition of polymers

UNIT-I INTRODUCTION TO POLYMERS 11 Hours

Monomers, oligomers, polymers and their characteristics- Classification of polymers- Natural, synthetic, linear, cross linked and network, plastics, elastomers, fibres, homopolymers and co-polymers - Bonding in polymers - Primary and secondary bond forcesin polymers - Cohesive energy and decomposition of polymers. Molecular mass of polymers, M_n and M_w.

UNIT-II MECHANISM FOR POLYMERIZATION 10 Hours

Chain growth polymerization: Cationic, anionic, free radical polymerization, stereo regular polymers-Ziegler Natta polymers. Step growth polymers

UNIT-III TECHNIQUES OF POLYMERIZATION AND POLYMER DEGRADATION 10 Hours

Bulk, solution, suspension, interfacial and gas phase polymerization. Types of polymer degradation, thermal degradation, mechanical degradation, photo degradation, photo stabilizers.

UNIT-IV INDUSTRIAL POLYMERS 11 Hours

Raw material, preparation, fiber forming polymers, elastomeric material. Thermoplastics-

Polyethylene, polypropylene, polystyrene, poly acrylonitrile, polyvinylchloride, poly tetra fluoro ethylene, nylon and polyester. Thermosetting plastics – Phenol formaldehyde and epoxide resin. Elastomers - Natural rubber and synthetic rubber - Buna-n,buna-s and neoprene. Conducting polymers - Elementary ideas – Examples - Poly sulphurnitriles, polyphenylene, poly pyrrole and poly acetylene.

UNIT-V INTRODUCTION TO POLYMER PROCESSING 10 Hours

Compounding-Polymer additives- Fillers, plasticizers antioxidants and thermal stabilizers fire retardants and colorants. Processing techniques - Calendaring, die casting, compression moulding, injection moulding, blow moulding, extrusion moulding and reinforcing.

Text Book:

- Gowariker, V.R. (1995).*Polymer Science*. Wiley Eastern.

Reference Books:

- Misra, G.S.(1996).*Introductory Polymer Chemistry.* New Age International (Pvt)Ltd.
- Kumar,A.&Guptha.S.K.(1978).*FundamentalsandPolymerScience&Engineering*.TataMc Graw-Hill.
- Billmeyer, F.N.(1971).*Text book of Polymer Science.* Wiley Inter science.

COURSE OUTCOMES:

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Define the polymers, die casting and calendaring process	K1, K2
CO-2	Understand the thermal degradation and the molecular mass of polymers, Mn and Mw	K3
CO-3	Apply the processing techniques for compression moulding and blow moulding	K4
CO-4	Criticize the natural, synthetic rubber and the mechanism of chain growth polymerization.	K5
CO-5	Create a method to prepare the raw materials for industrial polymers	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	3	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation: 96.6 %
Low Correlation : 3.4%

MEDICINAL CHEMISTRY

UCHO603

Semester : VI **Credits : 4**
Category : Major Elective **Hours/Week :4**
Class & Major : III-B.Sc., Chemistry **Total Hours :52**

Course Objectives:

CO No.	To enable the students
CO-1	Understand the importance of medicinal chemistry
CO-2	List the drug action and physiochemical properties and antipyretics
CO-3	Analyse the action on narcotics, non-narcotics and the chemical uses
CO-4	Synthesis of drugs and chemical uses the antibiotics
CO-5	Develop the Indian medicinal plants and traditional practices

UNIT-I INTRODUCTION **11 Hours**

Important terminology used in medicinal chemistry - Mechanism of action of drugs - Metabolism of drug. Naming of drugs - Assay in general. Drug and their mode of action - Causes of common disease and their treatment by drugs – Encapsulation. Indian medicinal plants - Traditional practice. Testing of potential drugs using experimental animals – Clinical trial and widespread use after the approval– Side effects.

UNIT-II ANTIBIOTIC **11 Hours**

Synthesis, assay and uses of chloramphenicol, streptomycin and penicillin. Structural features – SAR – Functional group responsible for drug action – Structural modification that enhance and retard the potency (for the above drugs). Action of drug - Drug action and physiochemical properties, hydrophobicity, electronic effect, steric effect.

UNIT-III ANTIPYRETICS AND ANALGESICS **10 Hours**

Classification-Action of analgesics-Narcotics analgesics–Morphine and its derivatives with reference to SAR - Synthetic analgesics – Pethidine's and methadone's. -Antipyretic analgesics – Salicylic acid derivate, indolyl derivatives and p-amino phenol derivatives– Mechanism of action.

UNIT-IV NARCOTICS AND NON NARCOTICS **10 Hours**

Tranquilizers-Sedatives-Psychedelic drugs (LSD), Antineo plastic and hypoglycemic drugs – Diabetics - Cause and control - Organic pharmaceutical aids and their role as preservatives, antioxidants, colouring, flavouring and sweetening agents, emulsifying agents-Stabilizing and suspending agents– Ointment bases.

UNIT-V SYNTHESIS OF DRUGS AND CHEMICALUSES **10 Hours**

Procaine hydrochloride, meprobamate, oxy-phenbutazone, hydralazine hydrochloride,

methyl dopa, propranolol hydrochloride, iso propamide iodide, chloropheniramine maleate, indomethacin and ibuprofen.

Text books

- Sudha,P.N.(1998).*Applied Chemistry*.SupraAssociates Vellore.
- JayashreeGhosh.(1999).*Fundamental Concepts of Applied Chemistry*.S.ChandPublications.

Reference books

- Billmeyer,F.(2002).*Textbook of Polymer Science*.NewAgeinternational

COURSE OUTCOMES:

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Naming the drugs and outline the medicinal chemistry	K1, K2
CO-2	Summarize the antibiotics, antipyretics, and analgesics properties	K3
CO-3	Classify the analgesics morphines and action of drugs	K4
CO-4	Estimate the procaine hydrochloride, indolyl derivatives and p-amino phenol derivatives	K5
CO-5	Determine the hydrophobicity, electronic effect, steric effects of antibiotics	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	1	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	2	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	1	3	3	3

High Correlation: 90%
Moderate Correlation: 3.4%
Low Correlation : 6.6%

FORENSIC CHEMISTRY

UCHO604

Semester : VI **Credit : 4**
Category : Major Elective **Hours/Week: 4**
Class&Major : III-B.Sc., Chemistry **Total Hours: 52**

Course Objectives:

CO No.	To enable the students

CO-1	Identify the crime detection and counter feiting
CO-2	Relate to accidental explosions during manufacture of matches and fire-works.
CO-3	Inspect the detecting gold plated jewels and silver line water mark in currency notes.
CO-4	Detecting steroid consumption among athletes and race horses.
CO-5	Developing the medical aspect of Detecting steroid consumption among athletes and race horses

UNIT-I FOOD ADULTRATION **11 Hours**

Contamination of wheat, rice, dhal, milk, butter - With clay, sand, stone, water and toxic chemicals (e.g. kasseri dhal with mentanil yellow). Food poisons - Natural poisons (alkaloids, nephrotoxins), pesticides (DDT, BHC, follidol), chemical poisons (KCN). First aid and antidotes for poisoned persons. Heavy metal (Hg, Pb, Cd) contamination of sea food. Use of neutron activation analysis in detecting poisoning (e.g., as in human hair).

UNIT–II TRANSPORTATION **10 Hours**

Drunken driving - Breath analyzer for ethanol. Incendiary and timed bombs in roadandrailwaytracks.Defusinglivebombs.Hitandgotrafficaccidents-PaintanalysisbyAAS.Soil of toxic and corrosive chemicals (e.g., conc. acids) from tankers.

UNIT-III CRIME DETECTION **11 Hours**

Accidental explosions during manufacture of matches and fire-works (as in sivakasi).Human bombs, possible explosives (gelatin sticks, rdx). Metal detector devices and other security measures for VVIP. Composition of bullets and detection of powder burns. Scene of crime: finger prints and their matching using computer records. Smell tracks and police dogs. Analysis of blood and other body fluids in rape cases. Typing of blood dna fingerprinting for tissue identification in dismembered bodies. Blood stains on clothing. Cranial analysis (head and teeth).

UNIT-IV FORGERYANDCOUNTER FEITING **10 Hours**

Detecting forgery in bank cheques/drafts and educational records (mark lists, certificates), using UV-light. Alloy analysis using AAS to detect counterfeit coins. Checking silver line water mark in currency notes. Jewelers- detection of gold purity in 22 carat ornaments, detecting gold plated jewels, and authenticity of diamonds (natural, synthetic, glassy).

UNIT-V MEDICALASPECTS **10 Hours**

Misuse of scheduled drugs. Burns and their treatment by plastic surgery. Metabolite analysis, using mass spectrum – Gas chromatography. Detecting steroid consumption among athletes and racehorses.

Text Books

- Richard Safestein. and Criminalistics. (2014).*An Introduction to Forensic Science (CollegeVersion).*Pearson Pentice Hall.
- James, S. H. and Jon J Noard. (2009).*Forensic Science: An Introduction to ScientificandInvestigativeTechniques.* CRC Press.

Reference Books

- Ngaire E. Genge.(2008).*The Forensic Casebook.The Science of Crime SceneInvestigation.* EburyDigital.

COURSE OUTCOMES:

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Identify the contaminations of food, and detecting forgery in bank cheques	K1, K2
CO-2	Summarize the blood DNA finger printing for tissue identification	K3
CO-3	Examine the drunken driving in the transportation and use of neutron activation analysis	K4
CO-4	Specify the blood stains on clothing in crime detection	K5
CO-5	Design the detecting poisoning and matching using computer records	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation: 100%

ORGANIC ANALYSIS AND PREPARATION
UCHR606

Semester :VI **Credit : 4**
Category :Core Practical–V **Hours/Week: 4**
Class &Major :III-B.Sc., Chemistry **Total Hours: 52**

Course Objectives

CO No.	To enable the students
CO-1	Recall the basic concept of qualitative analysis and preparation of organic compound.

CO-2	Interpret the oxidation, nitration and acylation reaction of organic preparations.
CO-3	Examine the carbonyl, acid, ester, amid and nitro compound function group.
CO-4	Analyze the special element and functional group present in the given organic compound.
CO-5	Acquire skill to prepare the organic compound.

I) Organic preparations:

- Oxidation (Benzaldeyde to benzoic acid).
- Hydrolysis (Methyl salicylate or Ethyl benzoate to the acid).
- Nitration (meta-Dinitrobenzene or picric acid).
- Halogenation (para-Bromo acetanilide from acetanilide).
- Diazotisation (Methyl orange).
- Acylation (Benzoylation of beta naphthol).

II) Micro level organic analysis:

Reaction of the following functional groups:

Aldehyde, Ketone, Carboxylic Acid (Mono and Di), Ester, Carbohydrate (Reducing), Phenol, Aromatic primary amine, Amide, Nitro compounds and anilide. Analysis of organic compound containing one functional group and characterization with a derivative.

Text Books

- Venkateswaran. V, Veeraswamy. R. & Kulandaivelu, A. R. (1998*).Basic Principles of Practical Chemistry.* S. Chand &Sons Publications.

Reference Books

- Thomas,A.O.(1999). *Practical Chemistry.* Scientific Book Center. Cannanore.
- Sundaram,S.(1998). *Practical Chemistry.*(3rdVol).
- Vogel's.(1998)*Text Book of Practical Organic Chemistry.* Longma

Course Outcome

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understanding of the basic principles of qualitative organic analysis	K1, K2
CO-2	Classify the organic preparation	K2
CO-3	Identify the Special element and functional group in organic compound	K3
CO-4	Analyze the various experimental method	K4
CO-5	Create the new method to preparation of organic compound	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	3	3	0	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	0	3
CO 4	3	3	3	3	2	3
CO 5	3	3	3	3	3	3

High Correlation : 86.7%
Moderate Correlation: 6.7%
Low Correlation : 6.6%

III AND IV EVALUATIONCOMPONENTOFCIA

Semester	Course Code	Course Title	Component-III	Component-IV
VI	UCHM614	Inorganic Chemistry III	Poster	Seminar
VI	UCHM615	Organic Chemistry III	Mechanism Writing	Seminar
VI	UCHM616	Physical Chemistry III	Assignment	Group discussions
VI	UCHM617	Advanced Material Chemistry	Assignment	Group discussions
VI	UCHO602 UCHO603 UCHO604 UCHO605	Polymer Chemistry Medicinal Chemistry Forensic Chemistry Dyes and Textile Fiber	Assignment	Seminar

PG AND RESEARCH DEPARTMENT OF BIOCHEMISTRY

PREAMBLE

UG: Course Profile & the Syllabi of Courses Offered in the Sixth Semester along with III & IV Evaluation Components (with Effect from 2021– 2024 Batch onwards).

PROGRAMME PROFILE OF B.Sc., BIOCHEMISTRY

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	Upon completion of these courses the students would be able to
PSO-1	Understand fundamental principles and concepts of biochemistry, including the structure and function of biomolecules present in living cells.
PSO-2	Acquire proficiency in laboratory techniques commonly used in biochemistry, including cell biology, chromatography, spectroscopy, biochemical analysis etc.,
PSO-3	Inculcate the basic concepts of Biochemistry, fundamental biochemical Principles and their applications in a systematic, methodological and scientific, evidence-based process.
PSO-4	Relate the applications of biochemistry in biotechnology and pharmaceutical industries, including the development of new drugs and biotechnological processes in securing a successful career and pursue higher studies.
PSO-5	Communicate scientific ideas and findings effectively through written reports, oral presentations, and other forms of scientific communication.
PSO-6	Develop problem solving and analytical skills through case studies, research projects, experimentation, internship, experiential learning and hands-on-experience.

PROGRAMME PROFILE B.Sc. (BIOCHEMISTRY)

Semester	Part	Category	Course Code	Course Title	Previous course code	Hours per week	Credit Min / Max
I	I	Language/ AECC-II / Tamil (2 Levels) Hindi / French	UTAL107/ UTAL108/ UHIL102/ UFRL102	Basic Tamil I/ Advanced Tamil I/ Hindi I /French I	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3/4
	II	Communicative English I / AECC-I (2 Levels)	UCEL101/ UCEL102	Communicative English I/ Effective Communicative English I	--	5	3/4
	III	Major Core I / DSC - I	UBCM108	Basics of Biochemistry	UBCM106	3	2
		Major Core II / DSC - II	UBCM107	Cellular Biology	UBCM105	6	6
		Core Practical I	UBCR103	Cellular Biology Practical	UBCR102	3	3
		Allied I / GE I	UCHA102	Allied Chemistry	UCHA101	3	2
		Allied Practical	UCHR103 / UCHR403	Allied Chemistry Practical	--	3	2
		PE - I	UPEM101	Professional English I	--	6	4
	IV	Value Education / SEC			--	2	1
					TOTAL	**36**	**26/28**
II	I	Language/ AECC-II / Tamil (2 Levels) Hindi / French	UTAL207 / UTAL208 / UHIL202 / UFRL202	Basic Tamil II/ Advanced Tamil II/ Hindi II/ French II	UTAL205/ UTAL206/ UHIL201/ UFRL201	5	3/4
	II	Communicative English / AECC-II (2 Levels)	UCEL201 / UCEL202	Communicative English II/ Effective Communicative English II	--	5	3/4
	III	Major Core III/DSC - III	UBCM203	Biomolecules	UBCM202	6	6
		Core practical II	UBCR202	Qualitative analysis of Biomolecules Practical	--	5	5
		Allied II/ GE -II	UMBA202	Microbiology	UMBA201	3	2
		Allied II practical	UMBR202	Microbiology Practical	UMBR201	3	2
		PE - II	UPEM201	Professional English II	--	6	4
		Internship	UBCI201	Internship / Field Work / Field Project	-	-	- / 1
	IV	Non Major elective /SEC	--	--	--	3	2
	V	Extension activity/ Physical Education/NCC	--	--	--	-	1/2
					TOTAL	**36**	**28/32**
III	I	Language/ AECC-II / Tamil	UTAL307/ UTAL308/	Basic Tamil III/ Advanced Tamil III/ Hindi III/ French III	UTAL305/ UTAL306/	5	3/4

		(2 Levels) Hindi / French	UHIL302/ UFRL302		UHIL301/ UFRL301		
	II	Communicative English / AECC-I (2 Levels)	UENL309/ UENL310	General English I / Advanced English I	UENL307/ UENL308	5	3/4
	III	Major Core IV / DSC - IV	UBCM305	Biochemical Techniques	UBCM304	6	6
		Core Practical III	UBCR302	Biochemical Techniques practical I	UBCR301	3	3
		Allied III/ GE -III	UMAA305	Biostatistics	UMAA405	6	4
	IV	Online Course		NPTEL/Spoken Tutorial		3	1/2
		Value Education/ SEC				2	1
					TOTAL	**30**	**21/24**
IV	I	Language/ AECC-II / Tamil (2 Levels) Hindi / French	UTAL407/ UTAL408/ UHIL402/ UFRL402	Basic Tamil IV/ Advanced Tamil IV/ Hindi IV/ French IV	UTAL405/ UTAL406/ UHIL401/ UFRL401	5	3/4
	II	English / AECC-I (2 Levels)	UENL409/ UENL410	General English II / Advanced English II	UENL407/ UENL408	5	3/4
	III	Major Core V / DSC - V	UBCM404	Immunology	UBCO603/ UBCM403	5	4
		Major Core VI / DSC - VI	UIDM402	Pharmaceutical Chemistry	UIDM401	4	4
		Allied IV/ GE -IV	UBIA401	Basics of Bioinformatics	UBCM506	3	2
		Core practical IV	UBCR402	Biochemical Techniques Practical II	UBCR401	3	3
		Internship	UBCI401	Internship / Field Work / Field Project	-	-	- / 1
	IV	Non Major Elective			--	3	2
		Soft Skill/ SEC			--	2	1
	V	Extension Activity/ Physical Education/NCC			--	-	- /2
					TOTAL	**30**	**22/27**
V	III	Major Core VII /DSC - VII	UBCM507	Enzymology	--	5	5
		Major Core VIII/DSC - VIII	UBCM508	Intermediary metabolism	UBCM504	5	5
		Major Core IX / DSC - IX	UBCM505	Human Physiology	UBCM502	5	5
		Major Elective - I / DSE - I	UBCO501	Nutritional Biochemistry	--	5	4
			UBCO502	Stem cell Biology	UBCO604		
		Core practical V	UBCR501	Enzymology Practical	UBCM501	4	3
		Major Core X / DSC - X	UBCP501	Project	UBCP601	4	4
		Value Education/ SEC				2	1
					TOTAL	**30**	**27**
VI	III	Major Core XI / DSC - XI	**UBCM605**	**Introduction to Biotechnology**	**UBCM601**	**5**	**5**
		Major Core XII / DSC - XII	**UBCM606**	**Clinical Biochemistry**	**UBCM602**	**5**	**4**

		Major Core XIII / DSC - XIII	**UBCM607**	**Molecular Biology**	**UBCM603**	**5**	**4**
		Major Core XIV / DSC - XIV	UBCM604	Comprehensive Viva voce	--	-	1
		Core Practical VI	**UBCR601**	**Clinical Biochemistry practical**	**--**	**5**	**3**
		Core Practical VII	**UBCR602**	**Hematology & Urine analysis**	**--**	**3**	**2**
		Major Elective – II / DSE - II	**UBCO607**	**Molecular Endocrinology**	**UBCO605**	**5**	**4**
			UBCO606	Pathobiology of Human Diseases and Disorders	--		
			UIDM601	Nanotechnology in Medicine	--		
		Internship	UBCI601	Internship / Field Work / Field Project	-	-	- / 1
	IV	Soft Skill/ SEC				2	1
	V	Extension activity/ Physical Education/NCC				-	-/2
TOTAL						**30**	**24/27**
GRAND TOTAL						**192**	**148/166**

INTRODUCTION TO BIOTECHNOLOGY
UBCM605

Semester : VI **Credits : 5**
Category : Core Paper XI **Hours/Week :5**
Class &Major : III B.Sc., Biochemistry **Total Hours :65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Understand how Molecular Tools are used to Modify an Organism.
CO -2	Study the Different Types of Gene Transfer Methods used in DNA Technology.
CO -3	Learn about Plant Tissue Culture and its Application in the Production and Improvement of Agricultural Crops (GMOs).
CO - 4	Learn about Animal Tissue Culture and its Application in the Production Transgenic Animals.
CO -5	Study and Apply the Molecular Biology Techniques for the Analysis of DNA/RNA/Protein.

UNIT –I TOOLS OF GNETIC ENGINEERING 13 Hours

Introduction to Recombinant DNA Technology -Restriction Enzymes, Types, Mechanism of Action, Ligases, Modifying Enzymes - Cloning Vectors: Plasmid, Phagemid, Cosmid, cDNA Library. Cloning Strategies-Screening and Selection of Recombinants-Positive and Negative Stain

UNIT –II METHODS OF GENE TRANSFER 13 Hours

Gene transfer mechanism - Physical, Chemical and Biological Methods. Gene Recombination and Gene transfer: Bacterial Conjugation, Transformation, Transduction, Microinjection, Electroporation, Micro projectile, Shot Gun method, Ultra sonication, Liposome Fusion.

UNIT –III PLANT BIOTECHNOLOGY 13Hours

Plant Tissue Culture – Basic of Plant Tissue Culture, Plant Hormones-Auxins, Cytokininand Gibberellins, Their Role in Development of Plant –Transgenic Plants- Herbicide Resistance, Virus Resistance and Pest Resistance. Genetically Modified Organisms.

UNIT-IVANIMAL BIOTECHNOLOGY 13 Hours

Introduction to Cell Culture, Applications of Cell Culture, Cryopreservation, Culture Environment-Serum and Serum Free Media. Adherent vs Suspension Culture, Cell Culture Laboratory, Cell Culture Equipment, CO_2 Incubator. Bio reactors and its Applications. Transgenic Animals and its Applications

UNIT – V MOLECULAR BIOLOGY TECHNIQUES IN BIOTECHNOLOGY 13 Hours

Principles and Techniques of Nucleic Acid- Hybridization, Northern, Southern and Western Blotting, Polymerase Chain Reaction (PCR)and its Types, DNA Fingerprinting, Molecular Markers- Restriction Fragment Length Polymorphism (RFLP) and Random Amplified Polymorphic DNA (RAPD).

Text Books

- U.Sathyanarayana, 2020. *Biotechnology*,Books and Allied private Ltd.
- R.C.Dubey, S.Chand, 2014. *A text bookof Biotechnology*- Publications.

Reference Books

- T.A Brown, 2006. *Gene Cloning and DNA Analysis*, Blackwell Publishing Co.
- Jack.W.Christian Maryland, 2009.*Biotechnology-Theory and Techniques of Plant Biotechnology,Animal Cell Culture &Immuno biotechnology*,CBS Publishers.
- John E Smith, *Biotechnology*,2009., Cambridge university press, Fifth edition.
- Sambamurthy K, AshoushKar,2022.*Pharmaceutical Biotechnology, Fundamentals and Applications*, New Age International Publishers, Third Edition.
- Srivastava A K, Singh R K, 2018. *Animal Biotechnology*, Oxford and IBH Publishers.
- Primrose,*Biotechnology* Blackwell Publishing house.

E- Resources

- www.springer.com/la/book/9781617799822
- www.freebookcentre.net › Medical Books
- www.indiabiotech.in/Free-e-Books-Journals.html
- nptel.ac.in.
- http://www.thanut-swu.com/images/BOT101/BiotechnologyBook.pdf

COURSE OUTCOMES

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand and recall rDNA technologies, gene transfer mechanisms, plant hormones and transgenic animals in tissue culture, and molecular biology techniques.	K1, K2
CO-2	Identify types of strains used in cloning vectors, various methods for gene transfer, transgenic plants and animals based on different types of	K3

	techniques	
CO-3	Analyze the modifying enzymes, gene transfer mechanism, plant hormone development, cell culture techniques and applications of biological techniques	K4
CO-4	Interpret strategies of cloning vectors, transformation of genes in plant and animals.	K5
CO-5	Combine various gene techniques for transferring plant and animal tissues to create genetically modified organisms through project.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	2	2	2	3	3
CO 3	2	3	2	3	3	3
CO 4	2	2	2	3	3	1
CO 5	2	3	3	3	3	3

High Correlation : 66.7 %
Moderate Correlation : 30%
Low Correlation : 3.3 %

CLINICAL BIOCHEMISTRY
UBCM606

Semester : VI **Credits : 4**
Category : Core Paper XII **Hours/Week : 5**
Class &Major : III B.Sc. Bio Chemistry **Total Hours : 65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Learn about the Basic Principles of Clinical Laboratory with Reference to Specimen Collection, Preservation and Diagnostic Test.
CO -2	Understand the Disorders and Complications Associated with Carbohydrate Metabolism.
CO -3	Understand the Disorders and Complications Associated with Lipid Metabolism.
CO -4	Integrate the Inborn Errors Associated with Amino acid Metabolism.
CO -5	Exposure to the Assessment and Clinical Manifestation of Renal, Liver and Pancreatic Functions.

UNIT-I INTRODUCTION TO CLINICAL BIOCHEMISTRY 13 Hours

Organization of Clinical Laboratory, Introduction to Instrumentation and Automation in Clinical Biochemistry Laboratories, Safety Regulation and First Aid, First Aid Equipments. Biological Specimen Collection – Blood, Urine, CSF and its Preservation. Disposal of Biological Specimen Waste. Reference Ranges for Clinical Laboratory Tests. Eligibility and Personal Skills Required for Clinical Biochemistry.

UNIT-II GLUCOSE HOMEOSTASIS-COMPLICATIONS, DISORDERS 13 Hours

Blood Glucose Homeostasis, Diabetes Mellitus, Hypoglycemia, Metabolic Complications of Diabetes Mellitus, GTT and its Significance, Glycosylated Hb, Glycosuria, Glycogen Storage Diseases, Galactosemia, Fructosuria, Ketoacidosis – Clinical Features and its Diagnosis.

UNIT-III LIPID-DISORDERS 13 Hours

Hypo and Hypolipoproteinemia's, Lipidosis, Fatty Liver, Cirrhosis, Obesity and Cardio Vascular Diseases- Hypertension, Atherosclerosis, Myocardial Infarction, Congestive Heart Failure – Cardiac Biomarkers- Troponin I, T, CKMB.

UNIT -IV INBORN ERRORS OF METABOLISM 13 Hours

Clinical Manifestation of Phenylketonuria, Tyrosinemia, Alkaptonuria, Homocysteineuria, Cysteinuria, Cystinosis, Maple Syrup Urine Disease, Hartnups Disease and Gout.

UNIT-V DIAGNOSTIC METHODS 13 Hours

Assessment and Clinical Manifestation of Renal, Hepatic, Pancreatic Functions, Renal Function Test - Clearance Test, Urea, Creatinine Clearance Test, PAH Test.Liver Function Test-Test based on Excretory Functions of Liver. Prothrombin Time. BSP Retention Test, Rose Bengal Dye Test. Water and Electrolyte Balance and Imbalance. Jaundice and its Types.

Text Books

- AmbikaShanmugam, 2016.*Fundamentals of Biochemistry for Medical Students*, LWW India publishinghouse.
- Vasudevan, 2022.*Text book of Medical Biochemistry*,Jaypee Brothers Medical Publishers (P) Ltd,TenthEdition.

Reference Books

- Harold Varley, 2022.*Practical Clinical Biochemistry*, CBS Publishers, New Delhi, Sixth Edition
- N. V. Bhagavan, 2004.*Medical Biochemistry*, Fourth edition, Academic Press.
- Victor W Rodwell, David A Benda, Kathean M, Botham, 2015.*Harpers illustrated Biochemistry*, MC Graw Hill Education, ThirtiethEdition.
- Subodh, R, Saxena, 2014.*Medical Biochemistry*, Black Printers, New Delhi,
- Shaun C A Anderson, Suncokayne S A, 2015.*Clinical Chemistry Concepts and Applications*, CBS Publishers New Delhi.

E - Resources

- https://www.elsevier.com/books/clinical-biochemistry/murphy/978-0-7020-7298-7
- https://bookboon.com/en/introduction-to-clinical-biochemistry-ebook
- https://www.kobo.com/us/en/ebook/clinical-biochemistry-e-book-1

- http://web.mef.hr/web/images/pdf/i_clin_bioch.pdf
- https://www.worldscientific.com/worldscibooks/10.1142/7126

COURSE OUTCOMES:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the importance of clinical laboratory, metabolic complications of carbohydrate, amino acid, lipids and various diagnostic methods	K1, K2
CO-2	Identify the uses of clinical laboratory instruments, and complications arise during carbohydrate, lipid and amino acid metabolism	K3
CO-3	Analyze various biological specimen glucose, lipid and amino acid metabolic disorders	K4
CO-4	Explain safety regulations first aid, disposal of various biological specimen used in clinical laboratory and complication of biomolecule metabolic disorder and clinical manifestation renal hepatic and pancreatic functions.	K5
CO-5	Develop the eligibility skills for clinical biochemistry and predict clinical features of various metabolic disorders and assess renal hepatic and pancreatic functions test.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**2**	**2**	**1**	**1**	**1**
CO 2	**3**	**3**	**2**	**2**	**2**	**3**
CO 3	**3**	**3**	**3**	**3**	**3**	**3**
CO 4	**3**	**3**	**3**	**2**	**2**	**2**
CO 5	**3**	**3**	**3**	**3**	**3**	**3**

High Correlation : 63%
Moderate Correlation : 27 %
Low Correlation : 10 %

MOLECULAR BIOLOGY
UBCM607

Semester : VI **Credit : 5**
Category : Core paper-XIII **Hours/week : 5**
Class & Major : III B.Sc Bio Chemistry **Total hours : 65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Study the Discovery of DNA as Genetic Material, DNA Replication in Prokaryotes and DNA Repair Mechanism.
CO -2	Understand the Concept Behind Central Dogma, DNA Transcription, Reverse Transcription and DNA Processing.
CO -3	Learn about Mechanism and Regulation of Translation in Prokaryotes along with Post Translational Modification.
CO -4	Acquire Working Knowledge of Gene Modification & how Gene Expressions are Controlled.
CO -5	Exposure to the Concepts of Gene and Chromosomal Mutation and its Importance.

UNIT-I INTRODUCTION 13 Hours

History of Molecular Biology-Central Dogma of Molecular Biology, Discovery of DNA - Experimental Evidence to Prove DNA as a Carrier of Genetic Material-Bacterial Transformation, Transduction and Conjugation. Replication - Semi Conservative Mode of Replication- Meselson and Stahl Experiment. DNA Replication in Prokaryotes -Types. DNA Repair Mechanism

UNIT-II TRANSCRIPTION 13 Hours

Transcription in Prokaryotes, DNA Dependent RNA Polymerases(Promotor- TATA Box-35 Sequence),Mechanism-, Various Sites of Transcription, Rho Dependent and Independent Termination. Post Transcriptional Modificationin Eukaryotes-mRNA, rRNA and tRNA Processing. RNA Splicing, Editing. Inhibitors of Transcription, Eukaryotic RNA Polymerases. Reverse Transcription.

UNIT-III GENETIC CODE AND TRANSLATION 13 Hours

Genetic Code-Definition, Deciphering of the Genetic Code, Codon Dictionary, Salient Features, Experimental Evidences, Wobble Hypothesis. Translation in Prokaryotes -Initiation, Elongation, Translocation, Termination, Post Translational Modification. Protein Targeting.

UNIT-IV OPERON 13 Hours

Operon Model - Lac Operon Positive and Negative Control, Role ofcAMP, Repression and Attenuation- Trp Operon Mechanism, Recombination. Gene Amplification.

UNIT-V GENE AND CHROMOSOME MUTATION 13 Hours

Mutation-Base Pair Substitution, Frame Shift Mutation, Missense Mutation, Nonsense Mutation, Mutation in Termination Codons, Silent Mutation. Chromosome Mutation.

Text books

- David L.Nelson, MichaelM.Cox ,*Lehninger -Principles of Biochemistry* Fourth edition, W.H.Freeman and Company, Newyork.2005,
- David Freifelder,"*Molecular cell Biology*", Narosa publishing house NewDelhi.2004.

Reference Books

- G.Karp.Willey International edition (9th edition), Cell and Molecular Biology". 2019.
- Harvey Lodish, David Baltimore, Adrenoldberk, S.LawrenceZipursky, Paul Matsudaira, James darnell,"Molecular Cell Biology", W.H.Freeman& Company, New York 2001.

- R.M.Twyman., Advanced Molecular cell Biology, W.WisdenVivabooks private Ltd. New Delhi 2001.

E- Resources

- http://www.freebookcentre.net/Biology/Molecular-Biology-Books.html
- https://www.amazon.in/Molecular-Biology-N-Vidyavathi-ebook/dp/B078KWF9BN
- https://pothi.com/pothi/book/ebook-kaushlendratripathi-introduction-molecular-biology
- https://www.worldcat.org/title/molecular-biology/oclc/1062496183
- https://www.us.elsevierhealth.com/medicine/molecular-biology

COURSE OUTCOMES

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Define genetic code and explain the mechanism of protein synthesis and protein processing.	K1, K2
CO-2	Describe the principles of gene expression, mechanism of transcription and post translational modification.	K2
CO-3	Illustrate and apply the concepts of DNA Replication & DNA repairs.	K3
CO-4	Analyze coding and non coding regions in prokaryotes and explain the types of mutation, relationship between the mutation and genetic disorders.	K4
CO-5	Evaluate and discuss the steps involved in regulation of gene expression for a given illustration.	K5

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	1	3
CO 2	3	3	2	2	2	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	2	3

High Correlation : 77 %
Moderate Correlation : 20 %
Low Correlation : 3 %

CLINICAL BIOCHEMISTRY-PRACTICAL
UBCR601

Semester : VI **Credit: 3**
Category : Core Practical-IV **Hours/Week : 5**
Class &Major : III B.Sc. Bio Chemistry **Total Hours : 65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Learn about the Diagnostic Methods for Analyzing the Biological Components in Urine and Serum.
CO -2	Understand the Concept of Biochemical Analyzing Instruments, Chemicals and Normal Ranges of Biochemical Components in Our Body.
CO -3	Demonstrate the Collection of Blood Sample. List the Conditions Essential for Collection of Urine and Other Clinical Samples
CO -4	Understand Good Clinical Practice of Diagnostic Biochemical Tests.
CO -5	Develop Competence and Confidence associated with Diagnostic and Interpreting Skills.

Colorimetric Estimations:

1. Estimation of Blood Glucose by
   a) GOD/POD Method.
   b) Ortho Toluidine Method
2. Estimation of cholesterol by
   a) Zak's Method
   b) GOD/POD Method.
3. Estimation of creatinine by Jeff's Method.
4. Estimation of Urea by Diacetyl monoxime Method.
5. Estimation of DNA by Diphenylamine Method
6. Estimation of RNA by Orcinol Method
7. Estimation of Bilirubin by Malley Evelyn Method.
8. Estimation of Protein and Determination ofA/G ratio by Biuret Method/ Lowry's Method.
9. Estimation of Inorganic Phosphorous by Fiske and Subbarrow Method.

Text Books

- Chatterjea, Rana Shinde, 2018. *Textbook of Medical Biochemistry*, Jaypee publication.
- Harold Varley,2022.*PracticalClinical Biochemistry*, CBS Publication, Sixth Edition.

Reference Books

- Chawla, Ranjna, 2014. *Practical Clinical Biochemistry*. Jaypee Publisher,Third edition.
- Saini, A.S. 2015.*Clinical Biochemistry in Diagnosis & Management*. B. S Publishers. First edition,
- Shirish M. Kawthalkar, 2015. *Essentials of Clinical Pathology*, Paperback, Second Edition

E- Resources

- https://books.google.co.in/books/about/Fundamentals_of_Practical_Clinical_Bioch.html d=oqrOT5xnbekC&redir_esc=y
- https://in.pinterest.com/pin/746049494494648558/
- http://clinicalbiochemistryupdates.blogspot.com/2010/01/biochemistry-ebook-links-free-download.html

- https://books.google.co.in/books/about/Practical_Clinical_Biochemistry.html?id=HP2YAwAAQBAJ&redir_esc=y
- https://www.amazon.in/Basic-Concepts-Clinical-Biochemistry-Practical-ebook/dp/B07BTJ12SR

COURSE OUTCOMES

CO No.	On completion of the course the student will be able to	Bloom's Level
CO -1	Choose Commonly used Laboratory Apparatus, Equipment, and Identify Good Safe Laboratory Practice.	K1,K2
CO -2	Apply the Concentration of Normal and Abnormal Constituents of Blood using Suitable Colorimetric Method	K3
CO -3	Analyze and Interpret Investigative Data.	K4
CO -4	Evaluate the Clinical Findings Under Given Set of Parameters for the Assessment of Nature of Disease.	K5
CO -5	Explain the Significance of their Variations and their Role in Diagnosing Diseases.	K5

HEMATOLOGY AND URINE ANALYSIS
UBCR602

Semester : VI **Credit : 3**
Category : Core Practical - VII **Hours/Week : 3**
Class & Major : III B.Sc. Biochemistry **Total Hours : 39**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Acquire Practical Training in the Hematology Field.
CO -2	Identify and Enumerate the Total Count of Erythrocytes and Leukocytes Differentiate Leukocytes and Calculate their Total Count
CO -3	Learn About the Normal and Abnormal Constituents of Urine and their Significance in Good Health.
CO -4	Apply the Different Test and Procedures Related to Urine Analysis and Hematology.
CO -5	Enhance the Student's Ability to Expose to Differential Diagnosis Based on Examination and Arriving for Values to Interrupt the Results.

1. Hematology

- RBC Count.
- Total and Differential WBC count.
- PCV.
- ESR.
- Hemoglobin.
- Absolute Eosinophil Count.

2. Urine Analysis

I. Qualitative Analysis of Normal and Abnormal Constituents of Urine (Glucose, Protein, Aminoacids, Ketone Bodies, Bile Salts, Bile Pigments, Bence Jones Protein, Hematuria).
II. Quantitative Estimations in Urine
    - Glucose by Benedict's method.
    - Urea by Diacetylmonoxime Method.
    - Creatinine by Modified Jaff's Method.

Text Books

- Varley, 2022. *Practical Biochemistry*, CBS Publishers, SixthEdition.
- S. K Sawhney, Randhir Singh,*2011*. *Introductory practical Biochemistry*,Narosa Publishing House.

Reference Books

- G Rajagopal, B D Toora, 2020.*Practical Biochemistry for medical, Dental and Allied Course*,FouthEdition, Ahuja Publishing House.
- Kanai L Mukherjee, 2004.*Medical Labaratory Technology*, Tata Mc GRAW- Hill Publishing Company Limited, fifteenth Edition.
- David T Plummer, 1999.*An Introduction to Practical Biochemistry*, Tata Mc GRAW- Hill Publishing Company Limited, Fifteenth Edition.

E- Resources

- https://www.researchgate.net/publication/284722237_Laboratory_Manual_and_Review_on_Clinical_Pathology.
- https://www.academia.edu/36985667/Dacie_and_Lewis_Practical_Haematology
- http://vetbooks.ir/laboratory-urinalysis-and-hematology-for-the-small-animal-practitioner/
- http://uploads.worldlibrary.net/uploads/pdf/20150424022016laboratory_feb14.pdf
- http://medsoulsmedicine.com/clinical-pathology-hematology-and-blood-banking-for-dmlt-students-3e-true-pdf/

COURSE OUTCOMES

CO No.	On completion of the course the student will be able to	Bloom's Level
CO -1	Find & Interpret the RBC and WBC Count Using Suitable Method in Accordance to Normal Values.	K1,K2
CO -2	Identify the Amount of Hemoglobin, CV and ESR Present in the Given Blood Sample.	K3
CO -3	Analyze the Normal and Abnormal Constituents of Urine.	K4
CO -4	Evaluate Laboratory Values from Routine Blood and Urine Examination to Identify the Pathogenic State.	K5
CO -5	Explain & Acquire Competent Skills in the Performance of Routine Biochemistry Laboratory Testing.	K5

MOLECULAR ENDOCRINOLOGY
UBCO607

Semester : VI **Credit : 4**
Category : Major Elective **Hours/week : 5**
Class &Major : III B.Sc. Biochemistry **Total hours: 65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Acquire and Understand the hormonal influence in human physiology.
CO -2	Learn about Hormones Secreted by Pituitary Gland and its Functions, Regulation and Disorders.
CO -3	Learn about Hormones Secreted by Thyroid Gland and its Functions, Regulation and Disorders.
CO - 4	Learn about Hormones Secreted by Pancreatic Gland and its Functions, Regulation and Disorders.
CO -5	Learn about Hormones Secreted by Adrenal and Gonadal Gland and its Functions, Regulation and Disorders.

UNIT-I INTRODUCTION **13 Hours**

Hormones- Definition, Classification, Steroid Hormones, Peptide Hormones, Characteristic Features, Mechanism of Steroid and Peptide Hormones. Hormones Receptors- Features and Structure, Regulation at Receptor Levels.

UNIT-II PITUTUARY HORMONES **13 Hours**

Secretion, Biological Action, and Regulation of Growth Hormone. Adreno Corticotropic Hormone, Prolactin, Gonadotropic Hormone, Follicle Stimulating Hormone. Leutinizing Hormone, Antidiuretic Hormone and Oxytocin. Hyper and Hypopituitarism Disorders- Dwarfism, Gigantism, Acromegaly, Cushing's disease and Diabetes Insipidus.

UNIT-III THYROID HORMONES **13 Hours**

Biosynthesis, secretion, transport, regulation and Biological action of thyroid stimulating hormones. Thyroxine. Disorders: Hyperthyroidism & Hypothyroidism disorders- Cretinism, Myxoedema and Hashimoto's diseases, Graves's diseases, Exophthalmos, Toxic goiter and Non-toxic Goiter.

UNIT-IV PANCREATIC HORMONES **13 Hours**

Biosynthesis, Regulation, Biological Action of Insulin, Glucagon, Insulin Growth Factor, Disorders- Diabetes Mellitus –Type I and II (Elementary Metals),Hypoglycemia.

UNIT-V ADRENAL ANDGONADAL HORMONES **13 Hours**

Glucocorticoids and Mineralocorticoids- Biosynthesis, Secretion, Transport, Biological Effects and Excretion. Gonadal Hormones-Biological Action of Androgens and Estrogens.

Text Books

- Lohar, S.Prakasa, 2021. *Endocrinology- Hormones &Human Health,* MJP Publishers.
- Devlin, Thomas, M. 2010. *Textbook of Biochemistry (with Clinical Correlation),* John Wiley &Son's Publishers, Seventh Edition.

Reference Books

- Austin and Short, 2019. *Mechanism of Hormone Action*. Prema Jaypee Brothers.
- Robert, K. Murray *et al* Appleton and Lange Stanford. 2009. Connecticut, *Harper's Biochemistry,* 28thEdition.

E- Resources

- https://www.elsevier.com/books/molecular-endocrinology/bolander/978-0-12-111232-5
- https://www.amazon.in/Molecular-Endocrinology-Franklyn-Bolander-ebook/dp/B01D4CI1AQ
- https://www.amazon.in/Molecular-Endocrinology-Human-Genetics-ebook/dp/B01E3EUF8U
- https://www.kobo.com/us/en/ebook/molecular-endocrinology-1
- https://www.ebooks.com/en-ao/297039/molecular-endocrinology/franklyn-f-bolander/

COURSE OUTCOMES

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the Human physiology related to Endocrinology – Mechanism of action of different hormones – Peptide hormones and steroids, Genetic control of hormonogenesis	K1, K2
CO-2	Identify, how Pituitary hormones are Synthesized, Secreted, Regulated and Provoke the Biological Effects with its Disorders	K3
CO-3	Analyze the molecular genetics related to endocrine system	K4
CO-4	Explain about the disorders affecting the metabolism of carbohydrate and lipids.	K5
CO-5	Evaluate the current research on hormone replacement therapy and its impact on post menopausal women's health.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	2	2	3	3
CO 2	3	2	2	2	2	1
CO 3	3	1	1	1	2	2
CO 4	3	1	1	1	1	1
CO 5	3	2	2	3	3	3

High Correlation : 33.3 %
Moderate Correlation : 33 .3%
Low Correlation : 33 .3%

PATHOBIOLOGY OF HUMAN DISEASES AND DISORDERS
UBCO606

Semester : VI **Credits :4**
Category : Major Elective **Hours/Week :5**
Class &Major : IIIB.Sc Biochemistry **Total Hours :65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Understand Pre-Clinical and Clinical Education in Pathobiology
CO -2	Categorize the Contemporary in Health Issues.
CO -3	Compare Normal and Abnormal Cells in Humans that Generates New Knowledge in Pathology
CO - 4	Understanding of Factors that Contribute to the Occurrence of Various Diseases and how those Diseases May be Treated by Clinical Professionals.
CO -5	Recognize the Signs and Symptoms of Diseases that may be Found in a Health Record.

UNIT –I DIGESTIVE TRACT DISORDERS 13 Hours

Diseases Related to Digestive Tract - Inflammatory Bowel Syndrome, Electrolyte Disorder, Liver Cirrhosis, Food Poisoning, GI Tract Cancers, Peptic Ulcer -H.Pylori Infection.

UNIT- II HAEMODYNAMIC DISORDERS AND CLINICAL PATHOLOGY 13 Hours

Mechanism of Blood Coagulation, Intrinsic and Extrinsic Pathways of Blood Clotting, List the Blood Clotting Factors, Fibrinolytic System, Importance of Coagulation. Blood Coagulation Profile Determination, Examination of Bone Marrow and it Uses

UNIT- IIICELL INJURY AND PARASITIC INFECTIONS 13 Hours

Normal and AbnormalCell, Cell Injury- Types of Cell Injury, Etiology of Cell Injury, Morphology of Cell Injury, Cellular Swelling. Diagnosis of Blood Parasites Like Malarial, Filariasis, Viruses Like Hepatitis Virus, Vibrio Cholera.

UNIT- IV INFLAMMATION 13 Hours

Inflammatory Markers - C Reactive Protein, Estimation OFC- Reactive Protein, Rheumatoid Arthritis, Rheumatoid Fever, Tuberculosis and Neoplasia.

UNIT- V DISEASES DUE TO MISFOLDED PROTEINS 13 Hours

Introduction to Protein Folding and Proteosome, Removal of Misfolded Proteins; Etiology and Molecular Basis For Alzheimer’s, Prion Diseases, Huntington's Chorea, Sickle Cell Anemia and Thalassemia.

Text Books

- P. Chakraborty Gargi Chakraborty(2005), *Practical Pathology*, New Central Book Agency, Kolkotta.
- Praful B. Godkar(2014), *Text Book of Medical Laboratory Technology*, Bhalani publishing house.

Reference Books

- Sir John Dacie (2011), *Practical Haematology*, Churchill Livingstone,London, 5th Edition.
- Todd & Sanford (2009), *Clinical Diagnosis & Management by Laboratory Methods* John Bernard Henry All India travellar Booksellar, Delhi.
- Harsh Mohan(2010), *Text Book of Pathology*, 6th edition, Jaypee Brothers.

COURSE OUTCOMES

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Recall and understand the major causative factors of diseases and disorders.	K1, K2
CO-2	Differentiate and summarize the commonly occurring diseases based on the pathological condition.	K3
CO-3	Relate the abnormalities with normal physiologic functions of all body systems.	K4
CO-4	Analyze the etiology, signs, and symptoms of diseases of all body systems.	K5
CO-5	Correlate the Prognosis, Medical Treatment and Procedures with Patient Morbidity and Mortality.	K6

NANOTECHNOLGY IN MEDICINE
UIDM601

Semester : VI **Credits : 4**
Category : Major Elective **Hours/Week : 5**
Class &Major : III B.Sc. Biochemistry **Total Hours : 65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Identify the Various Types of Nano medicine.
CO -2	Determine the Importance of Nanomaterials In Nano medicine.
CO -3	Understand How the Nano a Great Interest in Drug Delivery Such as Controlled Release and Targeting of Drugs for the Protection of Enzymes, Proteins, and Foreign Cells
CO - 4	Understand the Fundamental Nanotechnology Principles Realized in the Development of Real-Life Products Used in Life-Sciences Applications.
CO -5	Learn the Application of Nanotechnology in Medicine and Healthcare.

UNIT- I OVERVIEW OF NANOTECHNOLOGY **13 Hours**

Basics of Nanotechnology - State of Art of Nanotechnology- Relevance of Nanotechnology- Impact on Economy and Future Development- Applications.

UNIT- II NANOTECHNOLOGY IN EVERYDAY LIFE **13 Hours**

Nanotechnology Based Products- Daily Usage- Associated Concepts-Advantages of Using Nanotechnology Products. Applications of Nanotechnology in Biomedical Fields.

UNIT -III NANOMEDICINE **13 Hours**

History of the Idea – Nano medicine Taxonomy – Bio Pharmaceuticals –Implantable Materials – Surgical Aids – Diagnostic Tools – Imaging. Polymer Micelles as Drug Carriers: Polymer Micelle Structures – Drug Loading and Release – Phramaco kinetics and Biodistribution– Drug Delivery Applications – Clinical Trials.

UNIT -IV NANOCAPSULES **13 Hours**

Introduction – Preparation – Characteristics of Nano Capsules– Drug Release – Applications.

UNIT- V NANOTECHNOLOGY IN MEDICINE AND HEALTH **13 Hours**

Cardiovascular Diseases, Cancer, Diabetes. Nanotechnology - Implants and Prosthetics - Nanotechnology and Burn Victims - Diagnosis and Therapy - Drug Delivery Using Nanoparticles - Nanotechnology Fights Infections - Pharmaceutical Nanotechnology Research.

Text Books

- John Mongillo(2007), *Nanotechnology 101*, Greenwood Press.
- K.K. Chattopadhyay and A.N. Banerjee (2009), *Introduction to Nanoscience and Nanotechnology*, PHI Learning Ltd, New Delhi.

Reference Books

- Joe Anne Shatkin (2008), '*Nanotechnology: Health and Environmental risks'*, CRC press.
- Parag Diwan and Asish,Bharadwaj (2006), *Nanomedicines*, Ed. By, Pentagan Press.
- Vladimir P Torchilin(2006), *Nanoparticles as Drug Carriers*, Ed., Imperial College Press, North Eastern University, USA.

e-Resources

- https://booksfree4u.tk/download-nanomedicine-ebook-pdf-free
- https://sites.google.com/site/.../The-Handbook-of-Nanomedicine.pdf
- nptel.ac.in

COURSE OUTCOMES

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Recall & Relate the importance of nano technology in the field of medicine.	K1,K2
CO-2	Apply the Benefits of the Nanotechnology-Based Systems Compared to Traditional Treatments,	K3

CO-3	Analyse the Advanced Ideas And Techniques Required in Emergent Area Of Nanotechnology.	K4
CO-4	Explain Fundamental Principles That Allow Implementation Of The Nanotechnology-Based Treatments In A Clinical Setting,	K5
CO-5	Discuss the Applications of Nano technology in industries, medicine, Pharmacology and treatment of Specific diseases.	K6

ORGANIC FARMING

Semester : VI **Credits : 1**
Category : Vocational Paper XI **Hours/Week :5**
Class &Major : III B.Sc., Biochemistry **Total Hours :65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Empower the student to become an employee or an entrepreneur in the field of Organic Farming and to serve the nation.
CO -2	Inculcate a sound knowledge on latest developments in the field of Organic Farming with a practical approach.
CO -3	Produce a student who thinks independently, critically and discuss various aspects of Organic Farming.
CO - 4	Familiarize with organic crop management practices, organic standards and Certification
CO -5	Create awareness about organic farming

UNIT –I AGRONOMY **08 Hours**

Organic Farming- Concept, Characteristics, Significance, Organic Ecosystem,Scopeof Organic Farming in India- Principles and Types of Organic Farming. Organic Production Methods for Cereals, Vegetables and Fruit Crops.

UNIT –II SOIL SCIENCE **08 Hours**

Organic Farming for Sustainable Agriculture; Manures- Compost, Methods of Composting- Green Manuring, Vermi compost and Bio fertilizer. Organic Farming Practices for Improving Soil Health.

UNIT –III FUNDAMENTAL OF ORGANIC FARM MANAGEMENT **08 Hours**

Land Management in Organic Farming- Water Management in Organic Farming. Weed and Nutrient Management in Organic Farming.

UNIT-IV POST HARVEST MANAGEMENT **11 Hours**

Processing, Labeling Of Organic Produce- Storage and Transport of Organic Produce. Quality Aspect and Grading- Packaging and Handling. Economic Considerations And Viability of Organic Products- Export of Organic Product and Marketing.

UNIT – V ORGANIC FARMING (PRACTICAL) **30 Hours**

Field Visit of Organic Farming, Seed and Seed Treatment, Preparation of Farm Yard Manure (FYM) & Compost. Crop Planning & Management in Organic Agriculture.

Text Books

- Reddy S R(2019) *Fundamentals of Agronomy Kalyani Publications*, Uttar Pradesh
- Tolanur S (2018) *Fundamentals of Soil Science* 2nd Edition, CBS Publishers, New Delhi

Reference Books

- Palaniappan S.P and Annadurai K (2010) *Organic Farming Theory and Practice*Ist Edition Scientific Publishers, Rajasthan
- Bansal M (2018*) Basics of Organic Farming*. CBS Publishers and Distributors Pvt Ltd,New Delhi
- Sheaffer C and Moncada K(2012) *Introduction to Agronomy : Food , Crops and Environment*IInd Edition, Cengage Learning Publishers, Boston, U.S
- Das K.D(2015) *Introductory Soil Science* 4th Edition, Kalyani Publishers, New Delhi
- Mahender G P, Singh H, Kumar V. and Singh N (2018) *Botanicals in Insect Pest Management*, Anu Books, New Delhi
- Dongarjal R.P. and Zade S.B(2019) *Insect Ecology and Integrated Pest Management* Akinik Publications, New Delhi

COURSE OUTCOMES

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	List out and explain the various aspects of agronomy, soil components, and post harvest management.	K1,K2
CO-2	Apply pest management methods to maintain ecological balance in organic farming.	K3
CO-3	Analyze the impact of various crop management practices on sustainable agriculture considering ecological and economic factors	K4
CO-4	Examine the sustainability of soil management practices, efficiency of post harvest handling methods	K5
CO-5	Create a system for organic farming that develops biodiversity and reduces environmental impact and ensures sustainable productivity	K6

HERBAL MEDICINE

Semester : VI **Credits : 1**
Category : Vocational Paper XI **Hours/Week :5**
Class &Major : III B.Sc.,Biochemistry **Total Hours :65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Prove the Effectiveness and Safety of Herbal Medicine Based on Scientific Evidence and According to the Required Standards.
CO -2	Contribute to the Discovery and Authentication of Herbal Products with Scientific Information, with Aims of Enhancing their Commercial Value and Improving Penetration of International Markets.
CO -3	Collect Evidence-Based Information on Herbal Medicine and Traditional and Complementary Medicine.
CO - 4	Familiarize with Organic Crop Management Practices, Organic Standards and Certification
CO -5	Provide Herbal Research-Related Trainings.

UNIT-I HERBAL MEDICINE **13 Hours**

Introduction to Herbal Medicine, Indian System of Medicine. Traditional, Ayurveda, Siddha, Folklore Medicine, Medicinal Plants. Identification and Authentication of Herbs.

UNIT-II EXTRACTION OF HERBAL DRUGS **13 Hours**

Extraction, Isolation and Analysis of Phy to pharmaceuticals. Screening and Standardization of Herbal drugs.

UNIT-III HERBAL FORMULATIONS **13 Hours**

Herbal Formulations, Nutraceuticals, Good Manufacturing Practices for Herbal drugs

UNIT-IV QUALITY CONTROL OF HERBAL MEDICINE **13 Hours**

Quality Control of Herbal medicine. WHO and ICH Guidelines for Herbal Drugs. Herbal medicine: Standards, Regulation and Patenting.

UNIT-V GUIDE TO ESSENTIAL DRUGS **13 Hours**

Guide to Essential Drugs Prescribing information under Ayurvedic, Unani, Siddha and homeopathy system of medicines.

Text Books

- Thomsons, London(2000), *Principles of Ayurveda*, Anne Green.
- R.N.Chopra, S.L.Nayar and I.C.Chopra(1956), *Glossary of Indian medicinal plants*. C.S.I.R, New Delhi.

Reference Books

- Panda H., *Hand Book ofAyurvedic Medicines*, National Institute of Industrial Research, Delhi.
- CSIR – Cultivation and Utilization of Medicinal Plants
- Brahmvarchas, *AyurvedkaPran*: Vanoshadhivigyan, VedmataGayatri Trust, ShaktikunjHaridwar 2004

- Chaudhry R. D., *Herbal Drug Industry*, Eastern Publication
- Atal and Kapoor(1982), *Cultivation and Utilization of Medicinal Plants,* RRL Jammu Tavi.
- Raphael Ikan (1991), *Natural Products: A Lab Guide,* Academic Press, 2nd edition.
- DuttAshwin(2009),*An Introduction to Medicinal Plants*, Adhyayan Publishers and distributers, 1st edition.

COURSE OUTCOMES

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Understand and define the principle of Indian system of Herbal Medicine.	K1,K2
CO-2	Design effective quality control strategies for herbal medicine formulations and principles.	K3
CO-3	Evaluate advanced concept in herbal medicines herbal formulation and quality control for complex challenges in the field.	K4
CO-4	Integrate novel strategies for herbal medicine formulation and quality control	K5
CO-5	Create novel approaches for advancing herbal medicine research formulation and quality control.	K6

MUSHROOM CULTIVATION

Semester : VI **Credits :1**
Category : Vocational Paper XI **Hours/Week :5**
Class &Major : III B.Sc., Bio chemistry **Total Hours :65**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Cite ideas on types and importance of mushroom.
CO -2	Express the intricacies of mushroom cultivation.
CO -3	Practice cultivation by set up of own unit.
CO - 4	Acquaintance with climatic requirements of mushroom cultivation.
CO -5	Building knowledge on diseases and pests of mushroom and their management.

UNIT- I INTRODUCTION TO MUSHROOMS AND ITS LIFE CYCLE 9 Hours
History of Mushroom Cultivation. Morphology, Classification - Edibile and Poisonous Mushrooms. Wild and Cultivated Mushrooms**.** Life cycle of *Agaricusspp,* Characteristics and Importance of *Volvariella spp., pleurotus spp., Calocybe spp., and Lentinus spp.*

UNIT- II CULTIVATION AND BIOLOGICAL IMPORTANCE 9Hours Conditions for Tropical and Temperate Countries - Isolation, Spawn Production, Growth Media, Spawn Running and Harvesting of Mushrooms. Medicinal and Nutritional Value of Mushrooms. Composting: Importance in Waste Recycling

Spawn &Spawning: Facilities Required For Spawn Preparation, Preparation of Spawn Substrate, Preparation of Pure Culture, Media Used in Raising Pure Culture, Culture Maintenance, And Storage of Spawn. Unit: IV Casting Materials &Case Running: Importance of Casing Mixture, Quality Parameters of Casing Soil, Different Types of Casing Mixtures, Commonly Used Materials.

UNIT- III DISEASES AND POST HARVEST TECHNOLOGY 8 Hours

Diseases and Pest Affecting Mushroom. Post-Harvest Technology: Refrigeration – Freeze, Drying, Canning, Irradiation and Entrepreneurship. Principles of Composting, Machinery Required for Compost Making, Materials For Compost Preparation. Methods of Composting-Long Method of Composting (LMC) &Short Method of Composting (SMC).

UNIT- IV MUSHROOM CULTIVATION (PRACTICALS) 20 Hours

Bed and Shed Preparation, Sowing Seedlings, Pest Control, Fumigation and Harvesting Cultivation of Button, Oyster and Straw Mushrooms: Collection of Raw Materials, Compost & Composting, Spawn & Spawning, Casing & Case Run, Cropping & Crop Management, Picking & Packing. Visit to Relevant Labs/Field Visits

UNIT- V MUSHROOM RECIPIES (PRACTICALS) HEALTH BENEFITS OF MUSHROOM 6 Hours

Mushroom Soup, Mushroom Pickle, Mushroom Pulav, Mushroom Chips Health Benefits of Mushroom: Antiviral Value, Antibacterial Effect, Antifungal Effect, Anti-Tumour Effect, Haematological Value Cardiovascular & Renal Effect, In Therapeutic Diets, Adolescence, for Aged Persons & Diabetes Mellitus.

Text Books

- Nita Bahl. *Hand book of Mushroom.* (4th Ed.) Vijay Primlanifor oxford Publication Co. Pvt Ltd, New Delhi. 2009.
- Nair M.C &Gokulapalan. C and Lulu das. *Topics on Mushroom Cultivation.* (3rd Ed.) Scientific Publishers, Jodhapur, India. 2008.

Reference Books

- Chang.T.S. & Hayes. W.A. *The biology and Cultivation of Edible Mushrooms.* (2nd Ed.). Academic Press, New York. 2007.
- Ignacimuthu.S. *Applied Plant Biotechnology.* (3rd Ed.). Oxford & IBH Publishing Co.Pvt.Ltd, New Delhi. 2008.

COURSE OUTCOMES

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO-1	Understand the basics of mushroom life cycle, cultivation, biological importance, diseases, and post-harvest technology of	K1,K2
CO-2	Apply the methods of preparations of spawn, casing mixture and post harvest technology.	K3
CO-3	Analyze the complex aspects of mushroom biology, cultivation, biological importance, diseases and post-harvest technology .	K4
CO-4	Evaluate the strategies by integrating knowledge of mushroom and develop proposing approaches	K5

CO-5	Establish new mushroom cultivation shed to become a women entrepreneur.	K6

PROJECT
UBCP601

Semester : VI **Credit : 1**
Category : Core XV **Hours/Week : 2**
Class & Major: III B.Sc. Biochemistry **Total Hours :26**

COURSE OBJECTIVES

CO No.	To enable the students to
CO -1	Acquire Knowledge in Life Science Research.
CO -2	Develop Problem Solving and Decision Making Skills.
CO -3	Develop Synopsis of a Defined Research Problem.
CO -4	Conduct Bench Work.
CO -5	Prepare the Research Report and its Oral Demonstrations.

Guidelines:

- Mini Project is offered for Final Year B.Sc Biochemistry Students in Semester VI.
- Project can be Done According to Area of Interest
- Project should do either as Individual or as Group with Maximum of Three /Four Students.
- Project can be Field Study, Survey, Experimentation, Extraction of Components from Medicinal Plants and Waste Water Treatment.
- Evaluation Scheme for the Project will be Internal 60 and External 40.

Assessment:

S.No	Internal		External	
	Component	**Marks**	**Component**	**Marks**
1	Review of the Literature	10	Dissertation	10
2	Area of Research	10	Presentation	20
3	Methodology	10	Viva – voce	10
4	Accuracy of result	10		-
5	Result and Discussion	10		-
6	Report preparation	10		-
	Total	**60**		**40**
	Maximum marks	100		

COURSE OUTCOMES

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Identify Practical Problem Solve using the Laboratory Techniques and Biochemistry Underpinning the Set Experiment.	K1, K2
CO-2	Provide Students a hands-on Experience of Designing, Performing, and Analyzing Results from a Molecular Biology/Biochemical Mini-Project.	K3
CO-3	Acquire Effective Knowledge in Experiential Learning for the Students which plays a key role in bridging the Gap Between Industry and Academia.	K4
CO-4	Evaluate Through an Oral Presentation and the Dissertation.	K5
CO-5	Develop the Student to Submit the Original Dissertation Work Without Plagiarism.	K6

III & IV Evaluation Components of CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
VI	Core XI	UBCM605	Introduction to Biotechnology	Model presentation	Experiential Learning
	Core XII	UBCM606	Clinical Biochemistry	Case Study	Experiential Learning
	Core XIII	UBCM607	Molecular Biology	Assignment	e- Poster Presentation
	Major Elective	UBCO604	Stem Cell Biology	Culture preparation	e- Poster Presentation
		UBCO605	Molecular Endocrinology	Poster Presentation	e- Poster Presentation
		UBCO606	Pathobiology of Human Diseases and Disorders	Case Study	e- Poster Presentation

PG & RESEARCH DEPARTMENT OF MATHEMATICS

PREAMBLE

UG: Programme profile and the syllabi of courses offered in semester VI along with III and IV Evaluation Components (With effect from 2021-2024) batch onwards.

PROGRAMME PROFILE B.Sc. (MATHEMATICS)

PROGRAMME SPECIFIC OUTCOMES

PSO No.	Upon completion of the Programme, the students will be able to
PSO-1	Understand the fundamentals of Pure and Applied Mathematics and think possibilities for problems and find alternate solutions.
PSO-2	Demonstrate mathematical thoughts and ideas clearly and concisely to others by effective communication
PSO-3	Apply Mathematics in real life situations aiming at service to the society.
PSO-4	Analyze mathematical systems utilizing rich experiences that encourage independent, nontrivial, constructive exploration in mathematics.
PSO-5	Determine professional and ethical responsibility that has an impact on their higher studies and Professional career.
PSO-6	Develop sound mathematics knowledge to take competitive exams and get placed

Semester	Part	Category	Course Code	Course Title	Previous course code	Contact Hours/ week	Credit Min/Max
I	I	Languages / AECC – II Tamil / Hindi/ French	UTAL107/ UTAL108/ UHIL102/ UFRL102	Basic Tamil-I/ Advanced Tamil-I/ Hindi-I / French-I	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3/4
	II	Communicative English/AECC – I	UENL109/ UENL110	English for Communicative (Stream – I) / English for Communicative (Stream –II)		5	3/4
	III	Major Core (I)/ DSC (I)	UMAM104	Differential Calculus	-	6	4
	III	Major Core (II)/ DSC (II)	UMAM108	Algebra and Trigonometry		6	4
	III	Allied – I (GE)	UMAA117	Mathematical Statistics - I	UMAA115	**6**	**4**
	III	PE	UPEM101	Professional English		6	4
	IV	Value Education (VE)				2	1
					TOTAL	**36**	**23/25**

II	I	Languages / AECC –II Tamil/ Hindi/French	UTAL207/ UTAL208/ UHIL202/ UFRL202	Basic Tamil II/ Advanced Tamil-II/ Hindi-II /French-II	UTAL205/ UTAL206/ UHIL201/ UFRL201	5	3/4
	II	Communicative English / AECC – I	UENL209/ UENL210	English for Communicative (Stream – I) / English for Communicative (Stream –II)		5	3/4
	III	Major Core III / DSC(III)	UMAM207	Vector Calculus		6	5
	III	Major Core IV /DSC(IV)	UMAM208	Analytical Geometry	UMAM105/ UMAM106	5	5
	III	Allied – II (GE)	UMAA207	Mathematical Statistics - II		6	4
	III	PE	UPEM201	Professional English II		6	4
	III	Internship	UMAI201		--	30 hours	-/1
	IV	Non Major Elective				3	2
	V	Extension Programme/ Physical Education				-	1/2
					TOTAL	**36**	**27/30**
III	I	Languages / AECC –II Tamil/ Hindi/ French	UTAL307/ UTAL308/ UHIL302/ UFRL302	Basic Tamil II/ Advanced Tamil-II/Hindi-II /French-II	UTAL305/ UTAL306/ UHIL301/ UFRL301	5	3/4
	II	Communicative English /AECC – I	UENL309/ UENL310	English for Communicative (Stream – I) / English for Communicative (Stream –II)		5	3/4
	III	Major Core V/ DSC(V)	UMAM306	Differential Equation	UMAM302/ UMAM301	5	4
	III	Major Core VI / DSC (V)_	UMAM308	Discrete Mathematics	UMAM206/ UMAM606	4	4
		Allied – III (GE)	UCSA304	Mathematical Programming using C	-	3	3
		Allied - III (GE) Practical	UCSR307	Mathematical Programming using C Practical	-	3	2
	IV	Online Course (NPTEL / SP)				3	1/2
		Value Education (VE)				2	1
					TOTAL	**30**	**21/24**

IV	I	Languages / AECC –II Tamil/Hindi/ French	UTAL407/ UTAL408/ UHIL402/ UFRL402	Basic Tamil II/ Advanced Tamil-II/Hindi-II / French-II	UTAL405/ UTAL406/ UHIL401/ UFRL401	5	3/4
	II	Communicative English /AECC – I	UENL409/ UENL410	English for Communicative (Stream –I) / English for Communicative (Stream –II)		5	3/4
	III	Major Core VII / DSC(VII)	UMAM407	Integral Transforms	UMAM405	4	4
		Major Core VIII / DSC (VIII)	UMAM406	Mechanics	UMAM401	5	4
		Allied – IV (GE)	UPHA402	Electronics for Mathematics	-	3	3
		Allied – IV Practical	UPHR402	Electronics for Mathematics Practical	-	3	2
	III	Internship	UMAI401		--	30 hours	-/1
	IV	Soft Skill				2	1
		Non Major Elective				3	2
	V	Extension Programme/ Physical Education				-	-/2
					TOTAL	**30**	**22/26**
V	III	Major Core IX / DSC(IX)	UMAM513	Modern Algebra	UMAM501/ UMAM507	**6**	**5**
	III	Major Core X / DSC(X)	UMAM514	Real Analysis I	UMAM508/ UMAM512	**6**	**5**
		Major Core XI / DSC(XI)	UMAM515	Numerical Methods	UMAM510	**6**	**5**
		Major Elective	UMAO501	Graph Theory	UMAM205/ UMAM402	**5**	**4**
			UMAO502	Number Theory	UMAM506/ UMAM502		
		Major Core XII/ DSC (XII)	UMAP501/ UMAR511	Project/ R Programming	-	5	5
	IV	Value Education (VE)				2	1
					TOTAL	**30**	**25**
VI	III	Major Core XIII/ DSC (XII)	UMAM616	Linear Algebra	UMAM604/ UMAM610	6	6
		Major Core XIV/DSC (XIV)	UMAM615	Real Analysis II	UMAM607/ UMAM611	6	6
		Major Core XV/DSC(XV)	UMAM617	Complex Analysis	UMAM509/ UMAM602	6	6

		Major Core XVI/ DSC(XVI)	UMAM618	Operations Research	UMAM603/ UMAM608/ UMAM613	6	6
		Major Elective	UMAO608	Mathematical Modeling	UMAM404	4	4
			UMAO606	Mathematics for ConstructionCraft	--		
			UMAO609	Astronomy	UMAO607		
		Comprehensive Viva	UMAM619			-	1
		Internship	UMAI601		--	30 hours	-/1
	IV	Soft Skill				2	1
	V	Extension Programme/ Physical Education				-	-/2
					TOTAL	**30**	**30/32**
					GRAND TOTAL	**192**	**148/168**

EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Course code	Course Title	Contact Hours/ week	Credit	
						Min	Max
II	III	Self Study paper	UMAI201	Summer Internship	-	-	1
IV	III	Self Study paper	UMAI401	Summer Internship	-	-	1
VI	III	Self Study paper	UMAI601	Summer Internship	-	-	1
VI	III	Self Study paper	UMAS601 UMAS602 UMAS603 UMAS604	Fourier Transforms Simulation Number Theory Project	2	-	2

LINEAR ALGEBRA

UMAM616

Semester : VI **Credits : 5**

Category : Core XII / DSC (XII) **Hours/Week : 5**

Class & Major : III B.Sc Mathematics **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO-1	Understand the concepts of Vector spaces, linear transformations and Matrix Algebra.
CO-2	Determine if a set of vectors is a vector space, a subspace, or a basis for a vector space.
CO-3	Analyze linear combinations of vectors in R^n and identify sets of vectors that are linearly independent.
CO-4	Compute eigenvalues and eigenvectors, determine if a matrix is diagonalizable, and solve systems of linear ordinary differential equations.
CO-5	Develop on the algebra of matrices in order to solve applied and theoretical problems using inverses of matrices, determinants and other algebraic operations.

UNIT-I VECTOR SPACES & DUAL SPACES **13 Hours**

Elementary Basic Concepts – Linear Independence and bases- Dual Spaces.

UNIT-II INNER PRODUCT SPACES& DUAL SPACE **13 Hours**

Inner Product Spaces - Modules.

UNIT-III LINEAR TRANSFORMATIONS **13 Hours**

The Algebra of Linear Transformation - Characteristic Roots-Matrices.

UNIT-IV MATRIX OPERATIONS **13 Hours**

Trace and Transpose – Determinants.

UNIT-V HERMITIAN-UNITARY & NORMAL TRANSFORMATIONS **13 Hours**

Hermitian-Unitary & Normal Transformations**.**

Text Book

- Herstein.I.N. (2013). *Topics in Algebra.* John Wiley & Sons.

Reference Books

- Kumaresan.S. (2000). *Linear Algebra A geometric Approach.* PHI Learning Private LimitedNew Delhi. (10^{th} ed).
- Kenneth Hauffman. (2018). *Linear Algebra.* Person Education India (2^{nd} edu.)
- John B. Fraleigh. (2003). *A first course in Abstract Algebra.* Addison Wesley publishing Co. (7^{th} ed).

e-Resources

- http://nptel.ac.in/courses/111106051/
- https://www.khanacademy.org/math/linear-algebra

Course Outcomes:

CO No.	On completion of the course ,the students will be able to	Bloom'sLevel
CO-1	Recall and define the elementary concepts related to vector spaces, dual spaces and its relevance in linear algebra.	K1, K2
CO-2	Develop the knowledge of Hermitian, unitary, and normal transformations to solve mathematical problems.	K3
CO-3	Compare and Classify the matrix representations of linear transformations.	K4
CO-4	Justify the matrix representing in unitary and normal transformation.	K5
CO-5	Find out the solutions for the problems involved in linear transformations and specialized transformations.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	2	2	1
CO 2	3	3	3	2	2	1
CO 3	3	3	3	3	3	2
CO 4	3	3	3	3	3	2
CO 5	3	3	3	3	3	3

High Correlation : 73.33%
Moderate Correlation : 16.67%
Low Correlation : 6.67%

REAL ANALYSIS II

UMAM615

Semester : VI **Credits : 6**
Category : Core XVIII **Hours/Week : 6**
Class & Major: III B.Sc Mathematics **Total Hours :78**

Course Objectives

CO No.	To enable the students
CO-1	Recall open set and closed set.
CO-2	Understand the concepts of Connectedness and Completeness.
CO-3	Apply the concepts of completeness, compactness and uniform continuity.
CO-4	Analyze Riemann integral and properties of Riemann integrals.
CO-5	Evaluate derivatives, Taylor's theorem, Pointwise and uniform Convergence of Sequence of Functions.

UNIT-I CONNECTEDNESS, COMPLETENESS 15 Hours

More about Open sets, Connected Sets – Bounded Sets and Totally Bounded Sets – Complete Metric Spaces.

UNIT-II COMPACTNESS 15 Hours

Compact Metric Space – Continuous Functions on Compact Metric Spaces – Continuity of Inverse Functions – Uniform Continuity.

UNIT-III RIEMANN INTEGRATION 16 Hours

Definition of the Riemann Integral – Existence of Riemann integral(Statement only)- Properties of the Riemann Integral – Derivatives – Rolle's Theorem – The Law of the Mean – Fundamental Theorem of Calculus.

UNIT-IV IMPROPER RIEMANN INTEGRATION 16 Hours

Improper integrals – Cauchy's Principle Value -Taylor's Theorem: Taylor's formula with Different Forms of Remainder – The Binomial Theorem – L'Hospitals Rule.

UNIT-V SEQUENCES AND SERIES OF FUNCTIONS 16 Hours

Pointwise Convergence of Sequence of Functions – Uniform Convergence of Sequence of Functions – Consequence of Uniform Convergence – Convergence and Uniform Convergence of Series of Functions.

Text Book

- Richard Goldberg.(2009). *Methods of Real Analysis.*Oxford & IBH Publishing Co. New Delhi.

Reference Books

- Tom Apostol, M.(2004). *Mathematical Analysis.* Addison-Wesley publishing Company Inc.(2nd ed.,). New York.
- Malik, S.C. and SavitaArora. (2010). *Mathematical Analysis*.Wiley Eastern Limited. New Delhi.
- Sanjay Arora and BansiLal.(2000). *Introduction to Real Analysis*. Sathya Prakashan. New Delhi.

e- Resources

- https://nptel.ac.in/syllabus/111106053/

Course Outcomes:

CO No.	On completion of the course ,the students will be able to	Bloom's Level
CO-1	Relate and Summarize the definitions and properties of open sets, closed set and boundedness.	K1, K2
CO-2	Solve the mathematical problems using Riemann integrals.	K3
CO-3	Categorize connectedness, boundedness, and total boundedness in different metric spaces.	K4
CO-4	Criticize the convergence of sequences and series of functions.	K5
CO-5	Develop the mathematical proofs of basic results in real analysis.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	2	2	1
CO 2	3	3	3	2	2	1
CO 3	3	3	3	3	2	2
CO 4	3	3	3	3	3	1
CO 5	3	3	3	3	3	3

High Correlation : 66.67%
Moderate Correlation : 33.33%
Low Correlation : 0%

COMPLEX ANALYSIS
UMAM617

Semester : VI **Credit : 6**
Category : Core XV **Hours/Week : 6**
Class &Major : III B.Sc Mathematics **Total Hours : 78**

Course Objectives:

CO No.	To enable the students
CO 1	List the Knowledge of complex variable, Limits and Derivatives.
CO 2	Demonstrate the concept of Contours, Simply and Multiple Connected Domains.

CO 3	Utilize the series of Complex numbers.
CO 4	Classify the Concepts of Residues and Poles
CO 5	Compare Mappings by Elementary Functions.

UNIT-I ANALYTIC FUNCTIONS **15 Hours**

Functions of a Complex Variable – Mappings – Limits – Theorems on Limits – Limits involving the Point at Infinity – Continuity – Derivatives – Differentiation Formulas – Cauchy-Riemann Equations – Sufficient Conditions for Differentiability – Polar Coordinates – Analytic Functions – Harmonic Functions.

UNIT-II CONTOUR INTEGRATION **16 Hours**

Contours – Contours Integrals – Examples – Cauchy-Goursat's Theorem (without proof) – Simply and Multiply Connected Domains (Theorems without proof) – Cauchy's Integral Formula – An Extension of the Cauchy Integral Formula – Verification of the Extension – Som Consequences of the Extension – Lioville's Theorem and the Fundamental Theorem of Algebra – Maximum Modulus Principle.

UNIT-III COMPLEX SERIES **15 Hours**

Convergence of Sequence – Convergence of Series – Taylor's Series – Proof of Taylor's Series – Examples – Negative Powers of $(z - z_0)$ – Laurent Series – Proof of Laurent Series - Examples – Absolute and Uniform Convergence of Power Series – Continuity of Sums of Power Series – Integration and Differentiation of Power Series – Uniqueness of Series Representations – Multiplication and Division of Power Series.

UNIT-IV RESIDUES AND POLES **16 Hours**

Isolated Singular Points – Residues – Cauchy's Residue Theorem – Residue at Infinity – The Three Types of Isolated Singular Points – Examples – Residues at Poles – Examples – Zeros of Analytic Functions – Zeros and Poles – Behavior of Function near Isolated Singular Points.

UNIT-V COMPLEX TRANSFORMS **16 Hours**

Linear transformations – The Transformation w=1/z – Mappings by 1/z – Linear Fractional transformations – An Implicit Form – Mappings of the upper Half Plane – Examples – Mappings by the Exponential Function – Mapping Vertical Line Segments by w=sinz – Mapping Horizontal line Segments by w = sinz – Some Related Mappings – Mappings by Z^2 – Mappings by Branches of $Z^{1/2}$ – Square Roots of Polynomials – Joukowski Transformation.

Text Book

- Churchill. R. V. & Brown, J.W. (2013), *Complex Variables and Applications.* Mc Graw Hill International Book Co., Singapore.

Reference Books

- Durai pandian. P. & Laxmi Duraipandian (2001). *Complex analysis.* Emerald Publishers. Chennai.
- Ponnusamy. S. (2000). *Foundations of Complex Analysis.* Narosan Publishing House. New Delhi.
- Dennis G. Zill & Patrick D. Shanahan. (2003) *A First Course in Complex Analysis with Applications.* Jones and Bartlett Publishers. Sudbury.
- Arumugam, S. Thangapandi Isaac, A. & Somasundaram. A. (2015). *Complex Analysis.* Scitech Publications. Pvt. Ltd. India.

Course Outcomes:

CO No.	On completion of the course ,the students will be able to	Bloom's Level
CO 1	Define the functions of complex variable, mappings and Illustrate the concept of simply and multiply connected domains.	K1, K2
CO 2	Solve the Maximum Modulus principle, continuity, integration, and differentiation of power series.	K3
CO 3	Examine the Isolated Singular Points and Residue at Poles.	K4
CO 4	Evaluate the Linear Transformation and Mappings.	K5
CO 5	Modify complex transforms creatively in solving mathematical problems.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	2	2
CO 2	3	3	3	3	2	2
CO 3	2	3	3	3	3	2
CO 4	3	3	3	3	3	2
CO 5	3	3	3	3	3	3

High Correlation : 70%
Moderate Correlation : 30%
Low Correlation : 0%

OPERATIONS RESEARCH
UMAM618

Semester : VI **Credit : 6**
Category : Core XVI **Hours/Week : 6**
Class &Major : III B.Sc Mathematics **Total Hours : 78**

Course Objectives:

CO No.	To enable the students
CO 1	Identify the basic concepts of Linear Programming Problem and Simplex method.
CO 2	Relate Transportation Problem and Assignment Problem.
CO 3	Solve the two person zero game and mixed strategies.
CO 4	Examine queuing and the optimal solutions using models for different situations.
CO 5	Compare and formulate probability, conditional probability and its axiom and theorems

UNIT-I LINEAR PROGRAMMING PROBLEM 15 Hours

Linear Programming Problem – Mathematical Formulation of the Problem – Graphical Solution Method (Unbounded & Infeasible Solutions) – Simplex method Problem – Simplex Algorithm _ Artificial Variable Techniques – Big-M Method – Two Phase Method.

UNIT-II TRANSPORTATION AND ASSIGNMENTB PROBLEMS 16 Hours

Transportation Problem – The Transportation Algorithm – Degeneracy in Transportation Problem – Unbalanced Transportation Problem – The Assignment Problem – The Assignment

Algorithm – Unbalanced Assignment Problem – Traveling Salesman Problem.

UNIT-III SEQUENCING PROBLEM AND GAME THEORY **15 Hours**

Sequencing Problem – n Jobs through 2 Machines, n Jobs through k Machines – Two Jobs through k machines – Simple Problems – Game Theory – Two Persons Zero Sum Game – The Maximin Minimax Principle – Saddle Points – Games without Saddle – Mixed Strategies – Graphical Solution of 2×n and m×2 Games – Dominance Property.

UNIT-IV QUEUING THEORY **16 Hours**

Queuing Theory – Queuing System – Elements of Queuing System – Operating Characteristic of a Queuing System – Deterministic Queuing System – Probability Distributions in Queuing Systems – Classification of Queuing Models – Definition of Transient and Steady state – Poisson Queuing Systems [(M/M/1):(∞/FIFO), (M/M/1):(∞/SIRO), (M/M/1):(N/FIFO), (M/M/C):(∞/FIFO)].

UNIT-V PERT AND CPM **16 Hours**

Introduction – Basic Components – Logical Sequencing Rules of Network Construction – Concurrent Activities – Critical Path Analysis – Probability Consideration in PERT

Text Book:

- Kanti Swarup, Gupta,P.K. & Manmohan. (2014). *Operation Research*.Sultan Chand & Sons. Delhi.

Reference Books:

- Sharma, J.K. (2012). Operations Research Theory and Applications. Macmillan.Delhi.
- Ravindran, A. Philips, D.T. & Solberg, J.J. (1987). Operation Research. John Wiley & Sons. New York.
- Taha, H.A. (2016).Operations Research. Macmillan publishing Company. New York.

Course Outcomes:

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Define and Classify the fundamental concepts in operations research, including linear programming, transportation and assignment problems, sequencing problems, game theory, queuing theory, and PERT/CPM.	K1, K2
CO 2	Apply mathematical methods to solve real-world problems in operations research.	K3
CO 3	Simplify the different strategies and techniques in queuing theory, sequencing, and game theory.	K4
CO 4	Deduct the applicability of different methods in various scenarios.	K5
CO 5	Develop the solutions for complex problems in operations research.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	2	2	2
CO 2	3	3	3	2	3	2

CO 3	3	3	3	3	3	2
CO 4	2	3	3	3	3	2
CO 5	2	2	3	3	3	3

High Correlation : 66.67%
Moderate Correlation : 33.33%
Low Correlation : 0%

MATHEMATICAL MODELING
UMAO608

Semester : VI **Credit : 4**
Category : Major Elective **Hours/Week: 4**
Class &Major: III B.Sc Mathematics **Total Hours : 52**

Course Objectives:

CO No.	To enable the students
CO 1	Define the basic concepts involved in Mathematical Modelling.
CO 2	Explain the concepts of Mathematical Modelling through the system of first and Second order ordinary differential equations.
CO 3	Solve the Mathematical Modelling through the difference equations.
CO 4	Analyze the concepts of graphs and solves the mathematical models using graphs.
CO 5	Construct mathematical models of real world problems

UNIT-I GROWTH AND DECAY MODELS USING ODE 10 Hours

Ordinary differential equation – Linear growth model – Growth of science and scientists – Non- linear growth and decay models – Diffusion of glucose or a medicine in the bloodstream.

UNIT-II MODELING IN POPULATION DYNAMICS 11 Hours

Modeling in population dynamics – Prey-predator models – Competition models – Multi-species models – Modeling of epidemics – Simple epidemic models – A model for diabetic-mellitus

UNIT-III MODELING OF PLANETARY MOTION USING SECOND ORDER ODE 10 Hours

Modeling in second order O.D.E – Modeling of planetary motion – Motion under central force – Circular motion – Elliptic motion of a satellites – Rectilinear motion.

UNIT-IV MODELING THROUGH DIFFERENCE EQUATIONS 11 Hours

Modeling through difference equations – Linear difference equation – Obtaining complementary function by use of matrices – Harrod model – Cob-web model – Applications of Actuarial science.

UNIT – V MODELING THROUGH GRAPHS 10 Hours

Modeling through graphs – Seven bridge problem – Representing results of tournament – Genetic graph – Food web – Communication network – Matrices associated with a directed graph – Detection of clique – Terms of signed graph.

Text Book

- Kapur J. N, "*Mathematical Modeling"*, Wiley Eastern Limited, New Age International Pvt. Ltd., Reprint 2013.

Reference Books

- Kapur J. N, "*Mathematical Models in Biology and Medicine"*, Oscar Publications, New Delhi, 1985.
- Olink R, "*Mathematical Models in Social and Life Sciences"*, Wiley Publications 2014.

Course Outcomes:

CO No.	On completion of the course ,the students will be able to	Bloom's Level
CO 1	Understand & Recall the fundamental concepts in modeling using ordinary differential equations, population dynamics, planetary motion, difference equations, and graphs.	K1, K2
CO 2	Identify the mathematical modeling techniques to solve real-world problems.	K3
CO 3	Classify the different models and approaches in diverse scenarios.	K4
CO 4	Justify the effectiveness and limitations of various modeling techniques.	K5
CO 5	Design the mathematical models for complex problems in different fields.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	2	2	2
CO 2	3	3	3	3	3	3
CO 3	2	3	3	3	2	2
CO 4	2	2	2	3	3	3
CO 5	2	2	3	3	3	3

High Correlation : 63.33%
Moderate Correlation : 36.67%
Low Correlation : 0%

MATHEMATICS FOR CONSTRUCTION CRAFT
UMAO606

Semester : VI **Credits : 4**
Category : Major Optional **Hours/Week: 4**
Class &Major: III B.Sc Mathematics **Total Hours :52**

Course Objectives:

CO No.	To enable the students
CO 1	Relate the conservation and evaluation formulae.
CO 2	Explain Concept of transposition and evaluation of formulae of construction
CO 3	Solve the principles of area and volume for calculating concrete mix, flooring and painting.
CO 4	Examine the special structures and materials.
CO 5	Design setting-outs for a simple building site.

UNIT - I CONVERSION AND EVALUATION OF FORMULAE 10 Hours

Introduction - Length – Conversion factors – Use of the graphical method – Mass- Area volume and capacity – Temperature – Transpositions of formulae – Evaluation of formulae.

UNIT - II AREAS AND VOLUMES OF STRUCTURES 11 Hours

Introduction – Area of triangles-Area of quadrilaterals – Area of circles – Application of area to practical problems- Cavity walls- Volumes introduction- Volume of Prism, Cylinders, Pyramids and Cones- Mass, Volume and Density- concrete mix and its constituents.

UNIT – III SPECIAL STRUCTURES AND MATERIALS 11 Hours

Introduction - Surface area of a pyramid - Frustum of a pyramid - Surface area of a cone - Frustum of a cone- Costing materials Introduction - Foundations - Cavity walls – Flooring – Painting.

UNIT - IV ELEVATION AND DEPRESSION 10 Hours

Introduction - The Trigonometrical ratios - Trigonometric ratios for 30°, 45°, 60° - Angles of elevation and Depression - Stairs - Roofs - Excavations and Embankments.

UNIT - V SETTING OUT 10 Hours

Introduction - Setting out a simple building site - Bay windows and curved Brickwork - Checking a building for square corners - Circular arches - Elliptical arches.

Text Book

- Surinder Singh Virdi, and Roy Baker,T. (2007).*Construction Mathematics*. Elsevier Publications.

Reference Books

- Lal, D. (2012). *Construction Managements and PWD accounts.* Kataria and sons publishers.(2nd ed.,). New Delhi.
- Alfred Webster, and Kathryn bright. (2010). *Mathematics for the carpentering and the construction trade*. Pearson education trust. (2nd ed.,).

Course Outcomes:

CO No.	On completion of the course ,the students will be able to	Bloom's Level
CO 1	Recall and Summarize the fundamental concepts in construction mathematics, including unit conversion, transposition of formulas, area and volume calculations.	K1, K2

CO 2	Build mathematical concepts to solve practical problems in construction.	K3
CO 3	Survey the construction materials, costs, and structural elements.	K4
CO 4	Interpret the effectiveness of mathematical techniques in construction projects.	K5
CO 5	Create and Formulate solutions for setting out and construction scenarios.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	2	1
CO 2	3	3	3	2	3	2
CO 3	3	3	3	3	3	2
CO 4	2	3	3	3	3	2
CO 5	2	2	3	3	3	3

High Correlation : 63.33%
Moderate Correlation : 33.33%
Low Correlation : 3.33%

ASTRONOMY
UMAO609

Semester : VI **Credit : 4**
Category : Major Elective **Hours/Week : 4**
Class & Major : III B.Sc Mathematics **Total Hours : 52**

Course Objectives:

CO No.	To enable the students
CO-1	Identify the importance of the Earth's Celestial Sphere.
CO-2	Explain Earth's motions in space: rotation and revolution.
CO-3	Demonstrate the importance of Astronomical refraction
CO-4	Discover Kepler's Laws of Planetary Motion.
CO-5	Discuss how the phase of the Moon is controlled by the relative positions of the Sun and Moon in the sky.

UNIT-I CELESTIAL SPHERE **10 Hours**

Celestial Sphere – Diumal Motion – Simple Problems (No Need for Derivation).

UNIT-II ZONES OF EARTH **11 Hours**

Zones of Earth – Terrestrial Latitudes and Longitudes – Rotation of Earth – Dip of the Horizon – Simple Problems (No Need for Derivation).

UNIT-III ZONES OF EARTH (CONTINUED) **10 Hours**

Twilight – Simple Problems – Astronomical Refraction – Simple Problems (No Need for Derivation).

UNIT-IV KEPLER'S LAWS **10 Hours**

Kepler's Laws – Simple Problems (No Need for Derivation)

UNIT-V ECLIPSES **11 Hours**

Moon – Phase of Moon – Eclipses – Introduction – Umbra and Penumbra – Lunar Eclipse – Solar Eclipse – Condition for the Occurrence of Lunar and Solar Eclipses (No Need for Derivation)

Text Book:

- Kumaravelu, S. & Susheela Kumaravelu. (2005). *Astronomy for Degree Classes*. Rainbow Printers, Nagarcoil.

Reference Books

- Kartunen, H. (2013). *Fundamental Astronomy*. Content Technologies Publications.
- Prophet Mohammed. (2013). *Astronomy: Supplementary Guide*. Core Knowledge Foundation.
- Ramachandran, G.V. (1965). *Text Book of Astronomy*, Mission Press. Palayamkottai.

e-Resources:

- http://www.astronomy.com/
- http://www.theastronomer.org/

Course Outcomes:

CO No.	On completion of the course ,the students will be able to	Bloom's Level
CO 1	Define and compare fundamental concepts in celestial mechanics, including the celestial sphere, diurnal motion, zones of the Earth, twilight, astronomical refraction, Kepler's Laws, and eclipses.	K1, K2
CO 2	Construct the problems related to celestial phenomena.	K3
CO 3	Discover the characteristics of celestial events and motions.	K4
CO 4	Explain the applicability of celestial principles in practical scenarios.	K5
CO 5	Discuss the explanations for celestial phenomena, including eclipses and planetary motion.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	2	1
CO 2	3	3	3	2	3	1
CO 3	3	3	3	3	3	2
CO 4	2	3	3	3	3	2
CO 5	2	2	3	3	3	3

High Correlation : 63.33%
Moderate Correlation : 30%
Low Correlation : 6.67%

EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Course code	Course Title	Contact Hours/ week	Credit	
						Min	Max
VI	III	Self Study paper	UMAS601 UMAS602 UMAS603 UMAS604	Fourier Transforms Simulation Number Theory Project	2	-	2

III & IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component – III	Component - IV
VI	III	UMAM616	Linear Algebra	Problem solving	Assignment
VI	III	UMAM615	Real Analysis II	Assignment	Problem solving
VI	III	UMAM605	Complex Analysis	Assignment	Problem solving
VI	III	UMAM618	Operations Research	Problem solving in Excel Sheet or Google Spreadsheet	Poster Presentation
VI	III	UMAO608	Mathematical Modeling	Assignment	Poster Presentation
VI	III	UMAO606	Mathematics for Construction Craft	Problem solving	Poster Presentation
VI	III	UMAO609	Astronomy	Assignment	Poster Presentation

COURSES OFFERED ALLIED

Semester	Part	Category	Course code	Course Title	Contact Hours/ week	Credit	
						Min	Max
IV	III	Allied	UMAA401	Bio Statistics	4	-	3

BIO-STATISTICS
UMAA401

Semester : IV **Credit : 3**
Category : Allied **Hours/week : 4**
Class & Major : II B.Sc CND **Total Hour : 65**

Course Objectives

CO No.	To enable the students
CO 1	Define the basic concept & related to statistics.

CO 2	Discuss the measures of Central tendency.
CO 3	Solve the Measures of Dispersion in various fields.
CO 4	Distinguish Knowledge about correlation coefficients and regression.
CO 5	Interpret data via probability, conditional probability.

UNIT–I STATISTICAL METHODS **13 Hours**

Importance of Statistical Methods and their limitations – Collection, Classification and Tabulation of Statistical data – Diagrammatic and Graphical representation ofstatistical data.

UNIT – II MEASURES OF CENTRAL TENDENCY **13 Hours**

Measures of Central tendency – Mean, Median, Mode, Geometric Mean, Harmonicmean.

UNIT – III DISPERSION, SKEWNESS AND MOMENTS **13 Hours**

Measures of Dispersion – Range, Quartile deviation, Mean Deviation, Standard Deviation - Co-efficient of Variation – Lorenz curve - Skewness – Karl Pearson's, Bowley's and Kelly's co-efficient of Skewness – Skewness and Kurtosis based on Moments.

UNIT – IV CORRELATION AND REGRESSION ANALYSIS **13 Hours**

Correlation Analysis – Scatter Diagram – Karl Pearson's Co-efficient of Correlation – Spearman's Rank Correlation Coefficient – Co-efficient of Concurrent Deviation- Fitting of Straight line of the form Y = ax + b by the method of least squares - Regression Analysis – Regression Lines – Regression Equations

UNIT – V PROBABILITY, RANDOM VARIABLES AND EXPECTATIONS **13 Hours**

Concept of Probability – Addition and Multiplication theorem of probability – Baye's Theorem - Concept of random variable - Distribution function – Definition of probability function for Discrete and Continuous Random Variable.

Text Book

- Pillai R.S.N. (2010). *Statistics: Theory and Practice*. S.Chand & Company Ltd. New Delhi.

Reference Books

- Gupta S.P. (2011). *Statistical Methods.* S.Chand & Company Ltd. NewDelhi.
- Gupta.S.C. and Kapoor.V.K. (2008). *Elements of Mathematical Statistics.* S.Chand & Company Ltd. NewDelhi.
- Snedecor G.W and Cochran W.G. (2006). *Statistical Methods.* Oxford Press and IBH.

Course Outcomes

CO No.	On completion of the course ,the students will be able to	Bloom's Level
CO 1	Summarize the fundamental concepts in statistical methods, measures of central tendency, dispersion, skewness, moments,	K1, K2

	correlation, regression analysis, probability, random variables, and expectations.	
CO 2	Apply statistical data methods to organize effectively.	K3
CO 3	Examine the relationships between variables using correlation and regression techniques.	K4
CO 4	Compare the appropriateness of statistical methods for different types of data.	K5
CO 5	Interpret the probability distributions and expectations for random variables.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	2	2	2
CO 2	3	3	3	2	3	2
CO 3	3	3	3	3	3	2
CO 4	2	3	3	3	3	2
CO 5	2	2	3	3	3	3

High Correlation : 66.67%
Moderate Correlation : 33.33%
Low Correlation : 0%

III & IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component – III	Component - IV
IV	III	UMAA401	Bio Statistics	Problem solving	Assignment

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE

PREAMBLE

UG : Programme Profile – List of Courses offered to other Departments and Syllabi of Courses in the VI Semesters along with Evaluation Components III and IV (With effect from 2021-2024 Batch Onwards)

PROGRAMME PROFILE B.Sc. (Computer Science)

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	On completion of this programme, students will be able to
PSO-1	Understand fundamental principles and concepts of biochemistry, including the structure and function of biomolecules present in living cells.
PSO-2	Acquire proficiency in laboratory techniques commonly used in biochemistry, including cell biology, chromatography, spectroscopy, biochemical analysis etc.,
PSO-3	Inculcate the basic concepts of Biochemistry, fundamental biochemical Principles and their applications in a systematic, methodological and scientific, evidence-based process.
PSO-4	Relate the applications of biochemistry in biotechnology and pharmaceutical industries, including the development of new drugs and biotechnological processes in securing a successful career and pursue higher studies.
PSO-5	Communicate scientific ideas and findings effectively through written reports, oral presentations, and other forms of scientific communication.
PSO-6	Develop problem solving and analytical skills through case studies, research projects, experimentation, internship, experiential learning and hands-on-experience.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hours/ Week	Credit Min/Max
I	I	Language	UTAL107/ UTAL108	General Tamil-I/ Advance Tamil -I Hindi-I/French-I (2 Levels)	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3/4
	II	English	UENL109/ UENL110	English for Communication (Stream-I) /English for Communication (Stream-II)	UENL107/ UENL108	5	3/4
	III	Major Core (DSC) - I	UCSM110/ UCAM110	Principles of Information Technology	UCSM108	5	4
		Major Core (DSC) - II	UCSM109/ UCAM111	Programming Methodology	-	4	4
		Major Core (DSC) - III	UCSR110/ UCAR106	Programming Methodology – Practical	-	3	2
		Allied (GE) - I	UMAA114	Mathematics for Computer Science	-	6	4
		Professional English	UPEM101	Professional English I	-	6	4
	IV	Value Education (SEC)				2	1
					Total	**36**	**25/27**
II	I	Language	UTAL207/ UTAL208	General Tamil-II/ Advance Tamil -II Hindi-II/French-II (2 Levels)	UTAL205/ UTAL206/ UHIL201/ UFRL201	5	3 /4
	II	English	UENL209/ UENL210	English for Communication (Stream-I)/English for Communication (Stream-II)/	UENL207/ UENL208	5	3/4
	III	Major Core (DSC) - IV	UCSM207/ UCAM206	Data Structures	UCSM206	4	4
		Major Core (DSC) - V	UCSM208/ UCAM207	Python Programming	-	4	4
		Major Core (DSC) - VI	UCSR207/ UCAR205	Data Structures using Python – Practical	UCSR206	3	2
		Allied (GE) - II	UMAA218	Mathematics for Computer Science	-	6	4
		Professional English	UPEM201	Professional English II	-	6	4
	IV	NME (SEC)				3	2
		Internship	UCSI201	Internship/ Field work/ Field Project		-	-/1 (Extra Credit)
	V		Extension Programme/ Physical Education/ NCC			-	1/ 2
					Total	**36**	**27/31**

III	I	Language	UTAL307/ UTAL308	General Tamil -III Advance Tamil-III Hindi-III/ French-III(2 Levels)	UTAL305/ UTAL306 UHIL301/ UFRL301	5	3 /4
	II	English	UENL309/ UENL310	English for Communication (Stream-I) / English for Communication (Stream-II)	UENL307/ UENL308	5	3 /4
	III	Major Core (DSC) - VII	UCSM305	Java Programming	UCSM304	5	5
	III	Major Core (DSC)- VIII	UCSM307	Software Engineering	UCSM511	4	4
	III	Major Core (DSC) - IX	UCSR308	Java Programming – Practical	UCSR305	3	2
	III	Allied (GE) – V	UPHA305	Electronics for Computer Science	-	3	3
	III	Allied (GE) –VI	UPHR305	Electronics for Computer Science– Practical	-	3	2
	IV	Value Education (SEC)				2	1
					Total	**30**	**23/25**
IV	I	Language	UTAL407/ UTAL408	General Tamil -IV Advance Tamil-IV Hindi-IV/ French-IV(2 Levels)	UTAL405/ UTAL406/ UHIL401/ UFRL401	5	3 /4
	II	English	UENL409/ UENL410	English for Communication (Stream-I)/ English for Communication (Stream-II)	UENL407/ UENL408	5	3/ 4
	III	Major Core (DSC) - X	UCSM409	Operating Systems		5	5
		Major Core (DSC) - XI	UCSR412	Operating System Practical	UCSR411	4	3
		Allied (GE) – IX	UPHA403	Digital Electronics for Computer Science		3	3
		Allied (GE) - X	UPHR403	Digital Electronics for Computer Science – Practical		3	2
	IV	Online Courses		NPTEL		3	1/2
		Soft Skill (SEC)				2	1
		Internship	UCSI401	Internship/ Field work/ Field Project		-	-/1 (Extra Credit)
	V	Extension Programme / Physical Education				-	0/2
					Total	**30**	**21/27**
	III	Major Core (DSC) - XII	UCSM506	Data mining	-	5	5

V	III	Major Core (DSC) - XIII	UCSM510	Computer Networks		5	4
	III	Major Core (DSC) - XIV	UCSM512	Database Management System	UCSM509	4	4
	III	Major Core (DSC) - XV	UCSR512	DataMining – Practical	UCSR509	4	3
	III	MAJOR ELECTIVE (Discipline Specific Elective) – XVI	UCSO501/ UCAO501/ UCSO502/ UCSO503/ UCSO504	Cyber Security / Computer Graphics/ React JS/ Blockchain Technology	-	5	4
	III	Major Core (DSC) - VII	UCSP501	Project	UCSP601	5	5
	IV	Value Education				2	1
					Total	**30**	**26**
VI	III	Major Core (DSC) – Core XVIII	UCSM612	Cloud Computing	-	5	5
		Major Core (DSC) - XIX	UCSM614	Bigdata Tools	UCSM610	5	4
		Major Core (DSC) - XX	UCSM615	Internet of Things	UCSO608	5	4
		Major Core (DSC) - XXI	UCSR608	Bigdata Tools Practical	-	4	3
		Major Core(DSC) - XXII	UCSR609	Cloud Computing- Practical	UCSR508	4	4
		MAJOR ELECTIVE (Discipline Specific Elective) – XXIII	UCSO609/ UCSO610/ /UCSO606	Artificial Intelligence/ Open Source Technology/ Network Security	-	5	4
		Viva – Voce	UCSM611	Comprehensive Viva Voce	-	-	1
	IV	Soft Skill (SEC)				2	1
		Internship	UCSI60	Internship/ Field work/ Field Project		-	-/1 (Extra Credit)
	V	Extension Programme / Physical Education/ NCC	UROX601	Rural Outreach Programme		-	0/2
					Total	**30**	**24/27**
					Grand Total	**192**	**148/164**

CLOUD COMPUTING

UCSM612

Semester : VI **Credit :5**
Category : Core XVIII **Hours/Week : 5**
Class & Major : III B.Sc CS **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO-1	Understand the basic concepts of cloud computing
CO-2	Examine the components and the protocols in existing technologies in computing
CO-3	Build a small low cost embedded system with the Cloud
CO-4	Evaluate the various services in Cloud Computing.
CO-5	Apply the architecture of compute and storage cloud, service and delivery models

UNIT- I INTRODUCTION **12 Hours**

Cloud Computing Foundation: Introduction to Cloud Computing. Evolution of Cloud Computing: Hardware Evolution - Internet Software Evolution - Server Virtualization

UNIT- II WEB SERVICES DELIVERED FROM THE CLOUD **13 Hours**

Communication-as-a-Service (CaaS)- Infrastructure-as-a-Service (IaaS)- Monitoring-asa-Service (MaaS)- Platform-as-a-Service (PaaS)- Software-as-a-Service (SaaS).Building Cloud Networks: Cloud Data Center- Collaboration- Service-Oriented Architectures- Data CenterBased SOA- Open Source Software Is Used

UNIT - III FEDERATION, PRESENCE AND PRIVACY IN THE CLOUD 13 Hours

Federation in the Cloud: Four Levels of Federation- Federated Services and ApplicationsProtecting and Controlling- Future of Federation. Presence in the Cloud: Presence Protocols-
Leveraging Presence- Presence Enabled Future of Presence- Identity-as-a-Service (IaaS)Compliance-as-a-Service (CaaS)- Future of Identity. Privacy to Cloud-Based: Privacy Risks and the Cloud- Protecting Privacy information- Future of Privacy

UNIT -IV SECURITY IN THE CLOUD **14 Hours**

Cloud Security Challenges- Software-as-a-Service Security: Security Management (People)-Security Governance -Risk Management -Risk Assessment -Security Awareness - Education and Training -Secure Software Development Life Cycle (Sec SDLC)- Security Architecture Design- Security Images -Data Privacy - Data Security - Application SecurityVirtual Machine Security.

UNIT- V FOG AND EDGE COMPUTING **13 Hours**

Internet of Things and new Computing Paradigm – Addressing the Challenges in Federating Edge Resources – Integrating IOT, Cloud Infrastructures – Management and Orchestration of Network Slices in 5G,Fog,Edge and Clouds- Optimization problems in Fog and Edge Computing.

Text Books

- Rittinghouse, John W, & James F. Ransome. (2017).*Cloud Computing:implementation. Management and Security*. CRC Press.
- RajkumarBuyya,Satish Narayana Sriama. (2019). *Fog and Edge Computing. Principles and Paradigms*.wiley Publication.

Reference Book

- RajkumarBuyya, Christian Vecchiola, S. ThamaraiSelvi.(2013). *Mastering Cloud Computing*. Tata Mcgraw Hill.

e-Resources

- http://www.w3schools.com/html/
- https://www.tutorialspoint.com/cloud_computing/index.htm

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the core concepts of Cloud Computing and its characteristics	K1,K2
CO-2	Apply various Services and Models in Cloud.	K3
CO-3	Examine the vision of Cloud Security Risk from a global context.	K4
CO-4	Determine the Market perspective of Cloud Computing.	K5
CO-5	Build various cloud computing models by using Fog and Edge Computing	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	1	2	2	1
CO 2	3	3	3	2	3	2
CO 3	3	3	2	3	3	3
CO 4	3	3	2	3	3	3
CO 5	3	3	3	2	3	3

High correlation -66%
Moderate Correlation -27%
Low Correlation -7%

BIGDATA TOOLS

UCSM614

Semester : VI **Credit : 4**
Category : Major Core (DSC)- XIX **Hours/week : 5**
Class &Major: III B.Sc CS **Total Hours : 52**

Course Objectives

CO No.	To enable the students
CO-1	Understand the basics of concepts of Big Data analytics and tools
CO-2	Identify the need and application of Map Reduce
CO-3	Analyze the various search algorithms applicable to Big Data
CO-4	Apply analytics on structured and Unstructured Data
CO-5	Develop Big Data Solutions using Database

UNIT I INTRODUCTION **10 Hours**

Introduction– distributed file system–Evolution of Big data — Best Practices for Big data Analytics-Big Data and its importance, Four Vs, Drivers for Big data, Big data analytics, and Big data applications. Algorithms using Mapreduce

UNIT II HADOOP **11 Hours**

Big Data – Apache Hadoop & Hadoop EcoSystem– Components of Hadoop-Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization.

UNIT III HDFS, HIVE AND HIVEQL, HBASE **10 Hours**

HDFS-Overview, Installation and Shell, Java API; Hive Architecture and Installation, Comparison with Traditional Database; HiveQLQuerying Data- Sorting And Aggregating, Map ReduceScripts, Joins & Subqueries; HBase concepts- AdvancedUsage, SchemaDesign, AdvanceIndexing; PIG,Zookeeper- how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

UNIT IV SPARK& NOSQL **10 Hours**

Introduction to Data Analysis with Spark, Downloading Spark and Getting Started, Programming with RDDs, Machine Learning with MLlib. NoSQL – Uses - Types of NoSQL databases - Advantages of NoSQL, Use of NoSQL in Industry, SQL vs NoSQL, NewSQL.

UNIT V DATA BASE FOR THE MODERN WEB **11 Hours**

Introduction to MongoDB - key features, Core Server tools - Creating and Querying through Indexes, Constructing queries on Databases - Collections and Documents - MongoDB Query Language.

Real time Analytics Platform (RTAP) applications.

Case Studies: Real Time Sentiment Analysis, Stock Market Predictions. Using Graph Analytics for Big Data:

Text Books

- Sima Acharya, SubhashiniChhellappan, (2012). BIG Data and Analytics, Willey.
- Boris lublinsky, Kevin t. Smith, AlexeyYakubovich,(2015). *Professional Hadoop Solutions*, Wiley, ISBN: 978812655107.
- Chris Eaton,Dirkderooset al. , (2012). *Understanding Big data* , McGraw Hill.
- Kyle Banker,PiterBakkum , (2016). *MongoDB in Action*, Shaun Verch, Dream tech Press.

Reference Books

- Tom White, (2012). *HADOOP: The definitive Guide*, O Reilly.
- VigneshPrajapati, (2013). *Big Data Analytics with R and Haoop*, Packet Publishing.

e – Resources

- http://www.bigdatauniversity.com/
- http://www.coreservlets.com/hadoop-tutorial/#Pig-1
- http://in.reuters.com/tools/rss
- http://www.altova.com/xmlspy.html
- https://www.w3.org/RDF/

Course Outcomes:

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Understand Big Data and its analytics in the real world	K1,K2
CO-2	Solve Data Intensive Problems using Map Reduce Paradigm	K3
CO-3	Explore tools and practices for working with big data	K4
CO-4	Evaluate Big Data Analytics using pig and spark tools to generate Solutions.	K5
CO-5	Construct Big Data tools in modern databases	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	1	2	1	2
CO 2	3	2	3	2	3	2
CO 3	3	3	3	2	3	3
CO 4	3	3	3	3	3	2
CO 5	3	3	3	2	3	3

High correlation : 63%
Moderate Correlation : 30%
Low Correlation :7%

INTERNET OF THINGS

UCSM615

Semester : VI **Credits : 4**
Category : Major Core (DSC) - XX **Hours/Week : 5**
Class &Major : III B.Sc CS **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO-1	Identify the foundational concepts and phases of the Internet of Things (IoT) and analyze the challenges and issues related to IoT security and privacy.
CO-2	Analyze the components of IoT, including control units, sensors, communication modules, power sources, and communication technologies, such as RFID, Bluetooth, Zigbee, and Wi-Fi.
CO-3	Develop programming skills for IoT by setting up and programming microcontrollers, such as the Arduino or equivalent platforms, to read data from sensors and actuators.
CO-4	Evaluate the role of RFID technology in IoT, including the three core components of RFID systems, RFID middleware, and the EPC architecture.
CO-5	Design and troubleshoot basic machine-to-machine (M2M) interactions, including local and cloud-based M2M interactions, and implement M2M applications, such as alarm systems, automated light controllers, and automated sprinkler controllers.

UNIT - I INTRODUCTION **13 Hours**

Definition – phases – Foundations – Policy– Challenges and Issues - identification - security – privacy. Components in internet of things: Control Units – Sensors – Communication modules – Power Sources – Communication Technologies – RFID – Bluetooth – Zigbee – Wifi – Rflinks – Mobile Internet – Wired Communication.

UNIT - II PROGRAMMING THE MICROCONTROLLER FOR IOT **13 Hours**

Basics of Sensors and actuators – examples and working principles of sensors and actuators – Cloud computing and IOT – Arduino/Equivalent Microcontroller platform – Setting up the board - Programming for IOT – Reading from Sensors.

UNIT – III RFID AND INFORMATION TECHNOLOGY INTEGRATION **13Hours**

What Is RFID? - The Three Core Components of an RFID System - RFID Tags - RFID Interrogators - RFID Controllers - What Is RFID Middleware? - The Recent Focus on Middleware - Core Functions of RFID Middleware - Middleware as Part of an RFID System—The EPC Architecture - The Present State of Middleware Development - Middleware Vendors.

UNIT – IV MACHINE-TO-MACHINE INTERACTIONS 13 Hours

Introduction - Types of IoT interaction - Basic local M2M interactions - Cloud M2M with IFTTT – M2M alarm system - Automated light controller - Automated sprinkler controller - Troubleshooting basic M2M issues

UNIT V CASE STUDIES AND REAL-WORLD APPLICATIONS 13 Hours

Real world design constraints - Applications - Asset management, Industrial automation, smart grid, Commercial building automation, Smart cities - participatory sensing - Data Analytics for IoT – Software & Management Tools for IoT Cloud Storage Models & Communication APIs – Cloud for IoT - Amazon Web Services for IoT.

Text Books

- CharalamposDoukas. (2002). *Building Internet of Things with the Arduino*- Create space-
- V. Daniel Hunt, Albert Puglia, Mike Puglia. (2007). *Rfid-A Guide To Radio Frequency Identification* –Wiley.
- Marco Schwartz. (2016)**.** *Internet of Things with Arduino Cookbook*. Packt Publishing Olivier Hersent, David Boswarthick, Omar Elloumi. (2012).*The Internet of Things–Key applications and Protocols*. Wiley.

References Book

- Luigi Atzor et.al.(2010). *The Internet of Things: A survey*- Journal on Networks-Elsevier Publications.

e-Resources

- http://postscapes.com/
- http://www.theinternetofthings.eu/what-is-the-internet-of-things

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the working of Internet of Things (IoT) system by integrating control units, sensors, and communication technologies using appropriate programming languages and tools.	K1,K2
CO-2	Make use of the potential security and privacy risks associated with IoT devices and implement appropriate measures to mitigate those risks.	K3
CO-3	Examine the effectiveness of various machine-to-machine (M2M) interactions in different scenarios, and troubleshoot common M2M issues.	K5
CO-4	Analyze data from various sources, including participatory sensing and cloud storage models to perform data analytics and generate insights that can inform decision-making in IoT applications.	K4
CO-5	Design and implement a real-world IoT application to solve a specific problem, considering real-world design constraints, such as cost, scalability, and usability.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	1	1	1	2
CO 2	3	2	2	2	3	2
CO 3	3	3	3	2	1	2
CO 4	3	2	2	3	2	3
CO 5	3	3	3	2	3	3

High correlation -47 %
Moderate Correlation -40%
Low Correlation -13%

BIGDATA TOOLS–PRACTICAL

UCSR608

Semester : VI **Credit : 3**
Category : Core XXI **Hours/week : 4**
Class &Major : III B.Sc CS **Total Hours : 52**
Course Objectives:

CO.No.	To enable the students
CO - 1	Understand the need of Big Data, challenges and Installing Hadoop
CO - 2	Set up single and multi-node Hadoop Clusters
CO - 3	Analyse the Big Data using Map-reduce programming in Hadoop
CO - 4	Design new algorithms that uses Map Reduce to apply on Unstructured and structured data
CO - 5	Apply Hive QL techniques for sorting Data.

List of Programs

1. Implement the following file management tasks in Hadoop -Adding files and directories
2. Implement the following file management tasks in Hadoop - Retrieving files
3. Implement the following file management tasks in Hadoop - Deleting Files
4. Install and Run Pig then write Pig Latin scripts to join

5. Install and Run Pig then write Pig Latin scripts to sort Group

6. Install and Run Pig then write Pig Latin scripts to filter Data.

7. Install and Run Hive then use Hive to create, alter and drop Databases.

8. Install and Run Hive then use Hive to create, table, views, function, and indexes

Reference Book:

- Jay Liebowitz,,(2013). *Big Data And Business Analytics Laboratory,* CRC Press.

e-Resource

- https://www.studocu.com/in/document/jawaharlal-nehru-technological-universityanantapur/computer-science-engineering/3-cse-big-data-analytics-19a-05-602p-r-19-labmanual/31491781

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Demonstrate the components of Apache Hadoop	K1,K2
CO-2	Apply machine learning techniques like classification and regression.	K3
CO-3	Analyze and visualize large datasets using BigData tools	K4
CO-4	Evaluate large datasets using Pig and Hive tools.	K5
CO-5	Develop Models by Hands on experience with real world data.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	1	1	3	3
CO 2	3	2	2	1	3	2
CO 3	3	2	3	3	3	2
CO 4	3	2	3	1	3	3
CO 5	3	3	3	1	3	3

High correlation - 60 %
Moderate Correlation -23%
Low Correlation -17%

CLOUD COMPUTING–PRACTICAL

UCSR609

Semester : VI **Credit : 4**
Category : Major Core (DSC)- XXII **Hours/week : 4**
Class & Major : III B.Sc CS **Total Hours : 52**
Course Objectives:

CO.No.	After completion of the course, the student will be able to
CO - 1	Understand the fundamentals of installation of Virtual box
CO - 2	Execute Simple programs in Virtual machine
CO - 3	Design simple web applications by installing Google App Engine
CO - 4	Apply Cloudsim for simulation
CO - 5	Set up single and multi-node Hadoop Clusters

List of Programs

1. Install Virtual box/VMware Workstation with different flavours of linux or windows OS on top of windows7 or 8.
2. Install a C compiler in the virtual machine created using virtual box and execute Simple Programs.
3. Install Google App Engine. Create hello world app and other simple web applications using python/java.
4. Use GAE launcher to launch the web applications.
5. Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim.
6. Find a procedure to transfer the files from one virtual machine to another virtual machine.
7. Find a procedure to launch virtual machine using trystack (Online Openstack Demo Version)
8. Installation and Configuration of Hadoop
9. Install Hadoop single node cluster and run simple applications like Wordcount.
10. Case Study: Amazon Web Services

e-Resource

- https://stannescet.ac.in/cms/staff/qbank/CSE/Lab_Manual/CS8711-CLOUD%20COMPUTING%20LABORATORY-778800227-CC%20LAB%20MANUAL%20(1).pdf
- https://www.jnec.org/labmanuals/cse/be/sem1/Cloud-Computing-BE-PART-I.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Identify the different types of cloud services	K1, K2
CO-2	Construct cloud computing on different platforms like AWS, Azure.	K3
CO-3	Categories multiple cloud services and technologies to build complex and scalable systems.	K4
CO-4	Evaluate different cloud architectures and deployment models	K5
CO-5	Design and implement cloud based solutions for specific use cases, such as data analytics, machine learning and IOT.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	1	1	2	2
CO 2	3	2	3	2	3	2
CO 3	3	2	3	3	3	2
CO 4	3	2	3	3	2	3
CO 5	3	3	2	1	3	3

High correlation – 53%
Moderate Correlation – 37%
Low Correlation -10%

ARTIFICIAL INTELLIGENCE

UCSO609

Semester :VI **Credit : 4**
Category : Elective Core (DSC)- XXIII **Hours/week : 5**
Class & Major: III B.Sc Computer Science **Total Hours : 52**
Course Objectives:

CO No.	To enable the students
CO-1	Outlining the concepts of intelligent agents.
CO-2	Understand the underlying structure behind intelligence mathematically
CO-3	Applying the logical implications in probabilistic Reasoning
CO-4	Analyze automated learning techniques
CO-5	Reviewing artificial intelligence techniques for Robotics

UNIT I INTELLIGENT AGENTS **13 Hours**

Introduction to AI – Agents and Environments – Structure of Agents- Problem solving agents- Example problems-Uninformed Search strategies: Breadth First Search, Depth First

search, Depth limited search, Iterative deepening search, Bidirectional Search - Avoiding repeated States - Searching with Partial information.

UNIT II PROBLEM SOLVING. 13 Hours

Informed search strategies:Heuristic search strategies – heuristic functions-Local search and optimization problems – local search in continuous space – online search agents and unknown environments- Constraint Satisfaction Problems (CSP) - Backtracking CSP, The Structure of Problems-Adversarial Search-Games, Optimal Decisions in Games, min-max tree, Alpha- Beta Pruning.

UNIT III LOGICAL AGENTS. 13 Hours

Knowledge-based agents – propositional logic– Reasoning pattern in propositional logic – agents based on propositional logic. First-order logic (FOL)– syntax and semantics – knowledge engineering in FOL– inferences in first order logic – forward chaining – backward chaining.

UNIT IV LEARNING. 13 Hours

Learning-Forms of Learning- Inductive Learning - Learning Decision Trees. Knowledge in Learning – A logical Formulation of Learning-Knowledge Learning-Explanation Based Learning Using Relevant Information – Inductive Logic Programming. Reinforcement Learning – Passive Reinforcement Learning – Active Reinforcement Learning-Generalization in Reinforcement Learning.

UNIT V APPLICATIONS OF AI. 13 Hours

Artificial Intelligence applications - Language Models-Information Retrieval-Information Extraction-Natural Language Processing-Machine Translation-Speech Recognition-Robotics Planning and Perception.

Case Study: Credit card Fraud Analysis -Imbalanced Data, Neural Network

Text Books

- Stuart Russel and Peter Norvig, (2020). "*Artificial Intelligence: A Modern Approach*", Fourth Edition, Pearson Education.
- Deepak Khemani, (2013). "*Artificial Intelligence*", Tata McGraw Hill Education.
- Dennis Rothman, (2018). "*Artificial Intelligence* by Example: Develop machine intelligence from scratch using real artificial intelligence use cases".

Reference Books

- Dan W. Patterson, (2007). "Introduction to AI and ES", Pearson Education.
- Kevin Night, Elaine Rich, and Nair B., (2008). "Artificial Intelligence", McGraw Hill. Patrick H. Winston, (2006). "Artificial Intelligence", Third edition, Pearson Edition.

e-Resources

- http://nptel.ac.in/

Course Outcomes

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Identify the appropriate algorithms for solving given AI problems	K1,K2
CO-2	Apply autonomous agents that make effective decisions in fully informed, partially observable, and adversarial settings.	K3
CO-3	Analyze and formulate the First Order Logic from propositional logic.	K4
CO-4	Evaluate intelligent expert models towards perception and prediction from intelligent environment.	K5
CO-5	Build AI techniques to synthesize information and develop models within the constraint of Application area	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	2	3	1
CO 2	3	2	3	2	2	2
CO 3	3	2	2	2	3	2
CO 4	3	2	1	2	3	3
CO 5	3	2	3	2	3	3

High correlation :50%
Moderate Correlation :43%
Low Correlation :7%

OPEN SOURCE TECHNOLOGY

UCSO610

Semester :VI **Credit : 4**
Category : Elective Core (DSC)- XXIII **Hours/week : 5**
Class & Major: III B.Sc Computer Science **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO-1	Identify the concepts of HTML and CSS attributes.
CO-2	Understand the basic elements of UI design.
CO-3	Applying javascript for creating dynamic documents.
CO-4	Analyze Database using MYSQL Commands.
CO-5	Reviewing PHP Scripting for Database.

UNIT I HTML AND CSS **13 Hours**

Introduction: Introduction to the Internet and World Wide Web - World Wide Web Consortium (W3C). Learning front-end development technologies: HTML, CSS, JavaScript, JQuery. Structure of HTML pages- HTML tags and attributes- Basic formatting tags – Lists – Images- Hyperlink- Table – Form – Frame. **CSS** – Introduction – Benefits – Syntax – Selectors – Color Background Cursor – Text Fonts – Lists Tables- Box Model – Display Positioning.

UNIT II BASIC ELEMENTS OF UI DESIGN **13 Hours**

Introduction to basic elements of visual design – detailed study of color, color wheel, visual hierarchy, legibility and readability, grid, layout **UI/ UX Design Tools:** User Study-Interviews, writing personas: user and device personas, User Context, Building Low Fidelity Wireframe and High-Fidelity Polished Wireframe Using wireframing Tools, Creating the working Prototype using Prototyping tools, Sharing and Exporting Design

UNIT III JAVASCRIPT AND JQUERY **13 Hours**

JavaScript – Date – Array - Pattern matching using regular expressions - Dynamic documents with java script - Intro to jQuery UI – Need of jQuery UI in real web sites – Downloading and Importing j Query UI – Draggable – Droppable – Resizable – Selectable – Sortable – Accordion – Auto Complete – Date Picker – Dialog – Menu – Progress Bar – Slider – Spinner – Tabs – Tooltip – Color Animation – Easing Effects – addClass – removeClass – Effects – jQuery UI themes – Customizing jQuery UI widgets / plug-ins

UNIT IV MYSQL **13 Hours**

Introduction to MYSQL - The Show Databases and Table - The USE command Create Database and Tables - Describe Table - Select, Insert, Update, and Delete statement - Some Administrative detail - Table Joins - Loading and Dumping a Database.

UNIT V PHP **13 Hours**

Introduction- General Syntactic Characteristics - PHP Scripting - Commenting your code - Primitives, Operations and Expressions - PHP Variables - Operations and Expressions Control Statement - Array - Functions - Basic Form Processing - File and Folder Access - Cookies - Sessions - Database Access with PHP - MySQL - MySQL Functions - Inserting Records - Selecting Records - Deleting Records - Update Records.

Case Studies: Example Projects: Apache Web server, BSD, GNU/Linux, Android, Mozilla (Firefox), Wikipedia, Drupal, WordPress, Git, GCC, GDB, GitHub, Open Office, LibreOffice. Interaction Design Advance – Sketch, Figma, Invision, Adobe XD

Text Books

- Paul Deitel,Harvey Deitel,Abbey Deitel, (2018). "*Internet and World Wide Web*", Fifth Edition, Published by Pearson: How to Program Paperback.
- Randy Connolly, Ricardo Hoar, (2016). "*Fundamentals of Web Development*", Published by Pearson.

- Laura Lemay, Rafe Colburn, Jennifer Kyrnin, (2016). "*Mastering Html, Css&Javascript*", Web Publishing Paperback.
- Rex Hartson and PardhaPyla ,(2018). *The UX Book* , 2nd Edition.
- Rebecca Murphey. (2017). jQuery Fundamentals.(1st ed.,). Superhero Labs Publisher.

Reference Books

- Eric Rosebrock, Eric Filson ,(2004). "Setting Up LAMP: Getting Linux, Apache, MySQL, and PHP and working Together", Published by John Wiley and Sons.
- James Lee and Brent Ware , (2008). "Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP", , Dorling Kindersley(India) Pvt. Ltd.
- Ben Frain,(2012). "Responsive web design with HTML 5 and CSS 3",Packt publishing.

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the basic tags of HTML and CSS	K1,K2
CO-2	Apply the user Interfaces to different devices and requirements	K3
CO-3	Analyze different jQuery UI.	K4
CO-4	Evaluate web applications using LAMP.	K5
CO-5	Create session control PHP code for a website.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	1	1	2	1
CO 2	3	3	3	2	3	2
CO 3	3	3	2	2	2	3
CO 4	3	3	3	2	3	2
CO 5	3	3	3	1	2	3

High correlation -57 %
Moderate Correlation – 30%
Low Correlation -13%

NETWORK SECURITY

UCSO606

Semester : VI **Credit :4**
Category : Major Elective **Hours/Week :5**
Class : III B.Sc CS **Total Hours :65**

Course Objectives

CO No.	To enable the students
CO-1	Recall the key concepts of security, the different types of attacks, and the principles of security.
CO-2	Explain the various encryption techniques, including conventional and public key encryption, and the differences between them.
CO-3	Apply the principles of cryptography to design and implement secure network applications using encryption algorithms, message authentication codes, and hash functions.
CO-4	Analyze the strengths and weaknesses of different encryption techniques and modes of operation, and evaluate their effectiveness in different scenarios.
CO-5	Evaluate the different network security applications, including Kerberos, X.509 authentication service, and public key infrastructure (PKI), and their effectiveness in securing communication channels.

UNIT - I INTRODUCTION **13 Hours**

The concepts of Security- the Need for Security - Security Approaches- Principles of Security- Types of Attacks. Convention Encryption: Conventional Encryption Mode- Steganography- Classical Encryption Techniques - Simplified DES- Block Cipher Principles - The Data Encryption Standard - The Strength of DES - Differential and Linear Cryptanalysis - Block Cipher Design Principles - Block Cipher Modes of operation - Conventional Encryption algorithms.

UNIT - II PUBLIC KEY ENCRYPTION AND HASH FUNCTIONS **12 Hours**

Public Key Cryptography - Principles of Public Key Cryptosystems - The RSA Algorithm - Key Management - Diffie Hellman Key Exchange - Elliptic Curve Cryptography Message Authentication and Hash Functions Authentication Requirements - Authentication Functions - Message Authentication Codes - Hash Functions - Security of Hash Functions.

UNIT - III HASH AND MAC ALGORITHMS **12 Hours**

Introduction Nifty things to do with a Hash - MD5 Message Digest Algorithm - Secure Hash Algorithm (SHA-I) - RIPEMD - HMAC - CMAC - Digital Signatures - Authentication Protocols -Digital Signature Standard.

UNIT - IV NETWORK SECURITY APPLICATIONS **15 Hours**

Authentication Applications - Kerberos - X.509 authentication service - public key Infrastructure (PKI) - Electronic Mail Security - Pretty Good Privacy - S/MIME - IP Security - IP Security Overview - IP Security Architecture - Authentication Header - Encapsulating payload - combining security association - Key Management - Web Security - Web Security Considerations - Secure Socket Layer & Transport Layer Security - Secure Electronic Transaction - Introduction to Wireless security.

UNIT - V INTRUDERS, VIRUSES, WORMS AND CYBER SECURITY **13 Hours**

Intruders - Intrusion detection - password management - Viruses and Related Threats - Distributed Denial of service attacks - Firewall Design Principles - Trusted Systems - virtual

private network (VPN). Introduction to Cyber Security – Goals of Cyber Security – Computer Forensics – Steganography – Cyber Crime – Vulnerability Assessment.

Text Books

- William Stallings.(2013).*Cryptography and Network Security*. (6th ed.,). Prentice Hall.
- AtulKahate. (2006).*Cryptography and Network Security*.Tata McGraw-Hills.

Reference Books

- Neal Krawetz.(2007). *Introduction to Network Security*. Thomson Business Press.
- EricMaiwald. (2004). *Information Security Series*. Fundamental of Network security. Dreamtech press.

e– Resource

- http://www.nptel.ac.in/courses/106105031

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the fundamental concepts of security, including the need for security, security approaches, principles of security, and types of attacks.	K1,K2
CO-2	Apply conventional encryption techniques, including block cipher principles, the Data Encryption Standard (DES), and block cipher modes of operation.	K3
CO-3	Examine network security applications, including authentication applications, electronic mail security, IP security, and web security	K4
CO-4	Evaluate and implement public key encryption and hash functions, including the RSA algorithm, Diffie Hellman key exchange, and message authentication codes.	K5
CO-5	Formulate measures against intruders, viruses, worms, and cyber threats, including intrusion detection, password management, firewalls, and virtual private networks.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	2	3	2	2
CO 2	3	2	2	3	2	2
CO 3	3	2	1	3	2	3
CO 4	3	3	2	3	3	2
CO 5	3	1	2	3	3	3

High correlation -50 %

Moderate Correlation – 40%

Low Correlation -10%

III & IV EVALUATION COMPONENTS OF CIA

Semester	Part	Category	Course Code	Course Title	Component III	Component IV
VI	III	Major Core (DSC) - Core XIX	UCSM610	Big Data Tools	Assignment	Case Studies
	III	Major Core (DSC) - XXI	UCSR608	Big Data Tools - Practical	DPA	Viva
	III	Major Core (DSC) - XXVII	UCSR609	Cloud Computing - Practical	DPA	Viva
	III	Major Elective (Discipline Specific Elective) - XXIII	UCSO609	Artificial Intelligence	Assignment	Problem Solving
			UCSO610	Open Source Technology	Case Study	Prototyping

DEPARTMENT OF COMPUTER APPLICATIONS

PREAMBLE

UG: Programme profile, and syllabi of courses in the VI semester along with evaluation components III & IV (with effect from 2021-2024 batch onwards)

PROGRAMME PROFILE BCA

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	Upon completion of the Programme , the students will be able to
PSO-1	Understand and develop a strong foundation in computer applications concepts, including programming languages, algorithms, computer networks, database management, and software engineering.
PSO-2	Identify the system solutions using suitable computing techniques leading to propulsion towards employability.
PSO-3	Communicate effectively in both technical and non-technical stakeholders and collaborate a team environment and leadership skills, and they will present their ideas, solutions and project outcomes in a clear and concise manner.
PSO- 4	Apply computational methods, proficiency in programming languages and tools for solving real-time Problems.
PSO- 5	Develop professional practices in the field of Computer Applications in adherence to ethical standards.
PSO- 6	Demonstrate the ability to learn and adapt to emerging technologies and tools, and engage in lifelong learning in the field of computer applications.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hours/ Week	Credit Min/Max
I	I	Language	UTAL107/ UTAL108	Languages/ AECC-II Tamil-I/ Hindi-I/ French-I (2 Levels)	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3 / 4
	II	English	UCEL101/ UCEL102	Communicative English-/ English/AECC-I (2 Levels)	UENL107/ UENL108	5	3/ 4
	III	Major Core (DSC) - I	UCAM110	Principles of Information Technology	-	5	4
	III	Major Core (DSC) - II	UCAM111/ UCSM109	Programming Methodology	-	4	4
	III	Major Core (DSC) - III	UCAR106/ UCSR110	Programming Methodology - Practical	-	3	2
	III	Allied (GE) - I	UMAA110	Mathematical Methods I	-	6	4
	III	Professional English	UPEM101	Professional English I	-	6	4
	IV	Value Education (SEC)				2	1
Total						**36**	**25/27**
II	I	Language	UTAL207/ UTAL208	Languages/ AECC-II Tamil-II/ Hindi-II/ French-II (2 Levels)	UTAL205/ UTAL206/ UHIL201/ UFRL201	5	3 / 4
	II	English	UCEL201/ UCEL202	Communicative English-/ English/AECC-I (2 Levels)	UENL207/ UENL208	5	3/ 4
	III	Major Core (DSC) - IV	UCAM206/ UCSM207	Data Structures	UCAM205	4	4
	III	Major Core (DSC) - V	UCAM207/ UCSM208	Python Programming	UCAM407	4	4
	III	Major Core (DSC) - VI	UCAR205/ UCSR207	Data Structures using Python - Practical	-	3	2
	III	Allied (GE) - II	UMAA216	Mathematical Methods-II	-	6	4
	III	Professional English	UPEM201	Professional English II	-	6	4
	III	Internship	UCAI201	Internship/ Field work/ Field Project		-	-/1 (Extra Credit)
	IV	Non-Major Elective(Skill Enhancement Course)				3	2
	V	Extension Programme / Physical Education/NCC				-	1 / 2
Total						**36**	**27/31**

III	III	Major Core (DSC) - VII	UCAM310/ UCSM305	Java Programming	UCAM307	5	4
	III	Major Core (DSC) - VIII	UCAM312	Object Oriented Analysis and Design	UCAM403	5	4
	III	Major Core (DSC) - IX	UCAM311	Data Communication Networks	UCAM309 / UCAM405	5	4
	III	Major Core (DSC) - X	UCAR304/ UCSR308	Java Programming - Practical	UCAR303	4	2
	III	Allied (GE) - III	UCOA303	Financial Accounting	-	6	4
	IV	Online course		NPTEL/Spoken Tutorial/Swayam		3	½
	IV	Value Education				2	1
				Total		**30**	**20/21**
IV	III	Major Core (DSC) - XI	UCAM404	Database Management System	-	4	4
	III	Major Core (DSC) - XII	UCAM408	Operating System	UCAM507	5	4
	III	Major Core (DSC) - XIII	UCAM409	Software Engineering	UCAM509	4	4
	III	Major Core (DSC) - XIV	UCAR405	Database Modeling - Practical	UCAR402	3	2
	III	Major Core (DSC) - XV	UCAR406	Operating System- Practical	-	3	2
	III	Allied (GE) - V	UCOA403	Accounting Package	-	3	2
	III	Allied (GE) - VI	UCOR403	Accounting Package - LAB	-	3	2
	III	Internship	UCAI401	Internship/ Field work/ Field Project		-	-/1 (Extra Credit)
	IV	Non-Major Elective(Skill Enhancement Course)				3	2
	IV	Soft skill				2	1
	V	Extension Programme/ Physical Education				-	½
				Total		**30**	**24/26**

V	III	Major Core (DSC) - XVI	UCAM510	Cloud Computing	**UCAO604**	4	4
	III	Major Core (DSC) - XVII	UCAM511	R Programming	-	4	4
	III	Major Core (DSC) - XVIII	UCAM508	Open Source Technology	-	4	4
	III	Major Core (DSC) - XIX	UCAR506	Open Source Technology - Practical	-	3	2
	III	Major Core (DSC) - XX	UCAR507	R Programming - Practical	-	3	2
	III	MAJOR ELECTIVE (Discipline Specific Elective) - XXI	UCA0501/ UCS0501/ UCAO502/ UCAO503	Cyber Security/ Artificial Intelligence / Software Testing	-	5	4
		Major Core (DSC) - XXII	UCAP501	Project	UCAP601	5	5
	IV	Value Education				2	1
				Total		**30**	**26**
VI	III	Major Core (DSC) - XXIII	UCAM609	Data Mining	UCAM606	5	5
	III	Major Core (DSC) - XXIV	UCAM612	Computer Graphics and Image Processing	UCAM610	5	5
	III	Major Core (DSC) - XXV	UCAM613	Internet of Things	UCAM611	5	5
	III	Major Core (DSC) - XXVI	UCAR603	Data Mining - Practical	UCAR602	4	3
	III	Major Core (DSC) - XXVII	UCAR604	Computer Graphics and Image Processing - Practical	-	4	3
	III	MAJOR ELECTIVE (Discipline Specific Elective) - XXVIII	UCAO607/ UCAO608/ UCAO609/ UCAO610	Data Analytics/ Mobile Computing / Network Security / Machine Learning	-	5	4
	III	Viva-Voce	UCAM601	Comprehensive Viva Voce	-	-	1
	III	Internship	UCAI601	Internship/ Field work/ Field Project		-	-/1 (Extra Credit)
	IV	Soft Skill				2	1
	V	Extension Programme/ Physical Education/ NCC				-	0/2
				Total		**30**	26/29
				Grand Total		**192**	**148/1**60

DATA MINING

UCAM609

Semester : VI **Credit : 5**

Category : Core XIV **Hours/Week : 5**

Class & Major : III BCA **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	Understand the concepts of data mining and knowledge discovery in databases.
CO – 2	Apply data preprocessing techniques such as cleaning, integration, transformation, reduction, and discretization.
CO – 3	Analyze and mine multilevel and multidimensional association rules.
CO – 4	Implement backpropagation algorithm for neural network-based classification.
CO – 5	Analyze outlier data and perform outlier analysis.

UNIT I INTRODUCTION **13 Hours**

Data Mining tasks – Data Mining versus Knowledge Discovery in Data bases -Relational databases – Data warehouses – Transactional databases – Object oriented databases – Spatial databases – Temporal databases – Text and Multimedia databases – Heterogeneous databases - Mining Issues.

UNITII DATA PREPROCESSING **13 Hours**

Data Preprocessing – Data cleaning – Data Integration – Data Transformation – Data Reduction – Data Discretization.

UNIT III DATA MINING TECHNIQUES **13 Hours**

Association Rule Mining – The Apriori Algorithm – Multilevel Association Rules – Multidimensional Association Rules – Constraint Based Association Mining.

UNIT IV CLASSIFICATION AND PREDICTION **13 Hours**

Classification and Prediction – Issues– Decision Tree induction – Bayesian Classification – Back Propagation – Classification Methods – Prediction – Classifiers accuracy.

UNIT V CLUSTERING TECHNIQUES **13 Hours**

Cluster Analysis – Clustering Methods – Hierarchical Methods – Density Based Methods – Outlier Analysis – Introduction to Advanced Topics: Web Mining, Spatial Mining and Temporal Mining.

Text Book

- Jiawei Han and MichelineKamber. (2012). *Data Mining Concepts and Techniques*. Elsevier. (3rded.,) .

Reference Books

- Alex Berson and Stephen J.Smith. (2016). *Data Warehousing, Data Mining & OLAP*. Tata McGraw Hill Edition. 35th Reprint.

- Ian Witten Eibe Frank Mark Hall. (2011). *Data Mining. Practical Machine Learning Tools and Techniques*. (3rd ed.,).

e-Resources

- https://www.microstrategy.com
- https://www.techopedia.com

Course Outcomes

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Define the fundamental concepts of data mining and knowledge discovery in databases.	K1,K2
CO-2	Identify and differentiate various types of databases and their relevance to data mining.	K3
CO-3	Compare data preprocessing techniques, such as cleaning, integration, transformation, reduction, and discretization, to improve data quality.	K4
CO-4	Evaluate the accuracy and performance of classification models using appropriate metrics and techniques.	K5
CO-5	Design and explain the concepts and challenges related to advanced topics in data mining, such as web mining, spatial mining, and temporal mining.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	3	2	3
CO 2	3	2	3	2	2	3
CO 3	2	3	2	3	2	2
CO 4	3	3	3	3	3	3
CO 5	3	3	1	2	3	3

High Correlation – 63%
Moderate Correlation – 34%
Low Correlation – 3%

COMPUTER GRAPHICS AND IMAGE PROCESSING

UCAM612

Semester : VI **Credits : 5**
Category : Major Core (DSC)-XXIV **Hours/Week : 5**
Class & Major: III BCA **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	Understand the basics of computer graphics and image processing.
CO – 2	Classify various filters, Point processing, and Arithmetic operations in image processing.
CO – 3	Differentiate applications of graphics and image processing.
CO – 4	Analyze the Multimedia compression and animations
CO – 5	Apply the knowledge of image processing and pattern recognition at commercial values in industry and business management.

UNIT I GRAPHICS SYSTEMS AND GRAPHICAL USER INTERFACE 13 Hours

Pixel, Resolution, Video display devices - Types – Graphical devices – Direct screen interaction – Logical input function –GKS. User dialogue – Interactive picture construction techniques.

UNIT II GEOMETRIC DISPLAY PRIMITIVES AND ATTRIBUTES 13 Hours

Geometric Display Primitives: Points, Lines and Polygons. Point display method – Line drawing: DDA 2D Transformations and Viewing: Transformations - types – matrix representation – Concatenation - Scaling, Rotation, Translation, Shearing, Mirroring. Homogeneous coordinates – Window to view port transformations. Windowing and Clipping: Point, Lines, Polygons - boundary intersection methods.

UNIT III DIGITAL IMAGE FUNDAMENTALS 13 Hours

Image Formation and types – Basic geometric transformations – Fourier Transforms – Walsh – Hadamard – Discrete Cosine – Hotelling Transforms.

UNIT IV IMAGE ENHANCEMENT AND RESTORATION 13 Hours

Histogram Modification Techniques – Image Smoothening – Image Sharpening – Image Restoration – Degradation Model – Noise Models – Spatial Filtering – Frequency Domain Filtering.

UNIT V IMAGE SEGMENTATION AND RECOGNITION 13 Hours

Detection of Discontinuities – Edge Linking and Boundary Detection – Thresholding – Region Based Segmentation – Morphology operations. Pattern classification - Clustering and Matching - Knowledge representation and use for scene analysis and image understanding (2D and 3D) - Object recognition and identification. Case study of various applications.

Text Books

- Marschner, S, Shirley, P (2021). *Fundamentals of Computer Graphics*. CRC Press (5th Ed).
- RaikarM.MShreedhara K.S (2019). *Computer GraphicsWith Open GL*.CENGAGE (1st Edition).
- Hearn D, Bake M.P and Warren R. (2011). *Computer Graphics*. Prentice-Hall of India (4th Edition) (UNIT I & II)
- Rafael C. Gonzalez, Richard E. Woods (2011). *Digital Image Processing*. Pearson Education. (3rd Edition) (UNIT III, IV &V)

Reference Books

- Newmann W.M. and Sproull R.F.,(2008)"*Principles of Interactive Computer Graphics*", Tata McGraw-Hill, Second edition.
- Foley J.D., Van Dam A, Fiener S.K. and Hughes J.F.,(2008).“*Computer Graphics*", Second edition, Pearson education, 2008.
- Anil Jain K, (2001).“*Fundamentals of Digital Image Processing*”, Prentice-Hall of India, 2001.

e-Resources

- http://www.w3schools.com
- http://www.youtube.com
- http://www.nptel.ac.in /courses/106106090
- http://www.nptel.ac.in /courses/106102063

Course Outcomes

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Choose the common terms used in computer graphics.	K1,K2
CO-2	Apply Transformation techniques used in CG.	K3
CO-3	Construct image formation and classify its types.	K4
CO-4	Evaluate Image enhancement and restoration techniques.	K5
CO-5	Develop skills on exploration and appropriate use of image processing methods.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	2	3
CO 3	2	3	2	2	2	2
CO 4	3	3	3	3	3	3
CO 5	2	3	3	3	3	3

High Correlation – 77%
Moderate Correlation – 23%
Low Correlation – NIL

COMPUTER GRAPHICS AND IMAGE PROCESSING -PRACTICAL

UCAR604

Semester :VI **Credits : 3**

Category : Major Core(DSC) - XXVII **Hours/Week : 4**

Class & Major :III BCA **Total/Hours : 52**

Course Objectives:

CO No.	To enable the students
CO – 1	Understand basic image processing techniques.
CO – 2	Effectively use the 2D software.
CO – 3	Differentiate 3D objects, create, and render the objects.
CO – 4	Analyze the image and perform segmentation of images
CO – 5	Apply the image-processing algorithm and perform various operation on medical image.

List of Programs

1. Import an Image in photo shop, perform coloring and discoloring operation with feather cut, and move operation.
2. Create different blur effect in photo shop.

2D animation in Flash

3. Create simple motion twining effect and make masking technique.
4. Create Snowfall effect in Flash

3D animation in maya

5. Create a 3D object in Maya and render it.
6. Create Interior and Exterior light setting in Maya.

Matlab

7. Color image Segmentation
8. Clustering objects with similar color
9. Medical image segmentation
10. Image Compression and removal of watermarks from image.

Course Outcomes

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Explain the applications, areas, and graphic pipeline, display and hardcopy technologies	K1
CO-2	Apply and compare the algorithms for drawing 2D images.	K2
CO-3	Discuss OpenGL application programming Interface and apply it for 3D computer graphics	K3
CO-4	Analyze and apply color image segmentation algorithm	K5
CO-5	Solve the problems in medical image segmentation and clustering, compression techniques.	K5,K6

INTERNET OF THINGS

UCAM613

Semester : VI **Credits :** 5
Category : Core XVI **Hours/Week :** 5
Class &Major : III BCA **Total Hours :** 65

Course Objectives:

CO No.	To enable the students
CO – 1	Define the concept of the Internet of Things (IoT) and its phases.
CO – 2	Demonstrate how to read data from sensors using microcontrollers.
CO – 3	Identify RFID middleware vendors and their importance in the RFID ecosystem.
CO – 4	Utilize cloud-based M2M platforms, such as IFTTT, for automation.
CO – 5	Provide hands-on experience in developing simple programs using sensors in IoT scenarios.

UNIT I INTRODUCTION 13 **Hours**

Definition – phases – Foundations – Policy– Challenges and Issues - identification - security –privacy. Components in internet of things: Control Units – Sensors – Communication modules – Power Sources – Communication Technologies – RFID – Bluetooth – Zigbee – Wifi – R flinks – Mobile Internet – Wired Communication.

UNIT II PROGRAMMING THE MICROCONTROLLER FOR IOT 13 **Hours**

Basics of Sensors and actuators – examples and working principles of sensors and actuators – Cloud computing and IOT – Arduino/Equivalent Microcontroller platform – Setting up the board - Programming for IOT – Reading from Sensors.

UNIT III RFID AND INFORMATION TECHNOLOGY INTEGRATION 13 **Hours**

What Is RFID? - The Three Core Components of an RFID System - RFID Tags - RFID Interrogators - RFID Controllers - What Is RFID Middleware? - The Recent Focus on Middleware - Core Functions of RFID Middleware - Middleware as Part of an RFID System—The EPC Architecture - The Present State of Middleware Development - Middleware Vendors.

UNIT IV MACHINE-TO-MACHINE INTERACTIONS 13 **Hours**

Introduction - Types of IoT interaction - Basic local M2M interactions - Cloud M2M with IFTTT - M2M alarm system - Automated light controller - Automated sprinkler controller - Troubleshooting basic M2M issues

UNIT V CASE STUDIES AND REAL-WORLD APPLICATIONS 13 **Hours**

Real World Applications : - Asset management-Industrial automation- smart grid, Commercial building automation - Smart cities - participatory sensing - Data Analytics for IoT – Software & Management Tools for IoT Cloud Storage Models & Communication APIs – Cloud for IoT - Amazon Web Services for IoT-Simple Programs using sensors.

Text Books

- CharalamposDoukas. (2002). *Building Internet of Things with the Arduino*. Create space.
- V. Daniel Hunt. (2007). Albert Puglia, Mike Puglia - *Rfid-A Guide To Radio Frequency Identification*. Wiley.
- Marco Schwartz. (2016). *Internet of Things with Arduino Cook book*. Packt Publishing.
- Olivier Hersent, David Boswarthick, Omar Elloumi. (2012). *The Internet of Things– Key applications and Protocols*.Wiley.

References Book

- Luigi Atzor et.al. (2010).*The Internet of Things: A survey Journal on Networks*. Elsevier Publications.

e-Resources

- http://postscapes.com/
- http://www.theinternetofthings.eu/what-is-the-internet-of-things

Course Outcomes

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Define the concept of the Internet of Things (IoT) and its components.	K1,K2
CO-2	Apply programming skills to microcontrollers (e.g., Arduino) for IoT applications.	K3
CO-3	Analyze the integration of RFID technology with information technology systems.	K4
CO-4	Evaluate different types of machine-to-machine (M2M) interactions in IoT scenarios.	K5
CO-5	Design and develop real-world IoT applications using appropriate sensors and actuators.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	2	2	3	2	2	3
CO 3	2	3	2	2	2	2
CO 4	3	3	3	3	3	3
CO 5	2	3	3	3	3	3

High Correlation – 67%
Moderate Correlation – 33%
Low Correlation – NIL

DATA MINING –PRACTICAL

UCAR602

Semester :VI **Credits : 3**
Category : Core Practical VIII **Hours/Week : 4**
Class &Major :III BCA **Total/Hours : 52**

Course Objectives:

CO No.	To enable the students
CO – 1	Understand the concepts and principles of different domains, such as student details, supermarket details, library details, employee details, customer details, recruitment details, patient details, weather details, and social networking reviews details.
CO – 2	Apply data preprocessing techniques to clean and transform the datasets.
CO – 3	Normalize table data using Knowledge Flow in Weka Tool.
CO – 4	Apply the Apriori algorithm to mine association rules from the datasets.
CO – 5	Construct decision trees using ID3 algorithm and Naïve Bayes algorithm for classification tasks.

LIST OF PROGRAMS

Create a Dataset with 'n' number of tuples for the following

1. Student Details
2. Super Market Details
3. Library Details
4. Employee Details
5. Customer Details
6. Recruitment Details

7. Patient Details
8. Weather Details
9. Social Networking Reviews Details

To implement the Dataset in WekaTool

1. Pre-Processing on Dataset

2. Normalize Table data using Knowledge Flow.

3.Association Rule Process on Dataset

- A Priori Algorithm

4.Construct Decision Tree process on Dataset

- ID3 Agorithm
- Naïve Bayes Algorithm

5.Cross-validation process on Dataset

- J 48 Algorithm

6.Clustering Rule process of Dataset

- Simple K-eans Algorithm.

7.Data Visualization

Course Outcomes:

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Compare and describe the key attributes and characteristics of different domain datasets, such as student details, supermarket details, library details, employee details, and customer details.	K4
CO-2	Examine data preprocessing techniques to clean, transform, and normalize the datasets using Weka Tool.	K4
CO-3	Explain the Apriori algorithm to mine association rules from the datasets.	K5
CO-4	Determine decision trees using ID3 algorithm and Naïve Bayes algorithm to classify data in the datasets.	K5
CO-5	Create and analyze the performance of classification models using cross-validation techniques, such as J48 algorithm.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	2
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	2
CO 4	3	3	3	2	2	3
CO 5	3	3	3	3	3	2

High Correlation – 83%
Moderate Correlation – 17%
Low Correlation – NIL

DATA ANALYTICS

UCAO607

Semester : VI **Credits : 4**

Category : Major Elective (DSE)-XXVIII **Hours/Week : 5**

Class : III B.C.A **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	Describe, and analyze the data in Data Management
CO – 2	Knowledge on to gather sufficient relevant data, conduct data analytics using scientific methods.
CO – 3	Analyze statistical tools to support decision-making.
CO – 4	Implement the Clustering techniques with real-time Dataset.
CO – 5	Demonstrate the real time scenario (Case study) by using data Analytics techniques

UNIT I INTRODUCTION **13 Hours**

Data Definitions and Analysis Techniques: Elements, Variables, and Data Categorization, Levels of Measurement, Data Management and Indexing.

UNIT II DESCRIPTIVE STATISTICS **13 Hours**

Measures of Central Tendency, Measures of Location of Dispersions, Error Estimation and Presentation (StandardDeviation,Variance),IntroductiontoProbability.

UNITIII - BASIC ANALYSIS TECHNIQUES **13 Hours**

Statistical Hypothesis Generation and Testing, Chi-Square Test, T-Test, Analysis of Variance, Correlation Analysis, Maximum Likelihood Test.

UNITIV DATA ANALYSIS TECHNIQUES-I **13 Hours**

Regression Analysis, Classification Techniques, Clustering Techniques.

UNIT V DATAANALYSISTECHNIQUES-II **13 Hours**

Association Rules Analysis, Decision Tree. Introduction to R Programming: Introduction to R Software Tool, Statistical Computations using R (Mean, Standard Deviation, Variance, Regression, Correlation etc.).

Component III & IV

Prototyping: Introduction to Data Analytics Prof. Nandan Sudarasanam Prof. B. Ravidran IIT Madras

Case Study: Practice and Analysis with Rand Python Programming, Sensitivity Analysis.

Text Books

- Maheswari(2017), " Data Analytics", McGraw Hill, 1st Edition,.
- Ronald E Walppole, Raymond HMyres, SharonL. MyresandLeyingYe , *Probability and statistics for Engineers and Scientists* (9Edn.),Prentice Hall Inc.
- Travor Hastie Robert Tibshirani Jerome Friedman, (2014). *The Elements of Statistical Learning, Data Mining, Inference, and Prediction* (2ndEdn), Springer.

Reference Books

- Thomas Mailun(2017),*Beginning Data Science in R: Data Analysis, Visualization, and Modelling for the Data Scientist*,Apress.
- JohnM. Chambers, *Software for Data Analysis: Programming with R (Statistics and Computing),* Springer.
- G James, D. Witten, T Hastie, and R. Tibshirani(2013), *An Introduction to Statistical Learning: with Applications in R*, Springer.

e-Resources

- https://cse.iitkgp.ac.in/~dsamanta/courses/da/index.html

Course Outcomes:

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the concepts of pattern in data.	K1,K2
CO-2	Interpret the data with Database.	K3
CO-3	Examine the analytic algorithms	K4
CO-4	Compare large scale analytics projects from various domains	K5
CO-5	Develop intelligent decision support systems	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	2	3	3	3	3
CO 3	3	3	2	3	3	2
CO 4	3	3	3	3	3	3
CO 5	2	3	3	3	3	3

High Correlation – 83%
Moderate Correlation – 17%
Low Correlation – NIL

MOBILE COMPUTING

UCAO608

Semester : VI **Credits : 4**
Category : Major Elective (DSE)-XXVIII **Hours/Week : 5**
Class & Major: III BCA **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	Understand the basics of Mobile Communication Technologies & Wireless Networking
CO – 2	Knowledge on various Mobile Communication Systems
CO – 3	Build skills in working with Mobile Internet Protocol to develop mobile content applications
CO – 4	Analyze the working principles of mobile ad hoc networks.
CO – 5	Understand the use of Mobile Applications in Mobile Payment System

UNIT I INTRODUCTION **12 Hours**

Basics of Communication Technologies: Mobile Handsets Wireless Communications, and Server Applications - Cell Phone System - Types of Telecommunication Networks - Architecture of a Mobile Telecommunication System. **Mobile Computing & Wireless Networking:** Mobile Computing - Mobile Computing vs. Wireless Networking - Mobile Computing Application - Characteristics of Mobile Computing - Structure of Mobile

Computing Application - **Cellular Mobile Communication**: Generation of Cellular Communication Technologies- 1G to 3G, Wireless 4G systems.

UNIT II MOBILE COMMUNICATION SYSTEMS 12 Hours

Global System for Mobile communications(GSM): 3G GSM Services& Applications-System Architecture of GSM - GSM security. **Universal Mobile Telecommunication System (UMTS)**:UMTS Network Architecture.**4G LTE NETWORKS:**4G features and challenges, Applications of 4G, 4G Technologies – Multi carrier modulation, Smart Antenna Techniques, OFDM-MIMO Systems, Adaptive Modulation and Coding with Time-Slot Scheduler, Bell Labs Layered Space Time (BLAST) System.Software Defined Radio - Cognitive Radio.

UNIT III MOBILE IP, MOBILE TRANSPORT LAYER, MOBILE DATABASE 14 Hours

Mobile IP: Mobile IP - Packet Delivery - Desirable features of Mobile IP - Key mechanism used in Mobile IP, Route Optimization - Dynamic Host Configuration Protocol (DHCP): significance of DHCP. **Mobile Transport Layer:** Architecture of TCP/IP - Application Layer Protocols of TCP. Improvement in TCP Performance: Popular TCP Congestion Control Algorithms -TCP in Mobile Network. **Mobile Databases:** Issues in Transaction Processing. Transaction Processing in Mobile Environment: Atomicity Relaxation - Consistency Relaxation - Isolation Relaxation - Durability Relaxation - Data Replication - Mobile Transaction Models.

UNIT IV MOBILE Ad Hoc NETWORKS 14 Hours

Basics concepts: Ad Hoc Network setup without the infrastructure Support - Routing in a MANET a Complex Task. **Characteristics of Mobile Ad Hoc Networks(MANETs):** MANET Operational Constraints. Applications of MANETs - MANET Design issues - Routing – **MANET Routing Protocol**: Destination-Sequenced Distance-Vector Routing Protocol - Dynamic Source Routing (DSR) Protocol - Ad Hoc On-demand Distance Vector (AODV) - Zone Routing Protocol. Vehicular Ad Hoc Networks(VANETs) - MANET vs VANET-Security issues in a MANET.

UNIT V MOBILE PAYMENT SYSTEM 13 Hours

Mobile Payment System: Mobile Payment System, Mobile Payment Schemes, Desirable properties of a Mobile Payment system, Mobile Payment solutions, Process of Mobile Payment, Security Issues.**Smart Phone Technology:** Mobile app programming, Working Principles of QR Code& applications, social networks.

Case Study:

- Prepare a report on different mobile payment solutions for different payment schemes.
- Prepare a report on procedure for working of software in shopping mall.

Text Books:

- Prasant Kumar Pattanaik, Rajib Mall, (2016). *Fundamentals of Mobile Computing*, Second Edition, PHI, ISBN: 978-81-203-5181-3

- AsokeTalukder Hasan Ahmed Roopa R Yavagal,(2017).*Mobile Computing*, Second Edition.McGrawHill.
- 4G LTE/LTE – Advanced for Mobile Broadband, Erik Dahlman, Stefan Parkvall, Johan Skold, Academic Press 2011.

Reference Books:

- Prasant Kumar Pattnaik, Rajib Mall,(2012),*Fundamentals of Mobile Computing*, PHI Learning Pvt.Ltd, New Delhi.
- Sandeep Singhal, Thomas Bridgman, LalithaSuryanarayana, DanilMouney, JariAlvinen, David Bevis, Jim Chan and StetanHild," The Wireless Application Protocol: Writing Applications for the Mobile internet",Pearson Education Delhi,2001.

e-Resources

- https://nptel.ac.in/courses/106106147 (Fragment Programming)

Course Outcomes

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Explain the wireless and Mobile Communication system	K1,K2
CO-2	Identify the 3G GSM,UMTS,4G LTE and SDR	K3
CO-3	Analyze Mobile IP, Mobile Transport Layer and Mobile Database	K4
CO-4	Determine the working of Mobile Ad Hoc Networks and Vehicular Ad Hoc Network	K5
CO-5	Develop different applications in Mobile Commerce.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	2	3	3	3	2
CO 4	3	3	3	3	3	3
CO 5	3	3	3	2	3	3

High Correlation – 90%
Moderate Correlation – 10%
Low Correlation – NIL

NETWORK SECURITY
UCAO609/UCSO606

Semester : VI **Credit :4**
Category : Major Elective (DSE)-XXVIII **Hours/Week :5**
Class : III BCA **Total Hours :65**

Course Objectives

CO No.	To enable the students
CO – 1	Analyze of concepts of Network Security.
CO – 2	Compare the Key functions
CO – 3	Differentiate Various Algorithms
CO – 4	Elaborate the applications of Network Security.
CO – 5	Apply the intrusion and detection system of security

UNIT I INTRODUCTION 13 Hours

The concepts of Security- the Need for Security - Security Approaches- Principles of Security- Types of Attacks. Convention Encryption: Conventional Encryption Mode- Steganography- Classical Encryption Techniques - Simplified DES- Block Cipher Principles - The Data Encryption Standard - The Strength of DES - Differential and Linear Cryptanalysis - Block Cipher Design Principles - Block Cipher Modes of operation - Conventional Encryption algorithms.

UNIT II PUBLIC KEY ENCRYPTION AND HASH FUNCTIONS 12 Hours

Public Key Cryptography - Principles of Public Key Cryptosystems - The RSA Algorithm - Key Management - Diffie Hellman Key Exchange - Elliptic Curve Cryptography Message Authentication and Hash Functions Authentication Requirements - Authentication Functions - Message Authentication Codes - Hash Functions - Security of Hash Functions

UNIT III HASH AND MAC ALGORITHMS 12 Hours

Introduction Nifty things to do with a Hash - MD5 Message Digest Algorithm - Secure Hash Algorithm (**SHA-I)** - RIPEMD - HMAC - CMAC - Digital Signatures - Authentication Protocols -Digital Signature Standard.

UNIT IV NETWORK SECURITY APPLICATIONS 15 Hours

Authentication Applications - Kerberos - X.509 authentication service - public key Infrastructure (PKI) - Electronic Mail Security - Pretty Good Privacy - S/MIME - IP Security - IP Security Overview - IP Security Architecture - Authentication Header - Encapsulating payload - combining security association - Key Management - Web Security - Web Security Considerations - Secure Socket Layer & Transport Layer Security - Secure Electronic Transaction - Introduction to Wireless security.

UNIT - V INTRUDERS, VIRUSES, WORMS AND CYBER SECURITY 13 Hours

Intruders - Intrusion detection - password management - Viruses and Related Threats - Distributed Denial of service attacks - Firewall Design Principles - Trusted Systems – virtual

private network (VPN). Introduction to Cyber Security – Goals of Cyber Security – Computer Forensics – Steganography – Cyber Crime – Vulnerability Assessment- **Types of Securities**.

Text Books

- William Stallings. (2017).*Cryptography and Network Security*. (7th ed.,). Prentice Hall.
- Roberta Bragg, (2012).The Complete reference-Network Security.(7th ed.,). McGraw-Hill Education (India) Pvt Limited.
- William Stallings, (2011). *Network Security Essentials: Applications and Standards, 4/Ed (Old Edition)*, Pearson.

Reference Books

- Neal Krawetz.(2007). *Introduction to Network Security*. Thomson Business Press.
- EricMaiwald. (2008). *Information Security Series*. Fundamental of Network security. Dreamtech press.

e– Resource

- http://www.nptel.ac.in/courses/106105031

Course Outcomes

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the terms of security.	K1,K2
CO-2	Develop the usage of Algorithms.	K3
CO-3	Examine the various functions in security.	K4
CO-4	Interpret Encryption and Decryption Process.	K5
CO-5	Create the Intrusion and Detection System	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	2	3	3	3	3	3
CO 2	2	2	2	1	1	3
CO 3	3	3	2	2	2	2
CO 4	3	3	3	3	2	2
CO 5	2	3	3	3	1	3

High Correlation – 53%
Moderate Correlation – 37%
Low Correlation – 10%

MACHINELEARNING
UCAO610

Semester : VI **Credits : 4**

Category : Major Elective (DSE)-XXVIII **Hours/Week : 5**

Class : III B.C.A **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	Understand the needs of Machine Learning and Differentiate between supervised, unsupervised machine learning approaches
CO – 2	Choose appropriate machine learning algorithm for solving a problem
CO – 3	Apply different machine learning models to various datasets
CO – 4	Evaluate the models learned and report on the expected accuracy that can be achieved by applying the models
CO – 5	Design and implement machine learning algorithms to real world applications

UNIT-I INTRODUCTION **13 Hours**

Introduction: Concept of Machine Learning, Applications of Machine Learning, Key elements of Machine Learning, Supervised vs. Unsupervised Learning, and Reinforcement Learning, Real life examples of Machine Learning. Dataset division: test, train and validation sets, cross validation.

UNIT-II SUPERVISED LEARNING **13 Hours**

Classification and Regression: K-Nearest Neighbor, Linear Regression, Logistic Regression, Support Vector Machine (SVM), Evaluation Measures: SSE, MME, R2, confusion matrix, precision, recall, F-Score, ROC-Curve.

UNIT-III UNSUPERVISED LEARNING **13 Hours**

Introduction to clustering, Types of Clustering: Hierarchical, Agglomerative Clustering and Divisive clustering; Partitional Clustering - K-means clustering.

UNIT-IV REINFORCEMENT LEARNING **13 Hours**

Introduction to Reinforcement Learning, Learning Task, Example of Reinforcement Learning in Practice, Learning Models for Reinforcement – (Markov Decision process, Q Learning – Q Learning function, Q Learning Algorithm).

UNIT-V NEURALNETWORKS **13 Hours**

Neural Networks: Introduction, Model Representation, Gradient Descent vs.Perceptron Training, Stochastic Gradient Descent, Multilayer Perceptrons, Multiclass Representation, BackPropagation Algorithm.

Assignment

- Introduction to Machine Learning Prof. Balaraman Ravindran IIT Madras
- Machine Learning Prof. Carl GustafJansson KTH, The Royal Institute of Technology

TextBooks

- JeevaJose ,(2020). *Introduction to Machine Learning*, Khanna Book Publishing Co.,.
- John Paul Mueller and Luca Massaron, (2016).*Machine Learning for Dummies*,, For Dummies.
- Rajeev Chopra,(2021). *Machine Learning*, Khanna Book Publishing Co.,.
- EthemAlpaydin,(2016).*Machine Learning*: The New AI, The MIT Press.
- Tom M. Mitchell , (2017). *Machine Learnin*g, , McGraw Hill Education.
- MehryarMohri, AfshinRostamizadeh, Ameet Talwalkar.(2018). *Foundations of Machine Learning.* MIT Press.
- Miroslav Kubat.(2016),*An Introduction to Machine Learning,* Springer.

Reference Books

- ChristopherM.Bishop.(2007),"*PatternRecognitionandMachineLearning*",Springer.
- Mevin P. Murphy.(2012), "*Machine Learning:A ProbabilisticPerspective*", The MIT Press.
- EthemAlpaydin. (2016). *Introduction to Machine Learning.* MIT Press. Prentice Hall of India. (3rdEd.)
- Stephen Marsland, ―*Machine Learning: An Algorithmic Perspective*, CRC Press, 2009.
- Bishop, C., *Pattern Recognition and Machine Learning*. Berlin: Springer-Verlag.
- M. Gopal, "*Applied Machine Learning*", McGraw Hill Education

e-resources

- https://www.udacity.com/course/intro-to-machine-learning--ud120
- https://www.coursera.org/learn/machine-learning-duke

Course Outcomes:

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand basic applications and different types of datasets	K1,K2
CO-2	Apply various Machine Learning techniques and algorithms	K3
CO-3	Analyze and work with different datasets	K4
CO-4	Evaluate the algorithms with different datasets.	K5
CO-5	Develop an algorithm for different machine learning techniques	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	2	2	3	2	1	3
CO 3	2	3	3	3	3	3
CO 4	3	3	1	3	3	3
CO 5	2	3	3	3	3	3

High Correlation – 77%
Moderate Correlation – 17%
Low Correlation – 6%

III & IV Evaluation Components of CIA

Semester	Part	Category	Course Code	Course Title	Component III	Component IV
VI	III	Major Core (DSC) - XXIV	UCAM612	Computer Graphics and Image Processing	Assignment	Problem solving
	III	Major Core (DSC) - XXV	UCAM613	Internet of Things	Working Model	Prototyping
	III	Major Core (DSC) - XXVII	UCAR604	Computer Graphics and Image Processing - Practical	DPA	Viva
	III	MAJOR ELECTIVE (Discipline Specific Elective) - XXVIII	UCAO607/	Data Analytics/	Prototyping	Case Study
			UCAO608	Mobile Computing	Case Study	Prototyping
			UCAO609	Network Security	Case Study	Problem Solving
			UCAO610	Machine Learning	Assignment	Prototyping

DEPARTMENT OF PSYCHOLOGY

PREAMBLE

UG: Programme Profile and the Syllabi of Courses Offered in the VI Semester along with Evaluation Components III & IV (**With effect from 2021 - 2024 Batch Onwards)**.

PROGRAMME SPECIFIC OUTCOMES

PSO No.	Upon completion of these courses the student would be able to
PSO-1	Identify the major historical frameworks that shaped the development of psychology, including Structuralism, Functionalism, Behaviorism, and Psychoanalysis.
PSO-2	Understand the psychological processes influencing human behavior and develop critical thinking skills enhances one's comprehension of the cognitive mechanisms that shape individuals' actions and reactions.
PSO-3	Apply key psychological concepts, theoretical perspectives, and by carrying out hands-on activities and showcasing how these ideas are applied in real-world situations.
PSO- 4	Analyze the essence of human values by critically examining acts of social commitment, and assess the development of professional ethics and responsibilities.
PSO- 5	Evaluate the behavioral concepts in both laboratory settings and real-life situations.
PSO- 6	Develop and acquire skills in psychological assessment and Progress on the career path of higher studies, psychological services in the community, and research.

Semester	Part	Category	Course code	Course Title	Previous Course Code	Contact Hrs/ week	Credit Min/ Max
I	I	Languages / AECC - II Tamil / Hindi / French	UTAL107/ UTAL108/ UHIL102/ UFRL102	Basic Tamil- I/ Advanced Tamil- I/ Hindi -I / French- I	UTAL105/ UTAL106/ UHIL101/ UFRL 101	5	3/4
	II	Communicative English / AECC – 1	UENL109/ UENL110	English for Communication (Stream – I)/English for Communication (Stream – II)	---	5	3/4
	III	Major Core I / DSC	UPSM101	General Psychology- I	---	6	5
		Major Core II / DAC	UPSM102	Developmental Psychology- I	---	6	5
		Allied – I / (GE)	UPSA101	Human Physiology	---	6	4
		PE	UPEM101	Professional English	---	6	4
	IV	Value Education			---	2	1
				TOTAL		**36**	**25/27**
II	I	Languages / AECC - II	UTAL207/ UTAL208/	Basic Tamil II/ Advanced Tamil II/ Hindi II/ French II	UTAL205/ UTAL206/ UHIL 201/	5	3/4

		Tamil / Hindi / French	UHIL202/ UFRL202		UFRL 201		
	II	Communicative / English / AECC-1	UENL209/ UENL210	English for Communication (Stream – I)/English for Communication (Stream – II)		5	3/4
	III	Major Core III / DSC	UPSM201	General Psychology-II		6	5
		Major Core IV / DSC	UPSM202	Developmental Psychology- II		5	5
		Allied – II / (GE)	UPSA201	Elementary Statistics		6	4
		PE	UPEM201	Professional English II		6	4
		Internship	UPSI201	Internship / Fieldwork / Field Project		-	-/1 (Extra Credit)
	IV	Non-Major Elective				3	2
	V	Extension activity/ Physical Education/NCC				-	1/2
				TOTAL		**36**	**27/31**
III	I	Languages / AECC – II Tamil / Hindi / French	UTAL307/ UTAL308/ UHIL302/ UFRL302	Basic Tamil I / Advanced Tamil I / Hindi I / French I	UTAL 305/ UTAL 306/ UHIL 302/ UFRL 301	5	3/4
	II	Communicative English / AECC – 1	UENL309/ UENL310	English for Communication (Stream – I)/English for Communication (Stream – II)		5	3/4
	III	Major Core V / DSC	UPSM303	Social Psychology – I	UPSM 103	5	5
		Major Core VI / DSC	UPSR302	Experimental Psychology-I		5	5
		Allied-III / (GE)	UPSA301	Principles of Management		5	4
	IV	Online Course		NPTEL/ Spoken Tutorial		3	1/2
		Value Education				2	1
				TOTAL		**30**	**22/25**
IV	I	Languages / AECC – II Tamil / Hindi / French	UTAL407/ UTAL408/ UHIL402/ UFRL402	Basic Tamil II/Advanced Tamil II/ Hindi II / French II	UTAL403/ UTAL 404	5	3/4
	II	Communicative English / AECC - I	UENL409/ UENL410	English for Communication (Stream – I)/English for Communication (Stream – II)	UENL 406	5	3/4
	III	Major Core VII / DSC	UPSM403	Social Psychology – II	UPSM 203	5	5
		Major Core VIII / DSC	UPSR402	Experimental Psychology-II		5	5
		Allied – IV / (GE)	UPSA401	Research Methodology	UPSM 402	5	4
		Internship	UPSI401	Internship / Fieldwork / Field Project		-	-/1 (Extra Credit)

	IV	Non-Major Elective				3	2
	IV	Soft Skill				2	1
	V	Extension activity/ Physical Education/NCC				-	-/2
				TOTAL		**30**	**23/28**
V	III	Major Core XI / DSC	UPSM501	Abnormal Psychology		6	5
		Major Core X / DSC	UPSM504	Educational Psychology		6	5
		Major Core XI / DSC	UPSM506	Theories of Personality	UPSM 303	6	5
		Major Elective / (DSE)	UPSO501	Consumer Behaviour	UPSM 505	5	4
			UPSO502	Human Resource Development	UPSM 603		
		Major Core XII / DSC	UPSP501	Project	UPSP 601	5	5
	IV	Value Education				2	1
				TOTAL		**30**	**25**
VI	III	Major Core XIII / DSC	UPSM601	Clinical Psychology		6	5
		Major Core XIV / DSC	UPSM602	Counselling Psychology		5	4
		Major Core XV /DSC	UPSM604	Health Psychology		6	5
		Major Core XVI	UPSM606	Positive Psychology	UPSM 503	6	6
		Major Elective / (DSE)	UPSO601	Psychometric Methods and Statistics		5	4
			UPSO602	Rehabilitation Psychology			
		Comprehensive Viva Voce	UPSM605				1
		Internship	UPSI601	Internship / Field Work / Field Project (30 Hours)	-	-	- /1 (Extra Credit)
	IV	Soft Skill				2	1
	V	Extension Programme/ Physical Education/NCC				-	-/2
		Extension Programme	UROX601	Rural Outreach Programme (30 Hours)	-	-	- / 1 (Extra Credit)
				TOTAL		**30**	**26/30**
				GRAND TOTAL		**192**	**148/166**

EXPERIENTIAL LEARNING (Only for Interested Students)

Course Mapping				Collaborating Agency – E.S. Hospital		
Semester	**Course Code**	**Course Title**	**Assessment**	**Course Title**	**Hour/Days/ Month**	**Mode of Evaluation**
VI	UPSM604	Counselling Psychology	Component III	Counselling Psychology	2 Days	Reflection
VI	UPSM601	Clinical Psychology	Component IV	Clinical Psychology	2 Days	Reflection

CLINICAL PSYCHOLOGY
UPSM601

Semester : VI **Credit : 5**
Category : Major Core XIII **Hours / Week : 6**
Class & Major : III B.Sc. Psychology **Total Hours : 78**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Outline the theoretical and historical perspectives in Clinical Psychology.
CO-2	Acquisition of professional knowledge of ethics in the Clinical and Therapeutic processes.
CO-3	Understand the psychological functioning of an Individual from a Clinical Psychology Perspective.
CO-4	Analyzing the various Psychotherapeutic interventions in clinical settings.
CO-5	Familiarize the various approaches to Psychotherapy.

UNIT- I FOUNDATION OF CLINICAL PSYCHOLOGY 15 Hour

Introduction to Clinical Psychology: Meaning and nature of the discipline - Historical Development of Clinical Psychology – Methods of Studying Clinical Psychology – Interview Method – Observation Method – Experimental Method.

UNIT - II: CONTEMPORARY ISSUES 16 Hour

Professional Activities of Clinical Psychologist - Subspecialties of Clinical Psychology - Child, Adolescence, Adult & Geriatric–Roles of Clinical Psychologist–Ethical and Cultural Legal Issues in Clinical Psychology.

UNIT - III: DIAGNOSIS AND ASSESSMENT 15 Hour

Nature and Purpose of Clinical Diagnosis and Assessment - Stages in the Assessment

Process - Assessment Techniques – Questionnaire and Projective Method.

UNIT IV – PSYCHOTHERAPY **16 Hour**

Introduction to Psychoanalysis –Freudian Theory - Definition - Goals and Stages of Psychotherapy - Essential Process in Psychotherapy–Defence Mechanism - Models of Psychotherapy: Individual Therapy - Group Therapy - Couples Therapy - Family Therapy.

UNIT V APPROACHES TO PSYCHOTHERAPY **16 Hour**

Psychodynamic Approach - Behavioural Approach - Cognitive Approach- Humanistic Approach - Existential Approach.

Text Books

- T G.Plante, (2005) *Contemporary Clinical Psychology*. New York: John Willey & Sons, Inc.
- Bellack, A. S. & Hersen, M, (1980). *Introduction to Clinical Psychology*. New York: Oxford University Press.

Reference Books

- Hecker,J. E. & Thorpe.G, (2005*). Introduction to Clinical Psychology* (1st Ed.,). Delhi: Pearson Education.
- Herbert.M, (1998). *Clinical Child Psychology: Social Learning, Development and Behaviour* (2nd Ed.,). New York: John Willey & Sons, Inc.
- Irwin G.Sarason & Barbara R. Sarason, (2004). *Abnormal Psychology – The problem of Maladaptive Behavior* (11th Ed.,).

e-Resource

- https://www.verywellmind.com/what-is-clinical-psychology-2795000
- https://www.scientificworldinfo.com/2019/04/clinical-psychology-history-approaches-and-job-description.html
- https://ijip.in/wp-content/uploads/2020/06/18.01.093.20180602.pdf
- https://opentext.wsu.edu/abnormal-psych/chapter/module-15-contemporary-issues-in-psychopathology/
- https://opentext.wsu.edu/abnormal-psych/chapter/module-3-clinical-assessment-diagnosis-and-treatment/

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Understand various assessment techniques, and therapeutic interventions allowing them to diagnose and treat mental health disorders.	K1, K2
CO-2	Identify and teach the skills to become a professional in clinical psychology.	K3
CO-3	Distinguish between disorders and assess various conditions that arise in clinical practice.	K4
CO-4	Evaluate therapeutic programs based on the client's specific goals, to promote a positive mental health outcome.	K5
CO-5	Develop empirically supported interventions for clients across the lifespan.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	1	0	1	0
CO 2	3	2	1	2	1	1
CO 3	3	2	3	1	0	1
CO 4	3	2	2	2	3	2
CO 5	3	3	3	2	3	3

High Correlation : 37%
Moderate Correlation : 27%
Low Correlation : 26%

COUNSELLING PSYCHOLOGY
UPSM602

Semester : VI **Credit : 4**
Category : Major Core XIV **Hours / Week : 5**
Class & Major : III B.Sc. Psychology **Total Hours : 65**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Understanding fundamental knowledge of Counselling Psychology
CO-2	Familiarize theoretical approaches in Counselling Psychology.
CO-3	Understand and differentiate the principles of group dynamics, including group process components, therapeutic factors, and the roles and behaviours of group members.
CO-4	Identify the developmental transitions that families/couples face, common problems and issues associated with normal lifespan, and effective intervention programs for treatment.
CO-5	Determine the various work culture common to the profession.

UNIT-I INTRODUCTION TO COUNSELLING PSYCHOLOGY 13 Hour

Definitions and meaning of Counselling – Characteristics of a Counsellor - Types of Counselling: Individual and Group Counselling – Process of counselling – The Therapeutic

Relationship - Perspectives on Helping Relationships - Counsellors as Relationship Specialists.

UNIT-II APPROACHES IN COUNSELLING **13 Hour**

Counselling skills and methods of counselling – Insight-Oriented Approaches Introduction to theory construction - Psychoanalytic counselling – Client – centred Counselling - Existential Counselling – Gestalt Counselling- Honourable mentions – Action-Oriented Approaches – Behavioural Counselling - Rational Emotive Behaviour Counselling.

UNIT - III GROUP COUNSELLING **11 Hours**

Group Counselling Survey of groups – Some considerations in the use of group modalities - Counteracting potential limitations - Advantages of group work - Basic assumptions about groups - Group process stages – Cues for intervention – Specialized skills of group work.

UNIT - IV FAMILY COUNSELLING **14 Hour**

Marital family and Sex Counselling - Family versus Individual Counselling - Family Counselling theories – Power in relationships – Symptoms and Solutions - Interpreting symptoms as metaphors – Diagnostic questions – Reframing - Directives - Ethical issues in family Counselling and Interpersonal Relations.

UNIT - V CAREER AND ADDICTION COUNSELLING **14 Hour**

Career Counselling - The functions of work - Roles of Counselling -Theories of career development – Career Education – Career Guidance -Trends and issues in career counselling - Addictions Counselling - Symptoms of addiction - Drug use and drug abuse –Our drug culture - Classification of Drugs - Effects drug abuse - Adolescent drug use –Prevention – Drug Tolerance.

Text Books

- Robert L. Gibson & Marianne Mitchell, (2009). *Introducing to Counselling and Guidance* (^{7th} Ed.,). Pearson Education India Pvt Ltd, New Delhi.
- Corey.G, (2000). *Theory & Practice of Counselling and Psychotherapy* (6^{th}ed.,). Singapore books Cole.

Reference Books

- Ranganathan N. & Wadhwa T. (2017). *Guidance and Counselling for Children and Adolescents in Schools*. SAGE Publications India Pvt Ltd, New Delhi.
- Nelson – Jones R, (2012). *Basic Counselling Skills A Helper's Manual* (3^{rd} Ed.,). SAGE South Asia Edition.

e-Resource

- http://psychology.iresearchnet.com/counseling-psychology/history-of-counseling-psychology/
- https://counsellingtutor.com/history-of-counselling/

- https://positivepsychology.com/popular-counseling-approaches/
- https://counseling.education.wm.edu/blog/counseling-theories-and-approaches
- https://www.medicalnewstoday.com/articles/family-counseling

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Summarize the foundational aspects of counseling.	K1, K2
CO-2	Utilize the micro-skills required to conduct a successful counseling session	K3
CO-3	Simplify the mechanisms involved in group counseling.	K4
CO-4	Explain how gender issues and socialization affect men and women in an evolving society	K5
CO-5	Develop an effective counseling session using principles of family counseling, group work, and career development.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	1	1	0	0
CO 2	2	3	3	3	1	1
CO 3	3	2	3	2	1	1
CO 4	3	3	3	3	2	1
CO 5	3	3	2	2	3	3

High Correlation : 47%
Moderate Correlation : 23%
Low Correlation :23 %

HEALTH PSYCHOLOGY
UPSM604

Semester : VI **Credit : 5**
Category : Major Core XV **Hours / Week : 6**
Class & Major : III B.Sc. Psychology **Total Hours : 78**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Define the biopsychosocial model of health.
CO-2	Understand the Psychological, behavioural and cultural factors contributing to physical and mental health.
CO-3	Demonstrate the functioning of the Psychosocial Interventions.
CO-4	Examine the theoretical perspectives of health-related behaviour.
CO-5	Simulating health-promoting behaviours in various setups.

UNIT - I INTRODUCTION TO HEALTH PSYCHOLOGY 15 Hours

Definition and Need -The Bio-psychosocial model- Patient Practitioner Relationship- Training for a career in health psychology- Introduction to health behaviour - Factors influencing health behaviour practice.

UNIT - II MODELS OF HEALTH BEHAVIOUR 15 Hours

Changing health habits using theoretical models: Health belief model - Theory of planned behaviour, Cognitive behavioural approaches to change health behaviour- Trans theoretical model of behaviour change- Avenues for health habit modification.

UNIT - III CHRONIC ILLNESS AND PAIN 16 Hours

Illness Factors: Onset, Progression-Types of Symptoms, Quality of Life - Personal issues in chronic illness - Coping with chronic illness, Co-management of chronic illness - Psychosocial Interventions- Pain: definition- types of pain- Pain control techniques- Pain management

UNIT - IV STRESS AND COPING 16 Hours

Stress: definition, dimensions of stress - Sources of Chronic Stress - Theoretical contributions: Lazarus's Appraisal Model, Flight or fight response, General Adaptation Syndrome - Tending and Befriending Model- Coping with stress- Sources of stress.

UNIT - V PROMOTING HEALTH BEHAVIOUR 16 Hours

Smoking: Effects of smoking - Reasons for smoking, Alcoholism: effects - Reasons - Interventions for reducing smoking - changing problem drinking, Management of Overweight & Obesity- Effects of Dieting & Physical activity.

Text Book

- Boyer, B., & Paharia, I. (2008) *Comprehensive handbook of clinical health psychology.* Edison, NJ: John Wiley & Sons.

Reference Books

- Marks, D., Murray, M., Evans, B., Willig, C., Woodall, C., & Sykes, C.M. (2008) *Health psychology: Theory, research and practice* (2nd Ed.). India: Sage Publications.

New Delhi.

- Branmon, L., & Frist, J. (2010) *Introduction to health psychology;* Cengage Learning India Pvt Ltd. New Delhi.
- Sarafino, E. (1994) *Health psychology*. Edison, NJ: John Wiley & Sons.
- Taylor, S. (1995) *Health psychology* (6th Ed.). Toronto, Canada: McGraw-Hill Ryerson.

E Resources

- https://www.verywellmind.com/what-is-health-psychology-2794907
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6549388/
- https://my.clevelandclinic.org/health/diseases/4798-chronic-pain
- https://my.clevelandclinic.org/health/articles/6392-stress-coping-with-lifes-stressors
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4228521/

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Recall and comprehend the meaning, background, and foundation of health psychology.	K1,K2
CO-2	Apply evidence-based strategies to analyze and manage stress	K3
CO-3	Analyze the concepts of behavior and its implications for health promotion.	K4
CO-4	Evaluate the diverse psychosocial interventions for chronic illnesses, assessing their efficacy in improving patient's overall well-being and quality of life.	K5
CO-5	Formulate an intervention plan for individuals dealing with addiction.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	1	1	0	0
CO 2	3	3	3	3	2	1
CO 3	2	2	3	3	2	1
CO 4	3	3	3	3	3	1
CO 5	3	3	3	3	3	3

High Correlation :63%
Moderate Correlation :13%
Low Correlation :17 %

POSITIVE PSYCHOLOGY
UPSM605

Semester : VI **Credit : 5**
Category : Major Core XVI **Hours / Week : 6**
Class & Major : III B.Sc. Psychology **Total Hours : 78**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Highlights the applications and interventions of Positive Psychology for well being
CO-2	Understand the significance of a positive cognitive state and its processes.
CO-3	Examining various theories of wisdom.
CO-4	Explain the importance of mindfulness and prosocial behaviour
CO-5	Discover the significance of resilience in achieving success through perseverance in challenging times.

UNIT - I INTRODUCTION POSITIVE PSYCHOLOGY 15 Hours

Definition; goals and assumptions; Relationship with health psychology, developmental psychology, clinical psychology

UNIT - II POSITIVE EMOTIONS, WELL-BEING AND HAPPINESS 15 Hours

Positive emotions: Broaden and build theory; Cultivating positive emotions; Happiness hedonic and Eudaimonia; Well- being: negative vs positive functions; Subjective well –being: Emotional, social and psychological well-being; Model of complete mental life

UNIT - III SELF-CONTROL, REGULATION AND PERSONAL GOAL SETTING 16 Hours

The value of self-control; Personal goals and self-regulation; Personal goal and well-being; goals that create self-regulation; everyday explanations for self-control failure problems

UNIT IV: POSITIVE COGNITIVE STATES AND PROCESSES 16 Hours

Resilience: Developmental and clinical perspectives; Sources of resilience in children; Sources of resilience in adulthood and later life; Optimism- How optimism works; variation of optimism and pessimism; Spirituality: the search for meaning (Frankl); Spirituality and well-being; Forgiveness and gratitude.

UNIT - V APPLICATIONS OF POSITIVE PSYCHOLOGY 16 Hours

Positive schooling: Components - Positive coping strategies - Gainful employment Mental health: Moving toward balanced conceptualization - Lack of developmental perspectives.

Text Book

- Baumgardner, S.R & Crothers, M.K. (2010). *Positive Psychology.* U.P: Dorling Kindersley Pvt Ltd.

Reference Books

- Snyder, C.R. & Lopez, S.J. (2002). *Handbook of positive psychology*. Oxford University Press. New York:

- Carr, A. (2004). *Positive psychology, The science of happiness and human strengths*.: Routledge. New York.
- Singh, A. (2013). *Behavioral science: Achieving behavioral excellence for success*. Wiley India Pvt ltd. New Delhi.

E Resources

- https://www.verywellmind.com/what-is-positive-psychology-2794902
- http://www.positivepsychologyinstitute.com.au/what_is_positive_psychology.html
- https://en.wikipedia.org/wiki/Positive_psychology
- https://ppc.sas.upenn.edu/
- https://www.pursuit-of-happiness.org/science-of-happiness/

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Outline the core fundamentals and criticisms of positive psychology	K1,K2
CO-2	Develop age-appropriate stories and games to foster a positive mindset.	K3
CO-3	Distinguish emotions and recognize positive aspects of themselves and others.	K4
CO-4	Measure happiness and variables that are related to overall well-being.	K5
CO-5	Create a simulation that embodies the concept of Positive Psychology in everyday life.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	1	1	0	0
CO 2	2	3	2	2	0	2
CO 3	1	3	1	3	1	2
CO 4	2	3	3	3	3	3
CO 5	3	3	3	3	3	3

High Correlation :50%
Moderate Correlation :24%
Low Correlation :16 %

PSYCHOMETRIC METHODS AND STATISTICS
UPSO601

Semester : VI **Credit : 4**
Category : Major Elective **Hours / Week : 5**
Class & Major : III B.Sc. Psychology **Total Hours : 65**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Describe the characteristics and types of Psychological Testing.
CO-2	Compare and contrast the absolute threshold and difference threshold.
CO-3	Identify the ethical issues surrounding psychometric evaluation.
CO-4	Inference the steps involved in standardizing psychological tests.
CO-5	Evaluate the application of basic experimental design to varied research problems.

UNIT – I INTRODUCTION TO PSYCHOMETRICS METHOD 14 Hours

Definition of measurement –Historical Roots - Levels of measurement: Nominal, Ordinal, Interval and Ratio scales - Properties of scales of measurement: Magnitude, equal interval and absolute zero - Distinction between psychological measurement and physical measurement - Problems in psychological measurements.

UNIT – II NATURE AND USE OF PSYCHOLOGICAL TESTS 11 Hours

Definition of psychological test - Historical perspective of psychological testing - Uses of psychological test - Characteristics of a good test: Objectivity, Reliability, Validity, Norms, and Practicability - Ethical issues in psychological testing - Factors influencing Test Administration – Examiner, Testing Conditions, Test Taker.

UNIT – III TEST CONSTRUCTION AND ADMINISTRATION 13 Hours

Introduction to steps of test construction- Planning, Writing, meaning and purpose of item analysis, Administration, Standardization, Meaning of Reliability, Types of reliability, Meaning of Validity, aspects of validity – face validity, content validity; construct validity, criterion-related validity - Concept of Norms – norm-referenced and criterion-referenced norms, types of norms- percentile, standard score, age equivalent, grade equivalent and T-score.

UNIT – IV STATISTICAL METHODS 13 Hours

Characteristics of Mean, Median, Mode – Central Tendency - Standard Deviation – Quartile Deviation.

UNIT – V SIGNIFICANCE OF STATISTICS 14 Hours

Parametric Test: Correlation – t-test – f-test - ANOA – One-way Anova - Two-way Anova – Regression Analysis – Non Parametric Test: Overview.

Text Books

- Frank. S. Freeman, (2018). *Theory and Practice of Psychological Testing*. Oxford & IBH Publishing, Delhi.

- Colin Cooper, (2018). *Psychological Testing: Theory and Practice* (1st Ed.,). Routledge, United Kingdom.
- Singh, A.K, (2008). *Tests, Measurements and Research Methods in Behavioural Sciences* (3rd Ed.,). Patna: Bharati Bhawan Publishers.
- Chadha.N.K., (2009). *Applied Psychometry*. New Delhi: Sage Publications India Pvt Ltd.

Reference Books

- Anastasi, A., & Urbina S, (2005). *Psychological Testing* (7th Ed.,). Prentice – Hall Of India. New Delhi.
- Kaplan R. M. & Saccuzzo D. P, (2007). *Psychological Testing –Principles, Applications And Issues* (6th Ed.,). Thomson And Wadsworth. New Delhi.
- Kothari, C. R, (2009). *Research Methodology- Methods & Techniques* (2nd Ed.,). Repro India Limited. India.
- Goodwin.CJ, (2002*). Research in Psychology: Methods and design* (3rd Ed.,). John elia Sons, Inc. New York.
- J.P Guilford, (1978). *Fundamental Statistics in Psychology and Education* (6th Ed.,). McGraw Hill Higher Education. United States.

E-Resources

- https://www.egyankosh.ac.in/bitstream/123456789/12259/1/Unit-5.pdf
- http://gbpssi.in/admin/coursepack/MBR518Unit02D.pdf
- https://egyankosh.ac.in/bitstream/123456789/23282/1/Unit-2.pdf
- https://www.cns.nyu.edu/~david/courses/perception/lecturenotes/psychophysics/psychophysics.html
- https://www.ncbi.nlm.nih.gov/books/NBK305233/

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Understand and remember the role of psychological testing in various settings.	K1,K2
CO-2	Apply different types of norms in the interpretation and evaluation of test results in diverse settings.	K3
CO-3	Analyze the historical perspectives regarding the nature and meaning of assessment.	K4
CO-4	Evaluate and organize the various steps involved in the construction of a Psychological Test.	K5
CO-5	Create comprehensive and effective research designs by selecting appropriate statistical tests.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	1	1	1
CO 2	2	3	3	2	1	2
CO 3	2	2	3	2	2	0
CO 4	2	2	1	2	3	1
CO 5	3	3	3	1	1	3

High Correlation :33%

Moderate Correlation :37%
Low Correlation :27 %

REHABILITATION PSYCHOLOGY
UPSO602

Semester : VI **Credit : 4**
Category : Major Elective **Hours / Week : 5**
Class & Major : III B.Sc. Psychology **Total Hours : 65**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Describe the importance of rehabilitation in various conditions.
CO-2	Illustrate the importance of rehabilitation and recovery, rather than symptom reduction.
CO-3	Understand the context of Social and Vocational Rehabilitation.
CO-4	Differentiate the various types and models of rehabilitation.
CO-5	Explain the different challenges in rehabilitation.

UNIT – I REHABILITATION PSYCHOLOGY: OVERVIEW AND CONCEPTS 13 Hour

Nature and scope of rehabilitation psychology – History of Rehabilitation - Concepts of ability and disability – Types of Disability - Recovery - symptom control and rehabilitation.

UNIT – II MENTAL DISABILITIES 13 Hour

Rehabilitation of addictions - drug and alcohol - Palliative care and pain management - role of psychologists-cerebral palsy causes and learning disability treatment.

UNIT – III PHYSICAL DISABILITIES 11 Hour

Rehabilitation of persons with physical disabilities – physical – psychosocial and vocational rehabilitation.

UNIT–IV APPROACHES TO REHABILITATION **14 Hour**

Biopsychosocial and social model –Psychodynamic - behavioural approaches to rehabilitation counselling - Cognitive- behavioural approaches to rehabilitation counselling.

UNIT – V SUPPORT SYSTEMS FOR PERSONS WITH DISABILITIES **14 Hour**

Parental care and support systems for persons with disabilities - Assessment of persons with disabilities - Legal issues in rehabilitation for persons with disabilities - overview of PWD act and RCI act - national trust act - United Nations convention on the rights of persons with disabilities – the role of NGO – community rehabilitation programmes - Government programmes and act with regard to disability.

Text Books

- Chan, F., Berven, N.L., Thomas, K.R, (2004). *Counselling Theories and Techniques for Rehabilitation Health Professionals*. NY: Springer Publishing Company. New York.
- Frank, G.R., Rosenthal, M., Caplan, B. (2010*). Handbook of Rehabilitation Psychology*. American Psychological Association. United states

Reference Books

- Federici, S. Scherer M.J, (2012*). Assistive Technology Assessment Handbook* (Eds.,). Boca Raton, FL: Taylor and Francis Group. United States.
- Riggar, T.F. & Maki, D.R, (2004). *Handbook of Rehabilitation Counselling* (Eds.,). NY: Springer Publishing Company. New York.
- Stuss, D.T., Winokur, G. & Robertson, I.H, (2008). *Cognitive neurorehabilitation*.: Cambridge University Press. United Kingdom.

E-Resources

- https://www.apa.org/ed/graduate/specialize/rehabilitation
- https://www.div22.org/what-is-rehab-psych
- https://www.britannica.com/science/rehabilitation-psychology
- https://www.webmd.com/mental-health/rehabilitation-psychology-overview
- https://www.geeksforgeeks.org/role-and-functions-of-ngos/

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Explain the aspects of providing support for individuals with disabilities.	K1,k2
CO-2	Apply the principles of various models in rehabilitation counseling.	K3
CO-3	Analyze psychosocial rehabilitation approaches and assess their significance.	K4
CO-4	Evaluate the significance of recovery and relapse prevention.	K5
CO-5	Design an effective program for disabled people focusing on goal setting and achieving independence.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	1	1	0	0
CO 2	2	3	3	3	2	1
CO 3	1	2	3	3	2	2
CO 4	2	3	3	3	3	2
CO 5	3	3	3	3	3	3

High Correlation :56%
Moderate Correlation :24%
Low Correlation :13 %

III AND IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
VI	Major Core XIII / DSC	UPSM601	Clinical Psychology	Assignment	Chart work
	Major Core XIV / DSC	UPSM602	Counselling Psychology	Assignment	Group Activity
	Major Core XV / DSC	UPSM604	Health Psychology	Assignment	Chart Work
	Major Core XVI / (DSE)	UPSO605	Positive Psychology	Case Study	Poster Presentation
	Major Elective / (DSE)	UPSO601	Psychometric Methods and Statistics	Case Study	Chart Work
	Major Elective / (DSE)	UPSO601	Rehabilitation Psychology	Case Study	Group Activity

DEPARTMENT OF JOURNALISM AND MASS COMMUNICATION

PREAMBLE

UG: Program Profile and the Syllabi of Courses offered in the III and IV semesters along with Evaluation Components III & IV (with effect from 2022-2025)

PROGRAMME PROFILE B.A., JOURNALISM AND MASS COMMUNICATION

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	Upon Completion of the Programme, the Students will be able to
PSO-1	Recall the fundamental core concepts, theories, key terminology, historical milestones and practices within journalism and mass communication.
PSO-2	Understand and interpret media content and diverse perspectives critically.
PSO-3	Apply their skills to connect people, ideas, books, media, and technology, thereby contributing to meaningful and impactful communication.
PSO- 4	Examine professional ethics and responsibilities within the field.
PSO- 5	Determine the skills in assessing and enhancing teamwork and collaboration within diverse media environments.
PSO- 6	Generate original and engaging video materials and life-long learning within the ever-evolving socio-technological landscape.

Semester	Part	Category	Course code	Course Title	Previous Course Code	Contact Hrs/ week	Credit Min/Max
I	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL107/ UTAL108/ UHIL102/ UFRL102	Basic Tamil-I/ Advanced Tamil-I/ Hindi-I / French-I		5	3/4
	II	Communicative English / AECC – I	UCEL101/ UCEL102	Communicative English I/ Effective Communicative English I		5	3/4
	III	Major Core /DSC I	UJMM101	Introduction to Mass Communication	-	6	4
	III	Major Core / DSC II	UJMR101	Photography- Practical	-	6	4
	III	Allied – I (GE)	UJMA101	History of Journalism in India	-	6	4
	III	PE	UPEM101	Professional English I	-	6	4

	IV	Value Education (VE)				2	1
					TOTAL	**36**	**23/25**
II	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL207/ UTAL208/ UHIL202/ UFRL202	Basic Tamil II/ Advanced Tamil-II/ Hindi-II / French-II		5	3/4
	II	Communicative English / AECC – I	UCEL201/ UCEL202	Communicative English II / Effective Communicative English II		5	3/4
	III	Major Core/DSC III	UJMM201	Basics of Journalism	-	6	4
	III	Major Core /DSC IV	UJMR201	Print & Publishing Design	-	5	4
	III	Allied – II(GE)	UJMA201	Theories of Communication	-	6	4
	III	PE	UPEM201	Professional English II	-	6	4
	IV	Non-Major Elective				3	2
	V	Extension Programme/ Physical Education				-	1/2
					TOTAL	**36**	**25/28**
III	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL307/ UTAL308/ UHIL302/ UFRL302	Basic Tamil II/ Advanced Tamil-II/ Hindi-II / French-II	-	5	3/4
	II	Communicative English / AECC – I	UENL309/ UENL310	General English III/ Advanced English III	-	5	3/4
	III	Major Core /DSC V	UJMM301	Development Communication	-	4	4
	III	Major Core /DSC VI	UJMM302	Specialized Reporting	-	4	4
	III	Allied – III (GE)	UJMA301	Socio-economic and Political issues in India	-	4	4
	III	Allied - III Practical	UJMR301	Print Journal	-	3	3
	IV	Online Course (NPTEL/SP)			-	3	1/2
	IV	Value Education (VE)			-	2	1
					TOTAL	**30**	**23/26**
IV	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL407/ UTAL408/ UHIL402/ UFRL402	Basic Tamil II/ Advanced Tamil-II/ Hindi-II /French-II		5	3/4
	II	Communicative English / AECC – I	UENL409/ UENL410	General English II/ Advanced English II		5	3/4
	III	Major Core /DSC VII	UJMM401	Corporate Communication		4	4
	III	Major Core /DSC VIII	UJMM402	Television Production		4	4
	III	Allied – IV (GE)	UJMA401	Introduction to Indian Constitution		4	3
		Allied – IV Practical	UJMR401	Broadcast Journalism		3	3
	IV	Soft Skill				2	1
	IV	Non Major Elective				3	2

	V	Extension programme/ Physical Education				-	-/2
					TOTAL	**30**	**23/27**
V	III	Major Core IX/DSC	UJMM501	Media Laws and Ethics		5	5
	III	Major Core /DSC X	UJMM502	Introduction to Advertising		5	4
	III	Major Core /DSC XI Practical	UJMR501	Television Production		4	4
	III	Major Elective /DSC I	UJMO501	Writing for Mobile Application		4	4
			UJMO502	Writing for social media			
	III	Major Core /DSC XII	UJMM503	Current Affairs - I		5	4
	III	Major Core /DSC XIII	UJMP501	Project		5	4
	IV	Value Education (VE)				2	1
					TOTAL	**30**	**26**
VI	III	Major Core /DSC XIII	UJMM601	Media Culture and Society		6	6
	III	Major Core /DSC XIV	UJMM602	Introduction to Film Studies		6	5
	III	Major Core XV/DSC	UJMM603	Current Affairs - II		6	5
	III	Major Core Practical/DSC XVI	UJMR601	Online Journalism		5	5
	III	Major Elective/DSC II	UJMO601	Specialization in Print Journalism		5	5
			UJMO602	Specialization in Broadcast Journalism			
	III	Comprehensive Viva				-	1
	IV	Soft Skill				2	1
	V	Extension programme/ Physical Education				-	-/2
					TOTAL	**30**	**28/31**
					GRAND TOTAL	**192**	**148/162**

NON-MAJOR ELECTIVE

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/week	Credit Min/Max
II	IV	Non-Major Elective	UJME201	Blog Writing	-	3	2
IV	IV	Non-Major Elective	UJME401	Basics of Advertising and Copy Writing	-	3	2

DEVELOPMENT COMMUNICATION
UJMM301

Semester: III **Credit: 4**
Category: Major V **Hours/Week: 5**
Class & Major: II B.A. Journalism and Mass Communication **Total Hours: 65**

Course Objectives

CO. NO.	To enable the student to
CO-1	Define "development communication"
CO-2	Understand the major theories of development and development communication.
CO-3	To learn about the approaches in development communication,
CO-4	Develop the relationship between development communication and current issues.
CO-5	Know the Role of ICT in Development Communication

UNIT I INTRODUCTION TO DEVELOPMENT COMMUNICATION 15 Hours

Definition of Development Communication- Historical Contexts of Development Communication- Dynamics of Development-Social Development- social media for Development Communication.

UNIT II THEORIES AND MODEL OF DEVELOPMENT & DEVELOPMENT COMMUNICATION 15 Hours

Concept of Communication: Scope and Elements of Communication process- Introduction to Communication Theories: Consistency theory- Individual differences theory- Dependency Model Social responsibility theory- - Marxist concept of stages of society
Diffusion to Innovation theory - Media and modernization approach - Magic Multiplier - Digital Democracy

UNIT III: APPROACHES TO DEVELOPMENT COMMUNICATION 10 Hours

Communication approaches: One way-two way, Upward-downward- Horizontal-vertical- Participatory- social marking and participation message marking- Media intervention.

UNIT IV: DEVELOPMENT COMMUNICATION AND CURRENT ISSUES 10 Hours

Inequality- Global Poverty and Hunger - Environment and Sustainability -Health and Gender - ICT and Open Development –Humanitarianism- Activism and Social Change- Circular Economy

UNIT V: DEVELOPMENT: INFORMATION AND COMMUNICATION TECHNOLOGIES 15 Hours

Internet as a Medium-Digital Media & Society - Issues of Access and Participation - Policy Frameworks and Regulations- ICTS for Development – An Overview - E-Governance: Policy and Framework - E-Governance in Rural Development - E-Governance in Urban Development- ICT for Education - ICT for Health - ICT for Disability- Dimensions of Knowledge Society: Access and Equity Issues - Democracy and Digital Media - ICT and Knowledge Society: Challenges & Opportunities

PRACTICAL: Analysis and Appreciation of programmes of Radio, TV and Film from the perspective of development. Analysis of gender differentials using development indicator.

Text Book:

- Srinivas Melkote& Steeves (2001) Communication for Development in the Third World.

Reference Books:

- Everett, Roger. (2003). Diffusion of Innovations, Free Press
- Manyozo, Linje. (2012). Media, Communication and Development: Three Approaches. London: Sage Paravala
- Prasad, Kiran. (2009). Information and Communication Technology: Reinvesting Theory and Action (2Volumes). New Delhi: BRPC
- PW Preston. (1997). Development Theory, Blackwell
- RK Ravindran. (2000). Media in Development Arena, Indian Publishers Distributors SrinivasMelkore&Steeves (2001). Communication for Development in the Third World, Sage
- V & Malik K V. (2007). Other Voices, The Struggle for Community Radio in India, Sage India
- Gupta, VS. (2004). Communication for Development and Civil Society, Concept
- Pieterse, Jan Nederveen. (2001). Development Theory: Deconstruction/Reconstruction, Vistaar.

E-Resources

- https://www.caluniv.ac.in/academic/JMC/Study/DC.pdf
- https://www.academia.edu/8054246/Development_Communication_Theories_Means_and_Methods
- https://www.ukessays.com/essays/media/approaches-development-communication-4898.php
- https://bidmusjo.medium.com/development-communication-and-the-emerging-issues-towards-social-change-b3712e52721b
- https://unctad.org/system/files/official-document/iteipc20031_en.pdf

Course Outcomes:

CO. NO.	On completion of the course student will able to	Bloom's Level
CO-1	Recall and explain the key milestones and historical evolution of development communication, identifying significant events and contributors.	K1, K2
CO-2	Apply the knowledge of communication theories across diverse cultural and socio-economic contexts, recognizing the need for context-specific adaptations.	K3
CO-3	Examine the alignment of NGO goals with community needs and analyse the impact on communication outcomes.	K4
CO-4	Evaluate existing policies and proposed responses to current issues, considering their effectiveness, feasibility, and alignment with societal values.	K5
CO-5	Generate innovative digital storytelling approaches using ICT tools to convey impactful narratives, effectively communicating the human aspects of development challenges.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	1	1	1	1
CO 2	3	2	2	1	1	1
CO 3	3	3	1	1	1	1
CO 4	3	3	1	1	1	1
CO 5	1	2	3	3	3	3

High Correlation : 33%
Moderate Correlation : 10%
Low Correlation : 17%

SPECIALZED REPORTING
UJMM302

Semester : III **Credit : 5**
Category : Major Core IV **Hours/Week : 5**
Class & Major: I B.A Journalism and Mass Communication **Total Hours : 65**

Course Objectives

CO. No.	To enable the students TO
CO 1	Find the evolution of specialized reporting and contemporary
CO 2	Compare reporting and specialized reporting
CO 3	Make use of science reporting, environmental reporting, rural reporting, etc.
CO 4	Analyze conflict reporting
CO 5	Improve practical knowledge

UNIT I RELEVANCE OF SPECIALIZED REPORTING 10 Hours

Evolution of specialized reporting Relevance of specialized reporting in contemporary times Creativity in specialized reporting.

UNIT II JOURNALISTIC BEATS 15 Hours

Understanding Beats and their categories- City reporting: City and local news-Reporting Political Parties and Politics-Legislative (covering Assembly and Parliament)-Fashion & Lifestyle- Entertainment-Sport- Health Reporting-Culture- Art and Literature Reporting-Lifestyle reporting Economic and Commerce reporting.

UNIT III SOME SPECIALIZED REPORTING 15 Hours

Legal Reporting-Science and technology reporting-Environment Reporting-Development Reporting-Rural and agricultural reporting.

UNIT IV CONFLICT REPORTING 10 Hours

Reporting Conflict: Armed and Social Conflict, Region, Community and Human Rights-Crime reporting-Court reporting: Source and related laws -Election Reporting-Conflict Reporting-Terrorism reporting.

UNIT V Practical **15 Hours**

1. 5 Minutes video of reporting
2. 5 Minutes of Anchoring
3. Video of Live reporting
4. Interview with any resource person
5. Make a collaborative program anchoring and reporting

Text Books:

- Kamath, M. V. (1993). The Journalism Handbook.

Reference Books:

- Keeble, R. (2002). *Ethics for journalists*. Routledge.
- Shrivastava, K. M. (1987). *News reporting and editing*. Sterling Publishers Pvt. Ltd.
- 3 Mehta, M. D. (1979). *Mass communication and journalism in India* (Vol. 1). Allied Publishers.
- Aggarwal, V. B., & Gupta, V. S. (2001). *Handbook of journalism and mass communication*. Concept Publishing Company.

E-Resources

- https://question12media.wordpress.com/2020/08/04/what-is-specialised-reporting/
- https://www.nimcj.org/blog-detail/6-important-types-of-beats-in-journalism.html
- https://mcom201newsreporting.files.wordpress.com/2014/11/specialized-reporting-chap.pdf
- https://www.studocu.com/in/document/university-of-kerala/jouranlism-and-maas-communication/conflict-reporting/36641157

Course Outcomes

CO. No.	On completion of the course the student will be able to	Bloom's Level
CO 1	Recognize and understand the significance of accurate and reliable sourcing in specialized reporting, understanding its impact on the credibility of journalistic work.	K1, K2
CO 2	Apply investigative reporting methodologies in various genres, including news articles, features, and in-depth analyses.	K3
CO 3	Analyse the use of technology, including data visualization tools and digital platforms, in science reporting and assess their impact on storytelling.	K4
CO 4	Assess the underlying factors and dynamics contributing to conflicts, evaluating the historical, social, economic, and political dimensions.	K5
CO 5	Create in-depth feature stories that delve into specific aspects of their specialized reporting domain, showcasing a nuanced understanding and the ability to present complex information effectively.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	2	2
CO 3	2	2	2	2	1	3
CO 4	3	3	1	1	1	1
CO 5	1	2	3	3	3	3

High Correlation : 56%
Moderate Correlation: 24%
Low Correlation **:** 20%

SOCIO-ECONOMIC ISSUES IN INDIA

UJMA301

Semester: III **Credit: 3**
Category: Allied **Hours/Week: 4**
Class & Major: II B.A. Journalism and Mass Communication **Total Hours: 52**

Course Objectives

CO. NO.	To enable the student to
CO-1	Know about economic issues
CO-2	comprehend the growth and development of economics
CO-3	Grasp the knowledge of Indian society
CO-4	Recognize the social issues in India.
CO-5	Fathom the relationship between society and economics

UNIT I ECONOMIC ISSUES **12 Hours**

Poverty- Vicious cycle of poverty- Multi- Dimensional Poverty Index-major poverty alleviation programmes taken by the- Government of India-Feminization of Poverty- Major types of poverty- Poverty Estimation-History of poverty estimation in India-Rural Poverty

UNIT II GROWTH AND DEVELOPMENT **10 Hours**

Measurement of growth: National Income and per capita income-Poverty Alleviation and Employment Generation in India- Sustainable Development and Environmental issues- Human Development - Essential Components of Human development; Indexing Human Development in India- Inclusive Growth

UNIT III INDIAN SOCIETY **10 Hours**

Salient features of Indian Society- Diversity of India- Role of women- Role of women's organisations- Population and associated issues- Urbanization- Government schemes related to various sectors-Welfare schemes health-education- human resources

UNIT IV SOCIAL ISSUES **10 Hours**

Gender Issues: Gender Gap-Triple Talaq- Sexual Harassment at Workplace- Caste Related Issues: Lynchings- I&B advisory on the term Dalit- Implications of the Caste Census- Migration: Changing Pattern of Migration- Plight of migrants- Health: 1. Impact of air pollution- Campaign against Drugs- Substance Abuse in India

UNIT V SOCIETY AND ECONOMICS **10 Hours**

Labour and Employment scenario- Structure issues in Indian Economy- Inflamation: Concept, facts, and policy-Economic growth and inflammation- Women and Economy

PRACTICAL: Essay on current geo-politic, geo-economic of India, Socio-economic structure of India

Text Books

- Ahuja, R. (2014). Social problems in India. Rawat publications.
- Ahuja, R. (1999). *Society in India: Concepts, theories, and changing trends*. Rawat Publications.
- Acharya, R. H., & Sadath, A. C. (2019). Energy poverty and economic development: Household-level evidence from India. *Energy and Buildings*, *183*, 785-791.
- Ahluwalia, I. J., & Little, I. M. D. (2012). *India's economic reforms and development: Essays for Manmohan Singh*. Oxford University Press.

Reference Books:

- Ahmad, Imtiaz. (et.al). (2000). Pluralism and Equality, New Delhi: Sage Publications. Central Book Depot.
- Bardhan, Pranab (1994) : The Political Economy of Development in India; Oxford University Press, New Delhi
- Virmani, A. (2004). India's economic growth: From socialist rate of growth to Bharatiya rate of growth.
- C.T. Kurian (1978) : Poverty Planning and Social Transformation - An Alternative in Development Planning Allied Publishers, New Delhi
- Unnathan, T. K. N., Ahuja, R., & Rao, V. (1988). Sub-culture of violence: The Indian context. *Venugopala Rao*.
- Dasgupta, A. K. (2002). *A history of Indian economic thought*. Routledge.
- Jalan, B. (1997). *India's economic policy: preparing for the twenty-first century*. Penguin Books India.
- Swain, S. (2011). *Social issues of India*. Smarak Swain.
- Batra, R., & Reio Jr, T. G. (2016). Gender inequality issues in India. *Advances in Developing Human Resources*, *18*(1), 88-101.
- Ganguly-Scrase, R., & Scrase, T. J. (2008). *Globalisation and the middle classes in India: The social and cultural impact of neoliberal reforms*. Routledge.
- Das, A. (1999). Socio-economic development in India: A regional analysis. *Development and Society*, *28*.

E – Resources:

- https://shorensteincenter.org/wp-content/uploads/2012/03/d25_parker.pdf
- http://communication.iresearchnet.com/development-communication/development-journalism/
- https://www.academia.edu/41718418/INDIAN_SOCIETY_Some_important_features_of_Indian_society
- https://byjusexamprep.com/upsc-exam/social-issues-in-india
- https://www.studocu.com/in/document/jamia-millia-islamia/sociology-i/economy-of-indian-society/22402685

Course Outcomes:

CO. NO.	On completion of the course student will able to	Bloom's Level
CO-1	Understand the foundation of economic	K2
CO-2	Outline the growth and development of economics.	K2
CO-3	Inspect the Indian society	K4
CO-4	Interpret about social issues	K5
CO-5	Imagine the relationship between society and economics.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**1**	**1**	**1**	**1**	**1**
CO 2	**3**	**2**	**2**	**1**	**1**	**1**
CO 3	**3**	**3**	**3**	**1**	**1**	**1**
CO 4	**2**	**2**	**1**	**1**	**1**	**1**
CO 5	**3**	**3**	**2**	**1**	**1**	**1**

High Correlation : 23%
Moderate Correlation : 16%
Low Correlation : 61%

PRINT JOURNAL

UJMR301

Semester: III **Credit: 3**
Category: Allied Practical **Hours/Week: 4**
Class & Major: II B.A. Journalism and Mass Communication **Total Hrs: 52**

Course Objectives

CO. NO.	To enable the student to
CO-1	Gain knowledge of various concepts and classifications of print journalism.
CO-2	Acquaint with different news agencies and news gathering techniques.
CO-3	Develop skills in the writing, editing, and designing of news stories.
CO-4	Familiarize yourself with various trends, typography, and design principles in print media.
CO-5	Learn to design the pamphlet, brochure, tabloid, etc.

Exercises and Assignments

1. Create a tabloid newspaper 4 pages
2. 1 magazine u to 8 pages
3. 5 Brochures
4. 2 leaflet / flyer
5. 2 Pamphlet

Course Outcomes

CO. NO.	On completion of the course student will able to	Bloom's Level
CO-1	Recall and understand the key concepts in print journalism, including editorial content, bylines, and mastheads.	K1, K2
CO-2	Classify different types of print journalism publications, identifying unique characteristics and target audiences.	K3
CO-3	Investigate emerging trends in news storytelling, including multimedia integration and interactive elements.	K4
CO-4	Assess the impact of digital advancements on traditional print media, analyzing the effectiveness of integrating multimedia elements.	K5
CO-5	Design variety of printed materials, including pamphlets, brochures, tabloid-style publications, etc.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**3**	**3**	**3**	**3**	**3**
CO 2	**3**	**2**	**2**	**2**	**1**	**1**
CO 3	**1**	**1**	**3**	**2**	**3**	**3**
CO 4	**3**	**2**	**3**	**3**	**3**	**3**
CO 5	**1**	**1**	**3**	**3**	**3**	**3**

High Correlation : 63%
Moderate Correlation : 16%
Low Correlation : 21%

CORPORATE COMMUNICATION

UJMM401

Semester: IV **Credit: 4**
Category: Major **Hours/Week: 4**
Class & Major: II B.A. Journalism and Mass Communication **Total Hours: 52**

Course Objectives

CO. NO.	To enable the student
CO-1	Fathom the concepts and evolution of corporate communication in the context of organizations.
CO-2	Discuss the role and scope of CC in corporate brand management and image factors.
CO-3	Perceive media, especially the trade media, and its relevance to the practice of CC
CO-4	Give an overview of the Indian financial system and communication
CO-5	Make them aware of corporate identity and management.

UNIT I UNDERSTANDING ORGANISATIONAL COMMUNICATION 10 Hours

Defining structure of an organisation -Various kinds of organisations -Management hierarchy - Various kinds of communication in an organisation -Role and scope of corporate communication - Interface of corporate communication department with various management disciplines

UNIT II UNDERSTANDING CORPORATE COMMUNICATION 12 Hours

Definitions-concept and genesis of CC - Difference and similarities between PR and CC - CC and public affairs- CC and corporate affairs - Publics in CC - Financial publics-media-opinion makers-government-elected representatives- Present state of CC- Organising corporate communication activities - Areas of strategic thinking in corporate communication - Ethics and laws in corporate communication

UNIT III CORPORATE COMMUNICATION TOOLS 10 Hours

Lobbying- Sponsorship -Financial communication - Corporate reputation - Corporate identity - Media mileage- include media relation: new media-social media, social media analysis, corporate website, blogs e-public relations.

UNIT IV FINANCIAL COMMUNICATION 10 Hours

Defining financial communication - Growth and role of financial communication in present context - Overview of Indian financial system - Capital market – stock exchanges- SEBI-functioning and mandate - Financial institutions -financial products (bonds, debentures, shares) - Legal and ethical aspects in financial communication-Financial communication campaigns-corporate reputation

UNIT V: CORPORATE IDENTITY AND CORPORATE BRAND MANAGEMENT
10 Hours

Defining corporate identity - Integrating corporate identity into communication process - Making of house styles- the wherewithal -Case studies in corporate identity - Definition and role of corporate image - Corporate brand management

Text Books

- Dolphin, R. R. (2009). *The fundamentals of corporate communication*. Routledge. Donald R G Corporate Reputation, London: Kogan page

Reference Books:

- Welch, M., & Jackson, P. R. (2007). Rethinking internal communication: a stakeholder approach. *Corporate communications: An international journal*. Paul Argentli Paul The Power of Corporate Communication, NY: McGraw Hill
- Clow, K. E. (2013). *Integrated advertising, promotion and marketing communications, 4/e*. Pearson Education India.
- Cutlip, S. M. (1962). *Effective public relations*. Pearson Education India.Sukul Lomash & P.K.Mishra Business policy and strategic management, Vidya Vikash Publishing house, New Delhi

e- Resources

- https://www.marketing91.com/organizational-communication/
- https://www.easyleadz.com/blog/corporate-communication/
- https://www.velocityconsultancy.com/types-of-corporate-communication-tools-to-power-up-your-brand-identity/
- https://www.slideshare.net/KunalSinghal1/financial-communication-60389586

Course Outcomes:

CO.NO.	On completion of the course student will able to	Bloom's Level
CO-1	Define and explain the evolution of corporate communication and its relevance in organizational contexts.	K1, K2
CO-2	Identify the role and scope of CC in corporate brand management and image factors.	K3
CO-3	Distinguish media, especially the trade media, and its relevance to the practice of CC	K4
CO-4	Assess how cultural dynamics impact the reception and interpretation of financial information by different segments of the Indian population.	K5
CO-5	Develop creative design principles to ensure the visual elements are distinctive, memorable, and representative of the brand.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	1	1	1	1
CO 2	3	2	3	3	1	1
CO 3	1	1	2	1	1	1
CO 4	2	1	1	1	1	1
CO 5	1	2	3	3	3	3

High Correlation : 26%
Moderate Correlation : 13%
Low Correlation : 61%

TELEVISION PRODUCTION

UJMM402

Semester : IV **Credit : 4**
Category : Major Core VIII **Hours/Week : 4**
Class & Major: I B.A Journalism and Mass Communication **Total Hours : 52**

Course Objectives

CO. No.	To enable the students
CO 1	Acquire basic knowledge of the origin and history of television.
CO 2	Help the students to acknowledge the television productions types and its roles
CO 3	Understanding the production process and planning strategies
CO 4	Understanding the importance of post-production techniques and their operation
CO 5	Develop the core concepts associated with television production management.

UNIT -I ORIGIN AND DEVELOPMENT OF TELEVISION **10 Hours**

History of Television, Television system -NTSC, PAL, SECAM, TV Scanning- Interlace & Progressive. Types of telecasting- Terrestrial TV, Satellite TV, Cable TV , DTH. Development of TV in India. Role of Television in Development.

UNIT- II BASICS OF TELEIVISION PRODUCTION **10 Hours**

Basics of TV production - Stages of Production- Pre-Production, Idea, brainstorming, Research, Reece, Budget, and Scheduling. Scripting- Planning of Story, story board, Script formats -Single column & double column, fully scripted and semi scripted programmes. selection of cast, costumes, locations, location scout.

UNIT- III PRODUCTION PROCESS **10 Hours**

Production Stage - Basic camera mounts, Aspect ratio, White balance, framing & composition, Types of shots, Types of camera movements. Types of camera lenses -Normal, Tele, zoom etc., Functions of Lighting, Lighting Technique-Three Point Lighting, Production crew – above the line & below the line. Roles & responsibilities of crew members

UNIT -IV POST PRODUCTION **10 Hours**

Post Production -Video Editing – Linear & Non-linear, types of editing modes (assemble mode, insert mode, on line mode), Basic Transitions-Cut, Dissolve Fade & Wipe. Audio – types of microphones, Dubbing, Music, Back ground Music, synchronizing of video and audio, voice Over (narration)etc. Television graphics & titling and specials effects.

UNIT- V TELEVISION PRODUCTION MANAGEMENT **12 Hours**

Television Studio – PCR, MCR, shooting floor, Art direction & Set design, Floor management- Indoor & outdoor, Chroma Key, Equipment in a Television studio. Types of TV programmes and formats., TV News, Anchoring & VJ, TRP, Audio & video formats.

Text Book:

- Millerson, G. (1994). *Effective TV production*. Routledge.

Reference Books:

- Zettl, H., & Zettl, H. (2006). *Television production handbook* (pp. 74-75). Thomas Wadsworth.
- Millerson, G., & Owens, J. (2012). *Television production*. Routledge.
- Barker, D. (1985). Television production techniques as communication. *Critical Studies in Media Communication*, *2*(3), 234-246
- Millerson, G., & Owens, J. (2012). *Television production*. Routledge.
- Ward, P. (2013). *Basic Betacam Camerawork*. Taylor & Francis.
- Zettl, H. (2016). *Sight, sound, motion: Applied media aesthetics*. Cengage Learning.

E-Resources

- https://www.vedantu.com/blog/evolution-of-television
- https://www.jukolart.us/producing-for-tv/a-the-five-stages-of-tv-production.html
- https://www.slideshare.net/balishreya23/television-production-process-an-insight-to-tv-industry
- https://www.studiobinder.com/blog/what-is-post-production/
- https://www.masterclass.com/articles/film-101-what-is-a-production-manager-duties-and-responsibilities-of-a-production-manager

Course Outcomes

CO. No.	On completion of the course the student will be able to	Bloom's Level
CO 1	Recall and summarize the historical context and implications of the inaugural television broadcast in shaping the medium.	K1, K2
CO 2	Demonstrate the application of character archetypes in a scripted drama by	K3

	creating well-defined characters that align with established archetypal roles.	
CO 3	Investigate proactive risk management strategies, considering preventive measures that can be implemented during pre-production and early stages of the project.	K4
CO 4	Evaluate the editing techniques employed in a selected film scene, analysing the effectiveness of cuts, transitions, and special effects in contributing to the overall storytelling.	K5
CO 5	Generate creative solutions for addressing potential challenges in each phase, ensuring a well-rounded and adaptable plan.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**1**	**1**	**1**	**1**	**1**
CO 2	**1**	**2**	**3**	**3**	**3**	**3**
CO 3	**1**	**1**	**2**	**1**	**3**	**3**
CO 4	**2**	**1**	**3**	**3**	**3**	**3**
CO 5	**1**	**2**	**3**	**3**	**3**	**3**

High Correlation : 51%
Moderate Correlation : 13%
Low Correlation : 36%

INTRODUCTION TO INDIAN CONSTITUTION

UJMA401

Semester: IV **Credit: 3**
Category: Allied **Hours/Week: 4**
Class & Major: II B.A. Journalism and Mass Communication **Total Hours: 52**

Course Objectives

CO. NO.	To enable the students
CO-1	Introduce the Philosophy of the Constitution
CO-2	learn process of modern executive and legislature
CO-3	know the structure of government
CO-4	Understand the judiciary
CO-5	An overview of the political system of India

UNIT I CONSTITUTION AND PHILOSOPHY OF THE CONSTITUTION 10 Hours

Constitution – Meaning, Types- limitations and Historical Perspective of Constitution- Constitutionalism- Meaning and concept of Constitutionalism- Problems and Prospects of

Constitutionalism- The Preamble, Fundamental Rights and Duties, Directive Principles of State Policies - Gandhian, Liberal and Socialistic Principles - An Evaluation

UNIT II MODERN EXECUTIVE AND LEGISLATURE 10 Hours

Nature, Functions and Types of Executive-Judiciaries- Judicial Review- Rule of Law: Organization and Functions- salient feature of Indian Constitution, Parliament forms of Govt, Role of Prime Minister- legislature: Union-State- and local Panchayat Raj

UNIT III STRUCTURE OF THE GOVERNMENT 12 Hours

Federalism – Structure and Functioning- Powers of Parliament-Quality of Debates and Composition- Decentralized Governance – Philosophy-Responsibility and Institutional structure-Evaluation of their functioning

UNIT IV JUDICIARY 10 Hours

Supreme Court- High Court-Indian Judiciary – Judicial review- Public Interest Litigation-Judicial Activism -Lok Pal and Lok Ayukta- Communalism and Evaluation of Working of Indian Constitution.

UNIT V POLITICAL SYSTEM OF INDIA 10 Hours

Major political parties: National- Regional parties- Election-Commission-Electoral Reform-Process of election Coalition of govt.

Text Books:

- Basu, D D. (2018). Introduction to the Constitution of India. New Dehli: Lexis Nexis; Twenty-Third.
- Rama, Jois. (2014). Legal and Constitutional History of India. UP: Universal Law Publishing Co Ltd

Reference Books:

- Agrawal. P.K., & Guptal, Virag. (2019). The Constitution of India. New Dehli: Prabhat Prakashan.
- Atlantic Research Division, (2012). Constitutional Democracy and Government in India. Channai: Atlantic.
- Bakshi, P. M. (2019). Constitution of India. New Dehli: Universal.
- Johari, J.C. (1986). Major Modern Political Systems. Delhi: Vishal Publications.
- Pal, S. (2015). India'S Constitution –Origins and Evolution. New Dehli: Lexis Nexis.
- Pandey, Ashwani. (2012). Making of the constitution of india. New Dehli: Abhijeet Publication.
- Subhash, Kashyap. (2015). Concise Encylcopedia of Indian Constitution. Mubai: Orient Paperbacks.

E-Resources :

- https://www.geeksforgeeks.org/philosophy-of-the-indian-constitution/
- https://byjus.com/free-ias-prep/separation-power-indian-constitution/

- http://www.mcrhrdi.gov.in/drugs/week1/Oraganizational%20Structure%20of%20the%20Government%20at%20the%20Centre.pdf
- https://byjus.com/free-ias-prep/indian-judiciary/
- https://www.tradechakra.com/india-political-system.html

Course Outcomes:

CO. NO.	On completion of the course student will able to	Bloom's Level
CO-1	Recall and summarize the foundational principles that influenced the drafting of the Constitution, such as the separation of powers, checks and balances, and federalism.	K1,K2
CO-2	Identify the executive branch operates in contemporary political systems, considering its functions in policy implementation, administration, and decision-making.	K3
CO-3	Distinguish the roles, responsibilities, and decision-making processes within the executive branch, evaluating how it implements and enforces laws.	K4
CO-4	Scrutinize the mechanisms in place to ensure the independence of the judiciary, including judicial appointments and removal processes.	K5
CO-5	Illustrate the unique foundations of India's democratic political system, incorporating elements from its historical, social, and cultural contexts.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**1**	**1**	**3**	**1**	**1**
CO 2	**3**	**2**	**1**	**3**	**1**	**1**
CO 3	**3**	**2**	**1**	**3**	**1**	**1**
CO 4	**3**	**2**	**1**	**1**	**1**	**1**
CO 5	**3**	**1**	**1**	**1**	**1**	**1**

High Correlation : 26%
Moderate Correlation : 11%
Low Correlation : 63%

BROADCAST JOURNALISM

UJMR401

Semester : IV **Credit : 3**
Category : Allied Practical-IV **Hours/Week : 3**
Class & Major: I B.A Journalism and Mass Communication **Total Hours : 39**

Course Objectives:

CO. No.	To enable the students to
CO 1	Understand the development of radio
CO 2	Acknowledge the importance of the radio production process.
CO 3	Learn to write in radio
CO 4	Update about emerging trends in radio journalism
CO 5	Hands-on training about radio journalism

UNIT I ORIGIN AND EVOLUTION OF RADIO DEVELOPMENT 10 Hours

What is broadcast? History of Radio, Evolution & development of Radio journalism. Basics of Radio Programming- from conception to execution of ideas, Radio Format & Genres, Radio Station Organization and Management, Radio Jingles, Radio Drama, Radio Interview, Radio News.

UNIT II RADIO PRODUCTION PROCESS 7 Hours

Writing for Radio News, People involved in Producing Radio News - Executive Producer, Editor, News Reader, Board Operator, Line- up Producer. Radio Jockey, Ad-lib, Equipment used for radio production. Three tiers of Radio Broadcast—Local, Regional and National, Types of Broadcasts -AM & FM, AIR, Prasar Bharati - Code of ethics for Public Service Broadcast

UNIT III RADIO JOURNALISM 7 Hours

Brief History of the development of radio journalism, Electronic News Gathering (ENG), Tools of news gathering, researching for news & features, preparing for reporting and interview, writing for television news, writing for visuals, writing for different types of stories, Breaking news. Outdoor reporting, PTC, Indoor news production, News anchors and presenter. TV News channel Organization and Management

UNIT IV EMERGING TRENDS 10 Hours

Emerging Trends: Mobile Technology, social media & Web. Convergence: Need, nature and future of convergence. Convergence and Multi-media: - Use of Facebook & Twitter handles by Radio& TV channels, Internet TV/ Radio and Mobile/Radio.

UNIT V PRACTICALS 5 Hours

Handling of audio and video gadgets to produce Radio & TV Programmes, Producing Radio programmes - Radio Jingles, Radio Drama, Radio Interview, Radio News. Producing TV programmes – News features, Outdoor reporting & PTC, News Anchoring and News Bulletin.

Text Books:

- Trewin, J. (2013). *Presenting on TV and Radio: An insider's guide*. Routledge.
- Luitel, G. R. Radio News Reporting and Sourcing: A Case of

Reference Books:

- Benjamin, L. (1999). Live, Direct and Biased? Making Television News in the Satellite Age: By Brent MacGregor, London: St. Martin's Press, 1997, 234 pp.
- Herbert, J. (1999). *Journalism in the digital age: Theory and practice for broadcast, print and online media*. Routledge.
- Biagi, S. (2014). *Media/Impact: An introduction to mass media*. Cengage Learning. Cohler, D. K. (1985). *Broadcast journalism: A guide for the presentation of radio and television news*. Englewood Cliffs, NJ: Prentice-Hall.Nepal.
- Pavlik, J. V. (2008). *Media in the digital age*. Columbia University Press.
- McLeish, R., & Link, J. (2015). *Radio production*. Routledge.

E-Resources :

- https://www.groovenexus.com/learning/evolution-of-radio/
- https://beonair.com/blog-what-is-radio-production
- https://www.lifepage.in/careers/radio-journalism
- https://spacial.com/radio-trends-2022/

Course Outcomes

CO. No.	On completion of the course the student will be able to	Bloom's Level
CO 1	Find out the difference in writing the radio and television news scripts	K1/K2
CO 2	Develop diverse radio programs	K3
CO 3	Distinguish various television programs	K4
CO 4	Evaluate students' on-field reporting skills and presentation techniques	K5
CO 5	Develop an ability in news presentation techniques and live broadcast handle.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	1	3	3	3	3	2
CO 3	3	3	3	3	3	3
CO 4	1	3	3	3	3	3
CO 5	1	3	3	3	3	3

High Correlation : 85%
Moderate Correlation : 3%
Low Correlation : 12%

BASICS OF ADVERTISING AND COPY WRITING

UJME401

Semester: IV **Credit : 2**

Category: Non-Major Elective **Hours/Week: 3**

Class & Major: II B.A. Journalism and Mass Communication **Total Hours : 39**

Course Objectives

CO. No.	To enable the students to
CO 1	Explain the meaning, growth, and evolution of advertising.
CO 2	Learn principals, concepts, and advertising strategy.
CO 3	Summarize how an ad agency works.
CO 4	Know about copywriting.
CO 5	Relate creativity in the writing.

UNIT –I WHAT IS ADVERTISING **5 Hours**

Definition, nature and scope of advertising, role of advertising, functions of advertising, Advertising environment, advertising agency and media, latest trends in Indian advertising.

UNIT- II THEORIES OF ADVERTISING **10 Hours**

Advertising Theories: AIDA Model, DAGMAR, Maslow's Hierarchy Model Classification of advertising based on target audience, geographic area, media and purpose, online advertising and promos, Brand positioning, brand name, brand personality, brand equity and brand management.

UNIT –III PROCEDURE OF ADVERTIISNG, ADVERTIISNG BODIES, AND ETICS **7 Hours**

Integrated Marketing Communications, Publicity, Propaganda and Public relations, Advertising and public relations ethics and regulations. Advertising bodies in India and their roles. Media Planning, Work Procedure, Agency-Client Relationship; Regulatory Boards, Case Studies.

UNIT- IV COPY WRITING **7 Hours**

Basics of copy writing- what is copy? - Who needs copywriters? - Attributes of a good copywriter- Responsibility or characteristics a copywriter- ten timeless persuasive copy writing techniques- principles of copywriting- Writing copy for various Media-. Print: Headlines, sub headlines, captions, body copy, and slogans- Writing copy for various audiences

UNIT V ROLE OF CREATIVE WRITING IN COPY WRTING **10 Hours**

What is Creativity? - What Is Left Brain - Right Brain Theory? - Appeals to Pathos, Logos, and Ethos in writing- Conscious mind; unconscious mind- Role of Heuristics and assumptions in creative thinking- Five steps of Creative process- Idea Generation Techniques in

writing- Writing persuasive copy: The CAN Elements (connectedness, appropriateness, and novelty)-.

Text Book:

- Bly, R. W. (2020). *The copywriter's handbook: a step-by-step guide to writing copy that sells*. Holt Paperbacks.

Reference Books:

- Sugarman, J. (2006). *The Adweek Copywriting Handbook: The Ultimate Guide to Writing Powerful Advertising and Marketing Copy from One of America's Top Copywriters*. John Wiley & Sons.
- Sullivan, L., Bennett, S., & Boches, E. (2012). *Hey, Whipple, squeeze this: The classic guide to creating great ads*. John Wiley & Sons.
- Sullivan, L., Bennett, S., & Boches, E. (2012). *Hey, Whipple, squeeze this: The classic guide to creating great ads*. John Wiley & Sons.
- Sullivan, L., Bennett, S., & Boches, E. (2012). *Hey, Whipple, squeeze this: The classic guide to creating great ads*. John Wiley & Sons.

E-Resources :

- https://www.masscommunicationtalk.com/advertising-and-objectives-of-advertisment.html
- https://cubicmuse.com/?p=1553
- https://www.linkedin.com/pulse/content-writing-vs-copywriting-journalism-whats-elizabeth
- https://lizslyman.com/creative-copywriting-what-it-is-and-how-you-can-nail-it/

Course Outcome

CO.NO.	On completion of the course student will able to	Bloom's Level
CO-1	Define and explain what is advertisement.	K1, K2
CO-2	Apply fundamental principles and diverse approaches to advertising, demonstrating the ability to strategically create and implement campaigns.	K3
CO-3	Distinguish the ethical considerations in advertising and public relations.	K4
CO-4	Evaluate the effectiveness and significance of copywriting by examining its impact on audience engagement and brand messaging.	K5
CO-5	Create a comprehensive exploration of the role of creative writing in copywriting.	K6

CO-PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**1**	**1**	**1**	**1**	**1**
CO 2	**3**	**3**	**3**	**3**	**3**	**3**
CO 3	**3**	**3**	**2**	**3**	**1**	**1**
CO 4	**2**	**2**	**3**	**3**	**3**	**3**
CO 5	**1**	**2**	**3**	**3**	**3**	**3**

High Correlation : 61%
Moderate Correlation : 13%
Low Correlation : 26%

III AND IV EVALUATION OF COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
III	Major Core / DSC V	UJMM301	Development Communication	Assignments	Writing essays, case studies
	Major Core / DSC VI	UJMM302	Specialized Reporting	Assignments	Create a news reels
	Allied – III (GE)	UJMA301	Socio-economic and Political issues in India	Assignments	Writing essays, articles,
	Allied - III Practical	UJMR301	Print Journal	Assignments	Newspaper, Magazines, Brochure, leaflet
IV	Major Core / DSC VII	UJMM401	Corporate Communication	Assignment	Case studies
	Major Core / DSC VIII	UJMM402	Television Production	Assignment	Scripts
	Allied – IV (GE)	UJMA401	Introduction to Indian Constitution	Assignment	Writing essay, Article
	Allied – IV Practical	UJMR401	Broadcast Journalism	Assignment	Scripting, Shooting, Editing & Presenting a News Event /Feature for TV
	Non Major Elective	UJME401	Basics of Advertising and Copy Writing	Assignment	Writing Feature, Articles, Column, Letter to editor

DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS

PREAMBLE

UG: Programme profile & the syllabi of courses offered in the semester III and IV along with III & IV evaluation components (with effect from 2022 - 2025 batch on wards).

B.Sc., CLINICAL NUTRITION AND DIETETICS

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	Upon completion of these courses the students would be able to
PSO-1	Acquire knowledge and skills related to the management of food services, including menu planning, food safety, and quality control.
PSO-2	Recognize the importance of continuous learning and professional development in the rapidly evolving field of clinical nutrition and dietetics.
PSO-3	Demonstrate ethical behavior and effective communication skills in interactions with clients, colleagues, and other stakeholders.
PSO-4	Apply research methods to critically evaluate scientific literature and incorporate evidence-based practices into nutritional assessment and intervention.
PSO-5	Assess the nutritional status of individuals across the lifespan using appropriate tools and techniques.
PSO-6	Design and implement therapeutic diet plans for individuals with various health conditions, taking into consideration their medical history, cultural Preference Books, and lifestyle.

Semester	Part	Category	Course code	Course Title	Previous course code	Hrs per week	Credit Min / Max
I	I	Language/ AECC-II / Tamil (2 Levels) Hindi / French	UTAL107/ UTAL108/ UHIL102/ UFRL102	Basic Tamil I/ Advanced Tamil I/Hindi I/ FrenchI	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3/4
	II	Communicative English I / AECCI (2Levels)	UCEL101/ UCEL102	English for Communication – I (Stream – I)/ English for Communication – I (Stream –II)	--	5	3/4
	III	Core I / DSC - I	UCNM101	Food Science	--	4	4
		Core II / DSC - II	UCNM102	Human Nutrition – I	--	4	4
		Core Practical I	UCNR101	Food Science Practical	--	3	2
		Allied I / GE I	UBCA101	Biochemistry	--	4	3
		Allied Practical	UBCR101	Biochemistry Practical	--	3	2
		PE	UPEM101	Professional English I	--	6	4
	IV	Value Education / SEC			--	2	1
				TOTAL		**36**	**26/28**

II	I	Language/ AECC-II / Tamil (2 Levels) Hindi / French	UTAL207 / UTAL208 / UHIL202 / UFRL202	Basic Tamil II/ Advanced Tamil II/ Hindi II/ French II	UTAL205 / UTAL206 / UHIL201/ UFRL201	5	3/4
	II	Communicative English / AECC-II (2 Levels)	UCEL201 / UCEL202	English for Communication - II (Stream – I)/ English for Communication – II (Stream –II)	--	5	3/4
	III	Core III / DSC – III	UCNM201	Human Nutrition – II	--	4	4
		Core IV / DSC – IV	UCNM202	Human Physiology		4	3
		Core Practical II	UCNR201	Nutrient Analysis and Physiology Practical	--	3	2
		Allied II/ GE -II	UFSA201	Food Service Management	--	3	3
		Allied II practical	UFSR201	Quantity Cookery Practical	--	3	2
		PE	UPEM201	Professional English II	--	6	4
	IV	Non Major Elective (SEC)			--	3	2
	V	Extension activity/ Physical Education/NCC	--	--	--	-	1/2
TOTAL						**36**	**27/30**
III	I	Language/ AECC-II / Tamil (2 Levels) Hindi/ French	UTAL307/ UTAL308/ UHIL302/ UFRL302	Basic Tamil III/ Advanced Tamil III/ Hindi III/ French III	UTAL305/ UTAL306/ UHIL301/ UFRL301	5	3/4
	II	Communicative English / AECC-I (2 Levels)	UENL309/ UENL310	English for Communication III (Stream – I)/ English for Communication III (Stream –II)	UENL307/ UENL308	5	3/4
	III	Core V / DSC - V	UCNM301	Medical Nutrition Therapy - I	---	5	5
		Core Practical III	UCNR302	Medical Nutrition Therapy Practical	---	3	2
		Allied III/ GE -III	UMBA301	Basics of Food Microbiology	---	4	3
		Allied III/ GE -III	UMBR301	Food Microbiology Practical	---	3	2
	IV	Online Course		NPTEL / Spoken Tutorial	--	3	1/2
		Value Education/ SEC			--	2	1
TOTAL					**--**	**30**	**20/23**
IV	I	Language/ AECC-II / Tamil (2 Levels) Hindi/ French	UTAL407/ UTAL408/ UHIL402/ UFRL402	Basic Tamil IV/ Advanced Tamil IV/ Hindi IV/ French IV	UTAL405/ UTAL406/ UHIL401/ UFRL401	5	3/4
	II	English / AECC-I (2 Levels)	UENL409/ UENL410	English for Communication – IV (Stream – I) /	UENL407/ UENL408	5	3/4

				English for Communication – IV (Stream – II)			
	III	Core VI / DSC – VI	UCNM401	Community Nutrition	---	4	4
		Core VII / DSC - VII	UCNM402	Nutrition Through Life Cycle	---	4	4
		Core Practical IV	UCNR401	Community Nutrition Practical	---	3	2
		Allied IV/ GE –IV	UMAA401	Bio Statistics	---	4	3
	IV	Non Major Elective			--	3	2
		Soft Skill/ SEC			--	2	1
	V	Extension Activity/ Physical Education/ NCC			--	-	- /2
TOTAL						**30**	**22/26**
V	III	Major Core VII / DSC – VII	UCNM501	Clinical Nutrition	--	5	5
		Core VIII/ DSC - VIII	UCNM502	Principles of Food Preservation	---	5	5
		Core IX / DSC – IX	UCNM503	Food Product Development and Entrepreneurship	---	5	5
		Major Elective-I / DSE – I	UCNO501	Scientific Writing in Nutrition Research	--	5	4
			UCNO502	Health Psychology	--		
		Core Practical V	UCNR501	Clinical Nutrition Practical	---	4	3
		Core IX / DSC – IX	UCNP501	Project	---	4	4
		Value Education/ SEC			---	2	1
TOTAL						**30**	**27**
VI	III	Core X / DSC – X	UCNM601	Medical Nutrition therapy-II	---	6	6
		Core XI / DSC – XI	UCNM602	Nutrition Education and Counseling	---	6	6
		Core XII / DSC - XII	UCNM603	Sports Nutrition	---	5	5
		Core XIII / DSC - XIII	UCNM605	Comprehensive Viva voce	--	-	1
		Core Practical VI	UCNR601	Medical Nutrition therapy-II Practical	--	6	3
		Major Elective – II / DSE – II	UCNO601	Herbal Remedies& Alternative Therapy	--	5	4
			UCNO602	Human Development	--		
			UCNO603	Food Hygiene and Sanitation	--		
	IV	Soft Skill/ SEC			--	2	1
	V	Extension activity/ Physical Education/ NCC			--	-	-/2
TOTAL						**30**	**26/28**
GRAND TOTAL						**192**	**148/162**

MEDICAL NUTRITION THERAPY I

UCNM301

Semester : III **Credits :5**

Category : CoreV/ DSC-V **Hours /Week:5**

Class & Major: II B.Sc Clinical Nutrition &Dietetics **Total Hours :65**

Course Objectives

CO NO	To enable the students to
CO-1	Describe the Etiology, Symptoms and Metabolic Changes of Diseases
CO-2	Understanding of the Facts And Ideas in Identifying the Nutritional Implications of Infections
CO-3	Determine their Knowledge and Identify the Techniques of Planning, Preparation and Execution of Therapeutic Diets.
CO-4	Relate and Examine the Severity of Malnourishment Associated with the Specific Co morbid Conditions Based on their Observation
CO-5	Assess the Nutritional Status and Decide and Choose the Appropriate Dietary Modification for Liver Diseases

UNIT I INTRODUCTION TO MEDICAL NUTRITION THERAPY 13Hours

NCP: Nutritional Assessment of Patients, Therapeutic Diet: Routine Hospital Diets: Clear fluid, Full fluid, Semisolids, Soft diet and Regular diet, Classification of Dietitian and Responsibility of Dietitian.

UNIT II MODIFICATIONS OF DIET IN INFECTIONS, FOOD ALLERGY AND FEVER 13Hours

Diet in Fevers and Infection: Fever – Definition, Classification of Fevers, Causes and Dietary Management in Influenza, Typhoid, Malaria, Tuberculosis and Dengue Diet in Food Allergy: Food Allergy- Definition, Classification, Common Food Allergies, Tests and Dietary Treatment- Elimination Diets.

UNIT III ENERGY MODIFICATIONS AND NUTRITIONAL CARE FOR WEIGHTMANAGEMENT 13 Hours

Nutrition in Weight Management: Etiology, Symptoms, Dietary Management and Complications in Obesity and Underweight. Complications - Anorexia Nervosa, Bulimia

UNIT IV DISEASES OF THE GASTRO INTESTINAL TRACT 13Hours

Diseases of the Upper Gastrointestinal Tract- Etiology, Symptoms and Dietary Management in Diarrhea, Constipation, Gastritis, Peptic Ulcers, Colitis, Mal Absorption Syndrome – Tropical Sprue, Celiac Disease and Lactose Intolerance.

UNIT V: DISEASE OF THE PANCREAS AND LIVER 13 Hours

Diseases of the Lower Gastrointestinal Tract- Liver, Gall Bladder and Pancreas- Etiology, Symptoms, Nutritional Implication and Dietary Management Of Hepatitis, Cirrhosis, Hepatic Coma, Cholecystitis, Cholelithiasis and Pancreatitis.

Text Books

- Srilakshmi B,(2017),*Dietetics*, sixth edition, New age Publishing Press, New Delhi.
- Whitney EN and Rolfes SR, (2002),*Understanding Nutrition*, 9th edition, West/Wordsworth.

Reference Books

- Elia M, Ljunggvist O, Stratton RJ, Lanham SA,(2013),*Clinical Nutrition* (The Nutrition Society Textbook), 2nd edition, Wiley Blackwell Publishers.
- Mahan LK, Stump SE and Raymond JL, Krause's,(2012)*Food and Nutrition Care Process*, 13th Edition, Elsevier Saunders, Missouri.
- Stump SE,(2012),*Nutrition and diagnosis related care*, 7th edition, Lippincott Williams and Wilkins, Canada.
- Gopalan C., Ramanathan, P.V. Balasubramanian, S.C.,(2010*), Nutritive value of Indian foods*, NIN, Hyderabad

E-Resources :

- www.nal.usda.gov – Food & Nutrition Information Centre.
- www.eatright.org – American Dietetic Organisation.
- www.nin.org- National Institute of Nutrition, Hyderabad, India
- www.icmr.org – Indian Council for medical Research

Course Outcome

CO.NO	On completion of the course the student will be able to	Knowledge
CO-1	Understand the basic principles of diet and diet therapy.	K1, K2
CO-2	Identify the nutrition care process and International dietetic and nutrition terminologies.	K3
CO-3	Make use of the skills for planning and devising dietary recommendations to specific clinical conditions.	K4
CO-4	Assess the nutritional status and determine effective dietary management to combat malnutrition.	K5
CO-5	Prepare the diet plan based on the case study.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	2	2	1
CO 2	3	3	3	2	2	1
CO 3	3	3	3	3	3	2
CO 4	3	3	3	3	3	2
CO 5	3	3	3	3	3	3

Higher Correlation :60%
Medium Correlation : 30 %
Lower Correlation :10 %

MEDICAL NUTRITION THERAPY IPRACTICAL

UCNR302

Semester	**: III**	**Credits : 2**
Category	**: CoreV/ DSC-V**	**Hours /Week:3**
Class & Major	**: II B.Sc Clinical Nutrition &Dietetics**	**Total Hours :39**

Course Objectives

CO No.	To enable the students to
CO -1	Identify Medical Nutrition Therapy for Various Disease States Including Critical Care Patients
CO -2	Plan a Diet Chart Under Normal Conditions and also to Plan a Balanced Menu for Diseased Conditions.
CO -3	Prepare Diet for Various Gastrointestinal Disease Conditions, Allergies and Hospitalized Patients
CO -4	Prepare Diet for Liver Disorder – Hepatitis, Cirrhosis

1. Planning, Preparation and service of diet in
   a. Soft, clear and full fluid diet.
   b. Low and medium cost diet for protein – calorie, vitamin A, Iron deficiency.
   c. Overweight and underweight conditions.
   d. Fevers of shot and long duration.
   e. Diarrhea, dysentery, constipation.
   f. Peptic Ulcer.
   g. Liver disorder – Hepatitis, Cirrhosis.

REFERENCE BOOKS

- Antia. F.P.. 1989. *Clinical Dietetics and Nutrition*. Bombay, Oxford University Press.
- Passmore. P.and Eastwood. M.A. 1986. *Human Nutrition and dietetics*. London,ELBS.
- Robinson. C.H. et al. 1994. *Normal and Therapeutic Nutrition*. New York, Macmillanand Co.
- Williams. S.R. 1994. *Nutrition and Diet Therapy*. New York., Mosby Mirror PublishingCo.
- Sri Lakshmi. B. 2018. *Dietetics*. New Delhi ,New Age International Pub.

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Describe and understand the skills in planning therapeutic diets.	K1, K2
CO-2	Apply the skills to gauge the extend of deficiencies.	K3
CO-3	Distinguish the symptoms and biochemical parameters for effective administration of diet therapy.	K4
CO-4	Examine the nutritional requirements based on individual patient needs.	K5
CO-5	Compose an appropriate dietary modifications.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	2	1	1	1
CO 2	3	3	2	3	2	2
CO 3	3	2	2	2	2	2
CO 4	3	2	2	2	3	3
CO 5	3	3	3	3	3	3

Higher Correlation : 43.3%
Medium Correlation : 46.6%
Lower Correlation :10 %

BASICS OF FOOD MICROBIOLOGY

UMBA301

Semester : III **Credits : 4**
Category : Allied III/ GE –III **Hours /Week:4**
Class & Major : II B.Sc Clinical Nutrition &Dietetics **Total Hours :52**

Course Objectives

CO NO	To enable the students to
CO-1	Identify the General Characteristics of Micro-Organisms
CO-2	Relate the Role of Microorganisms in Food Spoilage and Food Borne Diseases.
CO-3	Integrating Knowledge on Environmental Microbiology.
CO-4	Reviewing the Knowledge on The Methods of Sterilization and Disinfection.
CO-5	Interpret the Principles Involving Food Preservation Via Fermentation Processes

UNIT - I INTRODUCTION TO MICROBIOLOGY 10Hours

General Characteristics of Microorganisms — Bacteria, Viruses, Yeasts, Molds and Protozoa. A Brief Study of Their Morphology and Diseases Produced by them, Media Preparation.

UNIT - II FOOD SPOILAGE 12Hours

Food Spoilage : Contamination of Foods and Microbes in the Spoilage of Foods and their Prevention. Spoilage of Cereals & Cereal Products, Vegetables & Fruits, Sea Foods, Meat, Egg, Poultry & Canned Foods, Milk & Milk Products.

UNIT - III FOOD HYGIENE AND SANITATION 10Hours

Public Health Hazards due to Food Contamination. Food Borne Infections &Intoxications - Symptoms, Mode & Sources of Transmission, Methods of Prevention: Detection ff Food Borne Disease Outbreak. Importance of Sanitation and Hygiene in Foods.Milk and Water Sanitary Quality. HACCP — Concept &Application in Food Safety.

UNIT — IV PROBIOTICS 10Hours

Importance of Microbes in Foods. Fermented Foods & Fermenting Age Cereal — Pulse Mixtures, Wheat Products, Milk Products, Soy Products. Mushrooms Cultivation, Single Cell Proteins.

UNIT – VCONTROL OF MICROORGANISMS 10Hours

Primary Sources of Microbes in Foods. Control of Microbes :Sterilisation, Disinfection, Pasteurization. Physical - Agents – Light desiccation, Electricity, Irradiation And Heat. Removal of Microbes — Filtration, Sedimentation.Chemical Agents - Preservatives & Antibiotics.

Text Books

- Joshua A K., (2000): Microbiology, Popular Book Depot, Chennai.
- Ananthanarayanan R and Panicker C K J., Textbook of Microbiology, Orient Longman, Chennai.

Reference Books:

- Frazier W C., (2002): Food Microbiology, Mc Graw Hill Book Co., 6th edition, N.Delhi.
- Pelezar, M.I and Reid, R.D, (1993): Microbiology, 5th edition, McGRaw Hill Book Company,New York.
- Jay, James, M (2000): Modern Food Microbiology, 2nd edition, CBS Publisher.
- Adams, M.R. and Moses M.G. (1995): Food Microbiology. 1st edition, New Age International (P)Ltd.

Course Outcomes:

CO No	On completion of the course the student will be able to	Blooms Level
CO1	Recall and explain the fundamental knowledge on the microorganisms.	K1,K2
CO2	Identify the sources of contamination and spoilage of foods.	K3
CO3	Classify the different types of immunity and vaccines.	K4
CO4	Asses the causes and prevention of food poisoning and food borne infections.	K5
CO5	Test the various types of microbes, including bacteria, fungi, and viruses, that are utilized in industrial applications.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	2	1	1	1
CO 2	3	2	2	2	2	2
CO 3	3	3	3	2	3	3
CO 4	3	2	2	2	2	2
CO 5	3	3	3	3	3	3

Higher Correlation : 46.7%
Medium Correlation : 43.3%
Lower Correlation :10%

FOOD MICROBIOLOGY PRACTICAL

UMBR301

Semester : III **Credits :2**
Category : Allied III/ GE -III **Hours /Week :3**
Class & Major : II B.Sc Clinical Nutrition &Dietetics **Total Hours :39**

Course Objectives

CO NO	To enable the students to
CO-1	Examine the Micro-organism Under the Microscope
CO-2	Perform Simple Tests to Identify the Microorganisms.
CO-3	Identify Appropriate Techniques for Sterilization and Infection.
CO-4	Gain Deeper Knowledge of Role of Micro-Organisms in Human and Environment.
CO-5	Create the importance of Micro-Organism in Food Spoilage and to Learn Advanced, Techniques Used in Food Preservation.

PRACTICAL

1. Study of Equipment's in a Microbiology Lab
2. Preparation of Laboratory Media and Special Media.
3. Cultivation and Identification of Important Moulds and Yeast in Food Items.
4. Examination of Yeast, Moulds and Bacteria
5. Examination of Organisms Using Gram Staining Technique
6. Examination of Organisms Using Simple Staining Technique
7. Motility of Bacteria Using Hanging Drop Technique
8. Demonstration of Sterilization of Glassware Using Hot Airoven, Autoclave

Reference Books:

- CheungPCKandMehtaBM(Eds),2015,HandbookofFoodchemistry,1st edition,Springer VerlagBerlin Heidelberg
- CappuccinoJ,Sherman,2013,N,*Microbiology:ALaboratoryManual*,10th edition,Pearson

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Recall and understand the principles of microorganisms during various food-processing	K1,K2
CO-2	Identify the structure of bacterial cells, its organelles.	K3
CO-3	Examine the different foods that present in hazardous microorganisms using in traditional and modern food microbiological technology	K4
CO-4	Asses the various biochemical processes to obtain products such as food, chemicals, vaccines and medicine	K5
CO-5	Minimize the specific types of microbial spoilage during various food shelf life stages.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**2**	**2**	**1**	**1**	**1**
CO 2	**3**	**2**	**1**	**2**	**1**	**1**
CO 3	**3**	**3**	**3**	**2**	**2**	**2**
CO 4	**3**	**3**	**2**	**2**	**2**	**2**
CO 5	**3**	**3**	**3**	**3**	**3**	**3**

Higher Correlation : 46.7%
Medium Correlation : 33.3 %
Lower Correlation : 20%

NUTRITION THROUGH LIFE CYCLE

UCNM402

Semester : IV **Credits : 4**
Category : Core VII/ DSC-VII **Hours /Week :4**
Class & Major: II B.Sc Clinical Nutrition &Dietetics **Total Hours : 52**
Course Objectives

CO NO	To enable the students to
CO-1	Express the Principles of Effective Meal Planning
CO-2	Generalize about the Birth Process and Lactation
CO-3	Interpret the nutritional needs of Individuals for Infancy & Early Childhood
CO-4	Distinguish the Physical Development of Preschool Children & Understand the Nutritional Disorder of Adolescence
CO-5	Value the Problems of Old Age.

UNIT I BASIC PRINCIPLES OF MEAL AND MENU PLANNING 10 Hours

Balanced Diet, RDA - Food Guide Pyramid (ICMR); Food Plate (USDA); Principles of Meal Planning – Steps Involved in Planning A Diet.

UNIT II NUTRITION DURING INFANCY AND EARLY CHILDHOOD 10 Hours

Infancy: Breast Feeding, Complementary Feeding, Advantages and Disadvantages, Low Cost Complementary Foods- Artificial Feeding,Infant Milk Substitutes,. Low Birth Weight Infants

Preschool: Growth and Nutritional Needs, Problems in Feeding Patterns and Food Acceptance, PEM, Vitamin A.

UNIT III NUTRITION FOR SCHOOL CHILDREN AND ADOLESCENCE 10Hours

School Children: Physical Development, Factors Affecting Food Needs, RDA, Packed Lunch. Childhood Obesity

Adolescence: Growth and Development, Food Habits, Nutritional Requirements, Eating Disorders, Nutritional Anemia

UNIT IV: **NUTRITION FOR PREGNANCY AND LACTATION 12 Hours**

Pregnancy: Effect of Nutrition on Outcome of Pregnancy, Physiological Demands of Gestation, Weight Gain, Nutrition Needs, Dietary Plans and Dietary Problems, Complication of Pregnancy.

Lactation: Physiology of Lactation, Nutritional Requirements During Lactation, Concerns of Breast Feeding Mother. Lactogogues, Human Milk Bank, EBM(Express Milk Bank)

UNIT V: NUTRITION FOR ADULT AND OLD AGE 10 Hours

Old Age:- Biologic &Physiologic Aspects of Aging, Nutritional Disorders in the Aged, Factors Affecting Food Selection, Nutritional Requirements.
Adult:- Nutritional Requirements, Planning Balanced Diets for Adult Men and Women, Promoting Healthy Lifestyle Through Holistic Approach - Diet, Physical Activity, Stress Management.

Text Books

- Srilakshmi, B. (2017), *Food Science*, (5th Ed), New Age Publishers India, NewDelhi.
- GopalanC.,Ramanathan,P.V.Balasubramanian,S.C.,2001,*Nutritive value ofindianfoods,NIN,Hyderabad.*

Reference Books

- Sharma M,2017,*Textbook of Nutrition*, 1st edition, CBS publishers & distributors PVT Ltd, New Delhi.
- Longvah T, Ananthan R, Bhaskar K, Venkaiah K, 2017, Indian Food Composition Tables, National Institute of Nutrition.
- Abraham S, 2016, *Nutrition Through Lifecycle*, 1st edition, New age international publishers, New Delhi,
- Verma P, 2015,*Food ,Nutrition & Dietetics*, 1st edition, CBS publishers & distributors PVT Ltd, NewDelhi.
- Edelstein S, 2015,*Lifecycle Nutrition- An evidence based approach*, 2nd edition, Jones &Bartlett learning publications.
- Mahan LK, Stump SE and Raymond JL, 2012,*Krause's Food and Nutrition Care Process*, 13thEdition, Elsevier Saunders, Missouri.
- Swaminathan M,,1995,*Principles of Nutrition and Dietetics*, Bappeo, Bangalore.

E-Resources

- http://vikaspedia.in/health/nutrition/dietary-guidelines-1/dietary-guideline-1

- https://www.nhp.gov.in/healthlyliving/healthy-diet
- https://motherchildnutrition.org/india/complementary-feeding-guidelines.html
- http://vikaspedia.in/health/nutrition/dietary-guidelines-1/diet-for-children-and-adolescents
- https://motherchildnutrition.org/india/complementary-feeding-guidelines.html
- https://sol.du.ac.in/mod/book/view.php?id=1422&chapterid=1288

Course Outcomes

CO.No	On completion of the course, the students will be able to	Bloom's Level
CO-1	Gain and understands the principles of effective meal planning.	K1,K2
CO-2	Identify nutrition related concerns and deficiency at every stage of lifecycle.	K3
CO-3	Analyze food labels to understand nutritional content and make informed choices for various age groups.	K4
CO-4	Assess the balance of macronutrients in the diet and its impact on age-related conditions.	K5
CO-5	Develop the healthy eating behaviors to general well being.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	2	1	1	1
CO 2	3	3	3	2	2	2
CO 3	3	3	2	2	2	2
CO 4	3	3	2	2	2	2
CO 5	3	3	3	3	3	3

Higher Correlation : 46.7%
Medium Correlation: 43.3%
Lower Correlation :10 %

COMMUNITY NUTRITION

UCNM401

Semester : IV **Credits :4**
Category : Core VI / DSC – VI **Hours /Week:4**
Class & Major : II B.Sc Clinical Nutrition &Dietetics **Total Hours :52**

Course Objectives:

CO NO	To enable the students to
CO-1	Understand the importance of Nutrition In National Progress And The Significance of Assessment of Nutritional Statues.
CO-2	Recognize Problems of Malnutrition in the country and the role of National And International Agencies In This Area.
CO-3	Identify Socioeconomic Factors That Place Individuals At High Risk For Malnutrition And Federal Domestic Food Assistance Programs Designed To Minimize Malnutrition

CO-4	Learn Various Health Indices And Assessment Techniques For The Community And Plan Nutrition Health Education Programs Balancing The Socio-Cultural Milieu.
CO-5	Create Awareness Of Various National And International Agencies Involved In Health And Nutrition And Nutritional Intervention Programs Concerned With Public Health In India.

UNIT I: CONCEPT AND SCOPE OF COMMUNITY NUTRITION 10Hours

Nutritional Status of a Community Methods and Techniques Used to Determine the Nutritional Status of a Community.

UNIT II: NUTRITIONAL PROBLEMS OF THE COMMUNITY 12Hours

Common Problems in India - Causes - Nutritional and Non-Nutritional. Incidence of Nutritional Problems,Signs and Symptoms, Treatment – PEM, Micro-Nutrient Deficiencies(Vitamin A, Iron, Iodine), Fluorosis

UNIT III: SCHEMES AND PROGRAMMES TO COMBAT NUTRITIONAL PROBLEMS IN INDIA 10Hours

Midday meal programmeICDS, SNP, ANP, FAO, WHO, UNICEF, CARE, AID, ICMR, CSIR,NIN, CFTRI.

UNIT IV: BREAST FEEDING & WEANING FOODS 10Hours

Breast feeding and its implications, Hazards pf bottle feeding – Review. Weaning foods-planning, formulating and preparing importance of correct and timely weaning – Review

UNIT V: NUTRITION EDUCATION 10 Hours

Scope, Objective, Methods available and evaluation. Nutrition policy in India and plan of action

REFERENCE BOOKS

- McLaren.D.S., ED-1983. *Nutrition in the Community*. John Weley and sons.
- Jelliffe. D.B.-1996. *The Assessment of Nutritional status on the community*-WHO Monograph series No. 53-geneva.
- Reh, Emma-1976. *Manual on Household Food consumption surveys*, FAO. Nutritional studies No.18 Rome
- Shukla, P.K.- 1982. *Nutritional problem of India-prentice* Hall of India Pvt. Ltd., New Delhi.
- Shanti ghosh-1977. The feeding and care of infants and young children, voluntary Health Association of India-New Delhi.
- Ibrahim. G.J-1983. *Nutrition in mother and children Health*. London, Macmillan.
- Ritchey, S.J. and J. Taper-1983. *Maternal and child Nutrition. Harper and Row publishers*, New Delhi

REFERENCE BOOKS

- www.eatrightpro.org
- www.health.qld.gov.au/ph/Documents/hpu/19345.pdf
- www.oxfordjournals.org/our_journals/tropej/online/mcnts_chap12.pd

Course Outcomes:

CO NO	On completion of the course the student will be able to	Bloom's level
CO1	Recall and outline the nutritional status of community and develop necessary interventions.	K1, K2
CO2	Identify the causes and consequences of nutrition problems in the society.	K3
CO3	Analyze the effectiveness of traditional and advanced dietary assessment methods in capturing habitual dietary intake over time and in diverse populations	K4
CO4	Assess the efficiency and accessibility of current distribution systems for infant foods, evaluating their suitability for low-cost weaning formulations.	K5
CO5	Plan the nutrition health educational programs for vulnerable sections of the community by promoting sustainability, gender equity and safe healthy practices.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	2	1	1	1
CO 2	3	2	2	1	1	1
CO 3	3	2	3	2	2	2
CO 4	3	3	3	2	3	3
CO 5	3	3	3	3	3	3

Higher Correlation :50 %
Medium Correlation : 30 %
Lower Correlation :20%

COMMUNITY NUTRITIONPRACTICALS

UCNR401

Semester : IV **Credits : 2**
Category : Core VI / DSC – VI **Hours /Week :3**
Class & Major: II B.Sc Clinical Nutrition & Dietetics **Total Hours : 39**

Course Objectives:

CO NO	To enable the students to
CO-1	Describe the environmental dimensions of Issues facing Professionals
CO-2	Relate the nutrition problems in The Community through Proper Evaluation
CO-3	Correlate on the Current Nutritional Scenario.
CO-4	Conducting Survey And Other Methods Of Assessments.
CO-5	Develop different types Of Visual Aid For The Community

PRACTICALS

1. Diet and Nutrition surveys

a) Identifying vulnerable and risk groups.

b) Diet survey and breast feeding and weaning practices of specific groups. d) Use of anthropometric measurements in children.

2. Methods of Extension used in community

a) Preparation of visual aids-charts, posters models, etc. for exhibition.

b) Lecture and Method Demonstrations to target groups.

3. Field visits to –

a) Observe the working of nutrition programs.

b) Hospitals to observe nutritional deficiencies

REFERENCE BOOKS

- Shukla, P.K.- 1982. *Nutritional problem of India-prentice* Hall of India Pvt. Ltd., New Delhi.
- Shanti ghosh-1977. *The feeding and care of infants and young children*, voluntary Health Association of India-New Delhi

Course Outcomes

CO.No	On completion of the course the student will be able to	Bloom's level
CO-1	Understand the role of national and International contributor towards national improvement in alleviating malnutrition and other nutrition problems.	K1,K2
CO-2	Develop community nutrition education by taking part in village projects and transferring to public to improve their health.	K3
CO-3	Analyze existing problems and also understand the importance of nutrition to overcome all deficiency disorders.	K4
CO-4	Assess the nutritional status of community and develop necessary intervention according to the need.	K5
CO-5	Develop best practices and evidence to identify problems and generate and evaluate practical solutions to a range of nutrition issues.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	2	1	1	1
CO 2	3	3	1	1	1	1
CO 3	3	3	2	2	2	1
CO 4	3	2	2	2	3	2
CO 5	3	3	3	3	3	3

Higher Correlation : 43.4%
Medium Correlation : 30%
Lower Correlation :26.6 %

NUTRITION IN DISASTER MANAGEMENT AND EMERGENCIES
UCNE401

Semester : IV **Credit : 2**
Category : Non major elective/SEC **Hours/week : 3**
Class &Major: II UG **Total Hours: 39**

Course Objectives:

CO	To enable the students to
CO-1	Describe the special nutrition concerns arising out of the disaster &emergency situations
CO-2	use the strategies for nutritional rehabilitation of emergency affected populations
CO-3	develop skills for problem solving and convergence of services; especially in special Conditions
CO-4	Measure the role of nutrition special conditions
CO-5	Solving the controversies and challenges associated with policy change in the emergency setting.

UNIT I - NATURAL /MAN- MADE DISASTERS 7Hours

Famine, drought, floods, earthquakes, cyclone, war, civil and political emergencies, factors contributing tothe rise and development of emergency situations

UNIT II - PRINCIPLES OF FOOD AID AND NUTRITION 8Hours

Overview of emergency nutrition programs: direct food aid & other emergency interventions. Planning emergency food and nutrition programs: assessment, identify problems and priorities, define strategies for promoting access to food, set program goals and objectives, identify resources for emergency nutrition program.

UNIT III - MALNUTRITION AND MICRONUTRIENT DEFICIENCIES 8Hours

Causes of Malnutrition, effects of malnutrition and micronutrient deficiencies, management of malnutrition and micronutrient deficiencies.

UNIT IV- ASSESSMENTS AND NUTRITIONAL STATUS IN EMERGENCY. 8Hours

Assessment and surveillance of nutritional status in emergency affected populations, scope of assessment of malnutrition in emergencies, indicators of malnutrition, clinical signs for screening acute malnutrition, anthropometric assessment of nutritional status – indicators and cut – offs indicating seriously abnormal nutrition situation, weight – for – height based indicators, MUAC, social indicators, organization of nutritional surveillances and individual screening**.**

UNIT V - PUBLIC NUTRITION IN EMERGENCIES 8Hours

Public health approach to tackle nutritional problems in emergencies & providing prompt medical relief. Immunization and sanitation, Disaster management cell function and convergence

TextBooks :-

- Tony Moore & Raj Lakha (2006) .Tolley‟s*Handbook of Disaster and Emergency ManagementPrinciples and Practice* .

- Saade Abdallah, Gilbert Burnham. Book:-Public Health Guide for Emergencies (2nd Edition),2008, Published by Johns Hopkins School of Hygiene and Public Health & International Federation of Red Cross and Red Crescent Societies.
- Michael H. Merson, Robert E. Black, Anne Mills (2005).*International Public Health: Diseases,Programs, Systems*, and Policies.Published by Jones & Bartlett and ISBN:0-7637-2874-8.
- Bradley, A. Woodruff and Arabella Duffield (July, 2000), *Assessment of Nutritional status inemergency affected populations – Adolescents, special supplement*, UNACC/SCN sub-committeeon nutrition.
- UNHCR (1999) UNHCR *Hand Books of emergencies* 2nd edition Geneva, UNHCR.

E-Resources :

- www.terzomondo.org/library/essentials/IFRC_Public_Health_Guide.pdf
- www.who.int/hac/crises/international/middle_east/Nutrition_guidinglist%20_2_.pdf
- whqlibdoc.who.int/publications/2000/9241545208.pdf

Course Outcome

CO.No	On completion of the course, the students will be able to	Bloom's Level
CO-1	Recall and understand the various response mechanisms employed during emergencies, including emergency services, humanitarian aid, and public health interventions.	K1,K2
CO-2	Familiarize on nutrient-rich foods consumed within the population for targeted nutritional interventions.	K3
CO-3	Aware on the nutritional data collected during emergencies to identify patterns and variations.	K4
CO-4	Assess the effectiveness of existing nutrition interventions based on the learned experience.	K5
CO-5	Construct frameworks for evaluating the effectiveness of nutrition strategies in diverse contexts.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	2	2	1	1
CO 2	3	3	1	1	1	1
CO 3	3	2	2	2	1	1
CO 4	3	2	2	2	1	1
CO 5	3	3	3	2	2	2

Higher Correlation :30.1%
Medium Correlation : 36.6 %
Lower Correlation :33.3%

WOMEN & CHILD HEALTH
UCNE402

Semester : IV **Credit : 2**
Category : Non major elective/SEC **Hours/week : 3**
Class &Major: II UG **Total Hours: 39**

Course Objectives:

CO	To enable the students
CO-1	Describe the importance of nutrition in adolescence
CO-2	Compare the evidence on what causes poor health outcomes and what is known About how to prevent them
CO-3	Enlighten on the dietary modifications for motherhood
CO-4	Measure the role of nutrition special conditions
CO-5	Adapting knowledge on the importance of nutrition during infancy.

UNIT I ADOLESCENCE 7Hours

Definition, characteristics and Nutritional needs.

UNIT II FOOD AND HEALTH CONCERNS OF ADOLESCENCE 8Hours

Definition of food, Health. Nutritional problems (Anaemia, Eating disorder) and prevention, premenstrual syndrome, PCOS, Faulty food habits of adolescence.

UNIT III MOTHERHOOD 8Hours

Fertilization definition, signs and symptoms of pregnancy, common discomforts and complications of pregnancy. Prenatal influences. Nutritional needs of pregnant mother.

UNIT IV BEGINNING OF HUMAN LIFE 8Hours

Prenatal Development — Stagesof multiple births. Stages and labor.

Nutritional needs. Advantages of breast-feeding, Advantages and disadvantages of bottle feeding, supplementary and weaning foods Immunization — Definition, schedule.

UNIT V INFANCY 8 Hours

Nutritional needs. Advantages of breast-feeding, Advantages and disadvantages of bottle feeding, supplementary and weaning foods Immunization — Definition, schedule.

TEXT BOOKS:

- Diane E, Papatia (1995), *Human Development* MCGRAW Hill, Inc New York.& 6 th Edition.

REFERENCE BOOKS

- Ganine B. Dehart (2006), *Child Development* — its nature and course. McGraw Hill. Boston Fourth Edition.
- Shubhagini A. Joshi (2002), *Nutrition&& Dietetic*, Tata McGraw Hill Publishing Company Limited, New Delhi 2nd Edition. SEMES

E-Resources

- www.nin.org- National Institute of Nutrition, Hyderabad, India
- www.icmr.org – Indian Council for medical Research

Course Outcomes:

CO.No	On completion of the course, the students will be able to	Blooms level
CO-1	Understand the factors influencing maternal and child health outcomes.	K1, K2
CO-2	Engage with how different stages of the lifecycle affect on women and child health	K3
CO-3	Assess the effectiveness of existing maternal and child health programs.	K4
CO-4	Evaluate the ethical considerations in maternal and child health research and practice.	K5
CO-5	Minimize the health problems of adolescent girls and adult women.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	1	1	1	1
CO 2	3	3	1	1	1	1
CO 3	3	2	2	2	2	1
CO 4	3	2	2	2	2	1
CO 5	3	3	3	2	2	2

Higher Correlation :26.8%
Medium Correlation: 36.6 %
Lower Correlation : 36.6%

EXTRA CREDIT EARNING PROVISION (Only for Interested Students)

Semester	Part	Category	Course Code	Course Title	Credit
IV	III	Internship	UCNI401	Food Quality Control Internship	1

III & IV Evaluation Components of CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
III & IV	Core V / DSC – V	UCNM301	Medical Nutrition Therapy – I	Assignment	Poster Presentation
	Core Practical III	UCNR302	Medical Nutrition Therapy Practical	DPA	VIVA
	Allied III/ GE -III	UMBA301	Basics of Food Microbiology	Media Preparation	Assignment
	Allied III/ GE -III	UMBR301	Food Microbiology Practical	DPA	Field visit
	Core VI / DSC – VI	UCNM401	Community Nutrition	Experiential Learning	Preparation of questionnaire and survey
	Core VII / DSC– VII	UCNM402	Nutrition Through Life Cycle	Assignment	Diet chart preparation
	Core Practical IV	UCNR401	Community Nutrition Practical	DPA	VIVA

COURSES OFFERED TO OTHER DEPARTMENTS
NON MAJOR ELECTIVES (NME)

Semester	Part	Category	Course code	Course Title	Previous course code	Contact Hour/ Week	Credit Min/Max
IV	IV	Non Major Elective	UCNE401	Nutrition In Disaster Management And Emergencies	--	3	2
			UCNE402	Women & Child Health	--		

DEPARTMENT OF COSTUME DESIGN AND FASHION

PREAMBLE

UG: Programme profile & the syllabi of courses offered in the semester III and IV along with III & IV evaluation components (with effect from 2022 - 2025 batch on wards).

PROGRAMME PROFILE

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	Upon Completion of the Programmed, the Students will be able to
PSO-1	Recall the basic of textile and relate its functional aspects with fashion.
PSO-2	Recognize the global scenario and ability to learning as a fashion garment designer.
PSO-3	Recognize the global scenario and ability to learning as a fashion garment designer.
PSO-4	Apply knowledge on eco dye coloring and zero discharge measure for future sustainability.
PSO-5	Demonstrate technical textiles to offer solution for various garment design.
PSO-6	Develop skills in Textile and Fashion Designing through experimental learning as per Current and Future trends.
PSO-7	Enhance the skill and attitude as a team player in apparel industry environment

Semester	Part	Category	Course code	Course Title	Previous Course Code	Contact Hrs/ week	Credit
							Min/Max
I	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL107/ UTAL108/ UHIL102/ UFRL102	Basic Tamil-I/ Advanced Tamil-I/ Hindi-I / French-I	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3/4
	II	Communicative English /AECC – I	UCEL101 / UCEL102	Communicative English I/ Effective Communicative English I	-	5	3/4
	III	Major Core -I \ DSC-I	UCDM101	Fundamentals of Fashion Design	-	6	5
		Allied - I \ GE - I	UCDA101	Indian Costumes and Textiles	-	3	3
		Major Core Practical -I	UCDR101	Fashion Illustration Practical	-	6	5
		Major Core Practical-II	UCDR102	Basics of apparel Construction Practical	-	3	2
		PE	UPEM101	Professional English I	-	6	4
	IV	Value Education (VE)				2	1
					TOTAL	**36**	**26/28**

II	I	Languages / AECC – II Tamil/ Hindi/ French	UTAL207/ UTAL208/ UHIL202/ UFRL202	Basic Tamil II/ Advanced Tamil-II/ Hindi-II / French-II	UTAL205/ UTAL206/ UHIL201/ UFRL201	5	3/4
	II	Communicative English /AECC – I	UCEL201 / UCEL202	Communicative English II / Effective Communicative English II	-	5	3/4
	III	Major Core –II\ DSC- II	UCDM201	Fiber and yarn Manufacturing	-	2	2
		Major Core –III \ DSC-III	UCDM202	Pattern Making	-	2	2
		Major Core Practical -III	UCDR201	Advance Fashion Illustration	-	4	3
		Major Core Practical - IV	UCDR202	Kids Apparel practical		4	2
		Allied - II \ GE - II	UCDA201	Apparel Marketing	-	3	3
		Allied Practical -I	UCDR203	Surface Embellishment		2	2
		PE	UPEM201	Professional English II	-	6	4
	IV	Non Major Elective				3	2
	V	Extension Programme/ Physical Education				-	1/2
					TOTAL	**36**	**27/30**
III	III	Major Core – IV /DSC – IV	UCDM301	Fabric Manufacturing Techniques	-	6	4
		Major core Practical-V	UCDR301	Fabric Structure and Design	-	3	2
		Major core Practical-VI	UCDR302	Computer Aided Designing - practical-I	-	3	2
		Allied Paper-III	UCDA301	Visual Merchandising	-	4	3
	IV	Major Core - V	UCDM302	Fashion clothing and Psychology	-	6	4
		Major Core Practical - VII	UCDR303	Women's Apparel practical	-	3	3
		Online Course NPTEL				3	1/2
		Value Education (VE)				2	1
					TOTAL	**30**	**20/21**
IV	III	Major Core Paper-VI	UCDM401	Textile wet processing	-	5	4
	III	Major core Practical-VIII	UCDR401	Textile wet processing Practical		3	3
	II	Major core Paper-Practical -IX	UCDR402	Men's Apparel Practical	-	4	4
	III	Allied – Practical-II	UCDR401	Fashion Accessories	-	3	2
	IV	Major Core Paper-VII	UCDM402	Boutique Management	-	5	4
	IV	Major Core Paper-VIII	UCDM403	Textile Finishing & Fabric Care	-	5	4
		Soft Skill				2	1
		Non Major Elective			-	3	2
	V	Extension programme/ Physical Education			-	-	-/2
					TOTAL	**30**	**24/26**
	III	Major Core Paper-IX	UCDM501	Textile Testing & Theory	-	4	4
	III	Major Core Practical -X	UCDR501	TextileTesting & Theory-Practical	-	6	4

V	III	Major Core Practical - XI	UCDR502	Fashion Photography-Practical	-	6	4
	III	Major Core Practical - XII	UCDR503	Interior Design	-	3	3
	III	Major Elective - I	UCDO501	Fashion Styling		4	4
	III	Major Core X	UCDP501	Project Work	-	5	5
	IV	Value Education (VE)				2	1
					TOTAL	**30**	**25**
VI	III	Major Core - XI	UCDM601	Garment Quality Control	-	3	3
		Major Core- XII	UCDM602	Digital Marketing Theory	-	4	3
		Major Core Practical - XII	UCDR601	Fashion Portfolio Practical	-	6	5
		Major Core Practical - XIII	UCDR602	Fashion Draping Practical	-	4	4
		Major core Practical-XIV	UCDR603	Computer Aided Designing-practical-II	-	6	5
		Major Elective - II	UCDO601	Home Textile Practical		5	4
		Comprehensive Viva	UCDM601		-	-	1
	IV	Soft Skill			-	2	1
	V	Extension programme/ Physical Education				-	-/2
TOTAL						**30**	**28**
					GRAND TOTAL	**192**	**148/158**

NON-MAJOR ELECTIVE

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/week	Credit Min/Max
II	IV	Non Major Elective	UCDE201	Embroidery	-	3	2
IV	IV	Non Major Elective	UCDE401	Accessories Making	-	3	2
IV	IV	Non Major Elective	UCDE402	General Painting Techniques	-	3	2

FABRIC MANUFACTURING TECHNIQUES

UCDM301

Semester : III **Credit : 4**
Category : Major Core-IV **Hours/Week : 6**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 78**

Course Objectives

CO No.	To enable the students
CO 1	Define different methods of fabrication
CO 2	Explain weaving and loom mechanism.
CO 3	Build the knowledge knitting.
CO 4	Discover the uses of non-woven
CO 5	Evaluate Other methods of fabrication

UNIT-I: WEAVING **15 Hours**

Weaving- Introduction, Classification. Loom - Introduction, Classification of looms, Basic loom mechanisms, Parts and functions of a loom, Preparation of Weaving- Warping, Sizing, Looming. Primary motion, Secondary motion, Auxicillary.

UNIT-II: KNITTING TERMS AND MACHINE DESCRIPTION **16 Hours**

Knitting – Definition, Classification, General terms of knitting, Elements of Knitting. Machine description – frame – drive – needles –loop forming sequence of latch, spring bearded, compound needles – sinkers - sinkers operation- cylinder – dial – cams- creels – feeders- fabric spreader – take down and winding mechanism.

UNIT- III: WEFT KNITTING & WARP KNITTING **15 Hours**

Weft knitting – Classification. Basic structure and properties of weft knit structures – single jersey or plain, rib, interlock, purl. Warp knitting – Classification. Basic structure and properties of warp knit structures – tricot, raschel, simplex fabrics.

UNIT-IV: NON WOVEN **16 Hours**

Nonwoven – Definition, Web Production- Dry laid fiber webs, Cross-laid webs, Wet laid fiber webs, and Spun laid, Spun lace webs, Melt blown fiber webs. Techniques for Preparing Nonwovens –Fusing, Bonding, Lamination. End uses of Nonwoven.

UNIT-V: OTHER METHODS OF FABRICATION **16 Hours**

Felting, Net like structure. Fabric from yarns-Braids, Lace, Handmade lace-Needle point lace, Bobbin lace, crocheted lace, Battenberg lace. Machine made lace-Leavers lace, Raschel lace.

Text Book:

- 'Fabric Manufacturing Technology'-Study Material prepared by the Department.

Reference Books:

- M.G. Mahadevan(2005),Textiles Spinning, Weaving and Designing, First Edition, Abhishek Publications Chandigarh.

- W.S. Murphy(2007), Textile Weaving and Design, First Indian Edition, Abhishek Publications Chandigarh.
- Sara J.Kadolph(2008), Textiles, 10thedition, Dorling Kindersley India pvt.Ltd, India.
- Spencer.D.J(2011), Knitting Technology, Woodhead Publishing Ltd, New Delhi, India.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO -1	Label the variety of fabric manufacturing techniques and equipment.	K1, K2
CO -2	Experiment with cloths and it's methods of knitting and weaving	K3
CO -3	Compare the differences between weft knitting and warp knitting	K4
CO -4	Determine the non-woven fabrics to evaluate their characteristics.	K5
CO- 5	Build the knowledge of textiles and other methods of fabrication.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	2	1	3	3	3	3
CO 2	3	1	3	3	3	2
CO 3	3	1	3	2	3	3
CO 4	1	1	3	3	2	3
CO 5	3	1	3	3	1	1

High Correlation –62%
Moderate Correlation –11%
Low Correlation –27%

FABRIC STRUCTURE AND DESIGN - PRACTICAL
UCDR301

Semester : III **Credit : 2**
Category : Major Core practical-V **Hours/Week : 3**
Class &Major : II B.Sc. Costume Design and Fashion **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO 1	List the elements of Elements of woven design
CO 2	Identify the different types of fabric Methods of fabric representation
CO 3	Prepare the draft and lifting plan, construction of elementary weaves – plain, wrap rib, weft rib, twill,
CO 4	Discover knowledge about fancy weaves..
CO 5	Compare to twills, satin and sateen weaves – their derivatives

Identify the following weave design and draft a peg plan for the same:

1. Plain Weave
2. Twill Weave
3. Satin
4. Sateen
5. Honey Comb Weave
6. Huck a Back Weave
7. Jacquard Weave
8. Dobby Weave
9. Extra Warp Figuring
10. Extra Weft Figuring.

Text Book:

- "Fabric Structure and Design "- Study material prepared by the department.

Reference Books:

- M.G. Mahadevan(2005.)Textiles Spinning, Weaving and Designing, First Edition, Abhishek Publications Chandigarh,
- W.S. Murphy(2007), Textile Weaving and Design, First Indian Edition, Abhishek Publications, Chandigarh,.
- N.Gokarneshan(2004), Fabric structure and design, New age International (P) limited,.
- The complete Technology book on Textile spinning, Weaving, Finishing and Printing, Asia pacific business press, Delhi.
- Bernard P. Corbman(1983),Textile fiber to fabric, 6th edition, McGraw Hill International editions.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO -1	Outline the design of the woven fabric structure and its basics	K1,K2
CO -2	Experiment with the various fabric structure design types.	K3
CO -3	Take part in fabric structure Design and the relationship of Peg Plans	K4
CO -4	compare the Fabric Structure patterns and design	K5
CO- 5	Formulate a new Fabrics Structure designs and develop its drafts	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	3	1	1	3
CO 2	3	1	3	2	1	1
CO 3	2	1	3	2	2	3
CO 4	3	1	3	3	1	2
CO 5	3	1	3	2	1	1

High Correlation – 40%

Moderate Correlation –20%
Low Correlation –40%

COMPUTER AIDED DESIGNING-PRACTICAL
UCDR302

Semester : III **Credit : 2**
Category : Major Core practical-VI **Hours/Week : 3**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO 1	Choose the basics in computerized design creation.
CO 2	Illustrate the knowledge in creating motifs using Computer Aided Designing.
CO 3	Experiment with different types of garments using Computer Aided
CO 4	Construct fashionable logos and labels using Computer Aided Designing.
CO 5	Develop the design for Home Furnishing

CREATE THE FOLLOWING DESIGNS

1. **Motifs**
   a. Create an Embroidery Design for Blouse
   b. Create a design using elements of design for T-Shirt.
   c. Create a design using principles of design for Home Furnishing.
2. **Create the following Children's Garments**
   a. Jabla
   b. Frock
   c. Sherwani
3. **Create the following Women's Garments**
   a. Maxi .
   b. Princess cut Top and Middi.
   c. House Coat
   d. Nighty
4. **Create the following Men's Garments**
   a. SB Vest
   b. T-Shirt
   c. Shirt
   d. Kurtha
   e. Pant
5. **Logo**
   a. Create a Logo for the Indian Apparel Branded Company.
   b. Create a Logo for the International Apparel Branded Company
6. **Care Label**
   a. Create a Care Label for Dry Cleaning.
   b. Create a Care Label for Tumble drying.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Relate the digital fashion design skills to industry standards.	K1,K2
CO 2	Develop a design in a unique way by using various garment components, accessories & human Anatomy and motif's colour	K3
CO 3	Construct logo designs and background themes and its applications.	K4
CO 4	Interpret the design knowledge base in Children's and Ladies' Clothing	K5
CO 5	Formulate and improve various fashion design presentation products	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	1	1	1	3
CO 2	3	3	1	3	2	3
CO 3	3	2	1	1	1	3
CO 4	3	3	1	3	1	3
CO 5	3	2	1	1	1	3

High Correlation – 50%,
Moderate Correlation – 10%,
Low Correlation –40%

VISUAL MERCHANDISING
UCDA301

Semester : III **Credit : 3**
Category : Allied paper – III **Hours/Week : 4**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 52**

Course Objectives

CO No.	To enable the students
CO 1	Instruct about roles and responsibilities of merchandiser
CO 2	Explain the role of visual merchandising in retail shops.
CO 3	Build the store planning, circulation plan and presentation of products.
CO 4	Discover the quality and process in visual merchandising.
CO 5	Encourage the students to become an entrepreneur.

UNIT –I: INTRODUCTION TO MERCHANDSING **10 Hours**

Visual Merchandising – Definition and Function, History of visual merchandising, Role of visual merchandising, Visual Merchandiser-Duties and Responsibilities of the merchandiser.

UNIT –II: STORE PLANNING AND FIXTURES **10 Hours**

Store plan-Factors in store planning, Floor plan and its features. Fixture-The purpose of

planning fixtures, Types of fixtures.

UNIT –III: BOUTIQUE AND CIRCULATION PLAN **10 Hours**

Boutique-Features and importance of Boutique, Circulation plan – Rules of circulation Plan, Types of Circulation plan – Free flow, Grid, Race track, Herringbone and spin.

UNIT –IV: MERCHANDISE PRESENTAION **11 Hours**

Merchandise presentation – Principles of merchandise presentation, categories in merchandise presentation, Dominance factor in merchandise presentation, Display-Types of display- Elementary of display – Store Exteriors and Interiors.

UNIT –V: WINDOW DISPLAY **11 Hours**

Window display-Features and importance of windows display. Promotional Display Vs Institutional Display, Mannequins, Torso-Types of Mannequins and Torso. Lighting-Different types of Lightening. Visual Merchandising Tool Kit, Quality and process in Visual Merchandising**.**

Text Book:

- Visual merchandising, Study Material, Dept of fashion Technology and costume designing, Jamal Mohamed College, Trichy.

Reference Books:

- Manmeet Sohia, Pooja Chatley(2008), Fashion Marketing and Merchandising, Kalyani Publishers, New delhi.
- Malini singh, Jaya B.George (2008),House Keeping,Jaico publication house, Newdelhi.
- Jay Diamond,Ellen Diamond(2008), Fashion apparel accessories and Home Furnishings, Dorling Kindersley publication, India .
- Bhallo.S, Anuraya.S (2010),Visual Merchandising, Tata MC Graw Hill Education Private Limited, New Delhi.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Illustrate the evolution and Current structure of the apparel retailing industry in India.	K1,K2
CO 2	Make use of marketing mix, basic principles of visual merchandising and effective customer handling practices.	K3
CO 3	Discover the boutique's features and its components	K4
CO 4	Assess the concept of merchandise display	K5
CO 5	Create an awareness of retailing business models and the factors governing the design of online apparel stores.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	3	2	3	3
CO 2	3	2	3	2	3	3
CO 3	3	2	3	3	3	3
CO 4	3	2	3	3	1	3
CO 5	3	2	3	3	1	1

High Correlation – 66%,
Moderate Correlation –23%,
Low Correlation –11%

FASHION CLOTHING AND PSYCHOLOGY
UCDM302

Semester : III **Credit : 4**
Category : Major Core paper-V **Hours/Week : 6**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 78**

Course Objectives

CO No.	To enable the students
CO 1	Find trends in Clothing behavior
CO 2	Outline an insight on the planning process involved in Clothing selection
CO 3	Choose the fashion changes and consumer acceptance
CO 4	Discover the fashion designer
CO 5	Importance Worldwide fashion centers

UNIT-I: INTRODUCTION TO FASHION AND TERMS 15 Hours

Introduction to fashion design. Terminology of fashion- fashion, apparel, style, design, classic, fad, trend, chic, haute couture, mannequin. Fashion forecasting - fashion show, trade show. Fashion cycle Application of Structural and Decorative Design in dress design.

UNIT-II: ELEMENTS OF DESIGN AND PORTFOLIO PRESENTATION 16 Hours

Elements of Art - line, shape or forms, color, size, and texture. Principle of Design- balance, rhythm, proportion, harmony and emphasis. Occasions - Forecasting colors, Pattern and Fabric for the ensuing seasons based on national forecast. Preparation –Theme board, Mood board, Story board, Fabric board, Colour board. Fabric development chart-Design development chart- Final Presentation.

UNIT-III: FIGURE IRREGULARITIES 15 Hours

Garment Designing for Figure Irregularities becoming and unbecoming. Figure types –Stout figure, thin figure, slender figure, Broad Shoulder, Narrow shoulder, Round shoulder, Flat bust, Large bust, Large abdomen, Large hip. Faces-Round, Large, Small, Broad, Chin-Prominent and Jaw, Prominent forehead.

UNIT- IV: SOURCES OF FASHION INSPIRATION 16 Hours

Theories of fashion adoption- down flow theory, horizontal flow theory, and upward flow theory. Factors influencing fashion changes- psychological, social, technological, economic,

political, legal and seasonal influence. Role of costumes as a status symbol. Fashion leaders and followers.

UNIT-V: FASHION CENTERS AND DESIGNERS **16 Hours**

World fashion Centers- France, USA, Italy, Germany, New York and Far East countries. Indian- culture and traditional costume, state fashion. Understanding fashion designers- classicists, idealist, influenced, realist, and thinking poet. Indian Designers-RituBeri, RohitKhosla, Ritu Kumar, RohitBal,

Text Book:

- "Apparel Designing and Clothing Psychology" - Text book prepared by the department.

Reference Books:

- Khurana and Sethi,(2007), Introduction to Fashion Technology, Fire Well Publication, New Delhi.
- Pundir. N(2007), Fashion Technology Today and Tomorrow, Mittal Publication, New Delhi.
- JudithRasband(1995), "Wardrobe Strategies for Women", Judith Rasband, Delmar Publishers, London.
- Jenny Davis(2009), A Complete Guide to Fashion Designing, 1st Edition, Abhishek Publication, Chandigarh.
- Frings(2008), Fashion from Concept to Consumer, 7th Edition, Dorling Kindersley Publishing Inc, India.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Relate fashion clothing and psychology	K1,K2
CO 2	Develop expertise in the field of fashion psychology and Elements of art and principles of design.	K3
CO 3	Discover the effects of the economy, politics, law, and seasons in fashion	K4
CO 4	Appraise the innovators and the victims of fashion and Motivates Indian culture	K5
CO 5	Elaborate about the Global Fashion Centre	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	3	3	2	3
CO 2	3	1	3	2	3	3
CO 3	3	1	3	1	3	3
CO 4	3	2	3	3	1	3
CO 5	3	1	3	3	1	1

High Correlation – 64%
Moderate Correlation –13%
Low Correlation –23%

WOMEN'S APPAREL – PRACTICAL-VII
UCDR303

Semester : III **Credit : 3**
Category : Major Core Practical-VII **Hours/Week : 3**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO 1	Create different types of patterns for women's apparel.
CO 2	suggest suitable fabrics, colors and designs for all patterns
CO 3	learn the drafting procedures for women's apparel
CO 4	Develop the drafting design for women's apparel.
CO 5	Summarize the cost calculation for the garment

Design and construct the following Garments:

1. Middy-Variation in panel/ pleated skirt/ circular
2. Middy Top-With or without collar, sleeve variations
3. Full gown- Fashioned neck and attaching trimmings.
4. Kameez –Stright,Semi stiched,Bandani.
5. Salwar -Plain, Gathering at bottom, pleated
6. Pannelled top
7. Anarkali - paneled , Pleated
8. Night dress- With / without yoke, Sleeve variation.
9. Ladies pant- patch pant, Zip attached.
10. Ladies shirt-Half open collar, half or full sleeve

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Demonstrate various patterns and looks for women's clothing.	K1,K2
CO 2	Build the fundamentals to create customized patterns.	K3
CO 3	Classify appropriate materials, hues, and patterns.	K4
CO 4	Construct the garment drafting process and pattern making	K5
CO 5	Estimate the garment's cost calculation.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	3	2
CO 3	3	3	3	3	1	3
CO 4	3	3	3	3	2	2
CO 5	3	3	3	3	2	1

High Correlation – 81%
Moderate Correlation –13%
Low Correlation –6%

TEXTILE WET PROCESSING
UCDM401

Semester : IV **Credit : 4**
Category : Major Core-IV **Hours/Week : 5**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO 1	understand the mechanisms of various Textile Auxiliaries
CO 2	Summarize to Mercerization Effect on Cotton – Dyeing of Various Textile Materials
CO 3	Develop the Methods of Printing and Finishing Effect
CO 4	Compare Dye and Print the fabrics the using suitable dyes and prints
CO 5	Decide to Prepare on Effluent treatment and its impact

UNIT: 1 Wet Processing Process and Basic Finishes 13 hours

Process sequence of textile wet processing; Finishes types – Basic finishes, Aesthetic finishes, Functional finishes and Special purpose finishes - Basic Finishes – Singeing, desizing, scouring, bleaching and mercerizing – Process sequence and methods;

UNIT: II Aesthetic, Functional and Special Finishes 13 hours

Aesthetic finish– glazed, Moire, embossed, napped finish Functional finish – Water repellant, flame retardant, antistatic finish,Special purpose finish – fragrance, antibacterial, stone wash and enzyme wash in denim Recent trends – Microencapsulation and nano finishes

UNIT: III Dyes and Dyeing Machines 13 hours

Dyes – classification and suitability of dyes to the fabric, stages of dyeing – fiber, yarn, fabric and garment dyeing, Natural dyes and its significance,Dyeing machines – loose stock fiber bale – hank package – jigger – winch – HT& HP Beam, jet – padding mangles. Garment dyeing machines

UNIT: IV Direct Printing 13 hours

Printing – Difference between dyeing and Printing,Preparation of Printing Paste, Properties and types of Thickeners,Direct Printing – Block Printing - History and techniques used. Screen Printing – Flat screen and Rotary screen, techniques used

UNIT: V Resist, Discharge Printing and Effluent Treatment 13 hours

Resist Printing – Tie and Dye and Batik; Process sequence and techniques.Discharge Printing, other methods – Digital Printing, Heat transfer printingEffluent Treatment – Pollution created by the processing unit, Process sequence in Effluent treatment Plant

Text Books:

- Textile Chemistry, Paters R.H, Elsevier Publishing , 1967.
- Technology of Textile Processing, Shenai V.A., Sevak publications, Bombay, 1981.
- Textile Finishing , Shenai.V.A. Sevak Publications, Mumbai, 1999.

Reference Books:

- Functional Finishes, Menachem Lewin and Stephen B. Sello, Marcel Dekker, Inc., 1984.
- Textile Finishing, R.S.Prayag, Shree J Printers, India, 1994.
- Dr.V.A. Shenai, Textile Fibres, Sevak Publications, Mumbai.
- Dr.V.A. Shenai, Technology of Bleaching and Mercerising, Sevak Publications, Mumbai.
- Dr.V.A. Shenai, Technology of Dyeing, Sevak Publications, Mumbai.
- Dr.V.A. Shenai, Technology of Printing, Sevak Publications, Mumbai.
- E.R. Trotman and BI. Griffin, Chemical Technology of Scouring and Bleaching,
- B.I. Publications, New Delhi.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Explain the textile industry's process sequence	K1,K2
CO 2	Organize the various textile finishes	K3
CO 3	Examine dyes and dyeing techniques	K4
CO 4	Assess the different printing techniques	K5
CO 5	Discuss a plan for the dying process's treatment, energy conservation, and cost management.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	3	3	1	3
CO 2	3	1	2	3	1	3
CO 3	3	1	3	2	1	3
CO 4	3	1	3	2	1	3
CO 5	2	1	3	2	2	2

High Correlation – 46%
Moderate Correlation –23%
Low Correlation –31%

TEXTILE WET PROCESSING-PRACTICAL
UCDM401

Semester : IV **Credit : 3**
Category : Major Core Practical-VIII **Hours/Week : 3**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO 1	Choose the different methods of Bleaching
CO 2	Compare to study dyeing and printing
CO 3	Develop the printing process and its components
CO 4	Classify the Softening and finishing process methods
CO 5	Make use of Water repellent finish and Wash-n-wear finish

PRACTICAL

Determination of strength of wetting agents and detergents

1. Bleaching of viscose rayon, polyester, acrylic, polyester/cotton blend and polyester/Viscose rayon blend
2. Mercerizing cotton fabrics
3. Determination of barium activity number of mercerized cotton yarn/fabric
4. Continuous method of dyeing wool
5. Discharge style of printing of silk and wool
6. Printing of polyester/cotton blend – direct style
7. Printing of polyester/cotton blend – discharge style
8. Printing of polyester/cotton blend – burnt out style
9. Softening finish and Wash-n-wear finish
10. Anti-static finish and Water repellent finish
11. Mildew proofing and Fire proofing

Text Books:

- Surface design for fabric, Richard M Proctor/Jennifer F Lew, University of Washington Press .
- Art of embroidery : History of style and technique, Lanto Synge,Woodridge
- The Timeless Embroidery, Helen M, David & Charles.
- Readers Digest(1993), Complete guide to Sewing,Pleasant ville-Nu Gail L,Search Press Ltd.
- Barbara .S, Creative Art of Embroidery, Lundon, Numbly Pub.group Ltd.
- Shailaja N, Traditional Ebroideries of India. Mumbai APH Publishing.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Relate the appropriate wetting agent and detergent strength	K1,K2
CO 2	Identify the bleaching polyester, acrylic, blends of polyester and cotton, and polyester and viscose rayon.	K3
CO 3	Test for the discharge printing method for wool and silk	K4
CO 4	Influence Direct-style printing on a combination of polyester and cotton	K5
CO 5	Test finishes for softening and wash-in wear.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	3	2	1	1
CO 2	3	1	3	3	1	2
CO 3	3	1	3	2	1	1
CO 4	3	1	3	3	1	1
CO 5	3	1	3	3	1	2

High Correlation – 44%
Moderate Correlation –13%
Low Correlation –43%

MEN'S WEAR-PRACTICAL
UCDM401

Semester : IV **Credit : 4**
Category : Allied paper-IV **Hours/Week : 4**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 52**
Course Objectives

CO No.	To enable the students
CO 1	Create different types of patterns for men's.
CO 2	Identify the suitable methods for fabrics, colors and designs for all patterns.
CO 3	Develop the pattern and drafting procedures for men's Apparel.
CO 4	Discover the Pattern drafting and stitching methods
CO 5	creative skills in designing & constructing men's wear for different age group

Design and construct the following Garments

1. S.B Vest –With collar, Sleeveless.
2. T-Shirt-Polo t shirt, Round neck t shirt, Neck binding.
3. Slack Shirt-with Collar, Half Sleeve, Pocket.
4. Full sleeve shirt
5. Nehru Kurta -Kali Piece, Pocket, collar.
6. Kalidar Kurta - Kali Piece, Side Pocket, Round Neck, Half Open.
7. Nehru jacket- Pocket, collar.
8. Pyjama – Elastic, Tape attached Waist, With/Without Fly.
9. One- piece pant

Course Outcomes

CO No.	On competion of the course, the students will be able to	Bloom's Level
CO 1	Summaries Designing, drafting and constructing the garments	K1,K2
CO 2	Apply relevant technologies within fashion.	K3
CO 3	List the necessary measurements and appropriate materials.	K4
CO 4	Decide the cost of the garment	K5
CO 5	Make up the usage of direct measurement method and the layout method	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	1	3	3	1
CO 2	2	3	2	3	3	2
CO 3	3	3	2	2	3	1
CO 4	3	3	2	3	3	3
CO 5	2	3	2	3	3	1

High Correlation – 61%
Moderate Correlation –26%
Low Correlation –13%

FASHION ACCESSORIES
UCDM402

Semester : IV **Credit : 2**
Category : Allied Practical-II **Hours/Week : 3**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO 1	Find the knowledge in different types of fashion accessories.
CO 2	Demonstrate the stud, chain, bangles, hand bags, foot wears and hand gloves.
CO 3	Construct the accessories using Paper, Fabrics, Beads, Glass, Leather and other suitable materials.
CO 4	Discover the Fashionable Textile accessories.
CO 5	Modify to design and develop the fashion accessories

Design the following Accessories

1. Construct the Earring Varieties using Beads and Kundhan stones.
2. Construct the Chain Varieties using Newspaper and fabrics.
3. Construct the Bracelet Varieties using Copper string, beads and hooks.
4. Construct a Hand Bag using Fur or resin Fabric.
5. Construct a Foot Wear using leather or resin Fabric.
6. Construct a Men's Tie using a suitable Fabric.
7. Construct a Hand Gloves using a floral textured fabric.
8. Construct a Baby Hat using the leather or resin fabric along with canvas.
9. Construct a Belt using the resin fabric.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Extend the skills of several fashion accessories	K1,K2
CO 2	Experiment with different materials of artistic accessories	K3
CO 3	Analyze the accessories for a fashion show.	K4
CO 4	Recommend the handmade goods creation and its applications	K5
CO 5	Modify accessories for the portfolio that match your outfit.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	2	3	1	2
CO 2	3	3	3	2	1	1
CO 3	3	2	3	2	2	3
CO 4	3	2	3	3	2	3
CO 5	3	2	3	1	1	2

High Correlation – 61%
Moderate Correlation –26%
Low Correlation –13%

BOUTIQUE MANAGEMENT
UCDA402

Semester : IV **Credit : 4**
Category : Major Core paper-VII **Hours/Week : 5**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO 1	Identify the suitable startups business to become an entrepreneur
CO 2	Demonstrate and design to build the boutique shop
CO 3	Develop the knowledge for garment cost calculation
CO 4	Discover the boutique interior design
CO 5	Important to study the small and medium scale of fashion entrepreneur business

UNIT: I Introduction to Boutique management **13 hours**

Introduction to Boutique management Terminologies. Fashion Retailing – History, Scope, Importance. Types of retailing (Domestic & International), techniques. Boutique market place and its role.

UNIT: II Business options and plans **13 hours**

Business options and plans for boutique. Costing and funding agencies. Boutique display, Exterior of Boutique, Illumination, Masking and Proscenia Mannequins and 3D Dressing. Props & promotions on floor. Visual merchandising and colour pallets.

UNIT: III Boutique interior planning **13 hours**

Boutique interior planning – Boutique interiors and display locations, fixture & dressings, purchase display systems. Boutique management – types of Boutique, planning, layout and storing

UNIT: IV Brand and Boutique **13 hours**

Boutique Planning – Designing, identification of threats, local market study, customer identification. kid's, women's and men's boutique business plan – start-up plan, products and services – strategy, implementation and financial plan.

UNIT: V Product Designing and planning **13 hours**

Ready to wear – Sourcing, pricing, wardrobe planning and packaging. Customisation – Sourcing: domestic and international, fabric, trims and apparels. Product planning - design, sampling and product development.

Text Books:

- Gini Stephen fringes, Fashion from Concept to Consumer, Dorling Kindersley Pvt Ltd, 2009, 7th Edition, Person Publishing, South Asia.
- Frances Cowell, Practical Quantitative Investment Management with Derivatives,2002. 2ndEdition, Palgrave Publisher Pvt Ltd, New York.
- T Rowe, Interior textiles- Design and Developments, 2011, 2nd edition, Woodhead Publishing Pvt. Ltd, UK.

Reference Books :

- Jay Diamond and Ellen Diamond, Fashion Apparel,(2011), 1st edition, Accessories and Home Furnishings, Prentice Hall, New Delhi.
- Entrepreneur Magazines(2008), Entrepreneur Press and Melissa Campanelli, Jera L.Calmes, Publisher, Eliot House Production, Canada.
- Business Boutique, Christy Wright(2017), Ramsey Press, The Lampo Group LLC, USA.

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Explain the administration of the boutique.	K1,K2
CO 2	Make use of the business strategy and possibilities.	K3
CO 3	Construct the interior design of the boutique	K4
CO 4	Evaluate the Boutique and Brand	K5
CO 5	Create the fresh concepts for product planning and design	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	2	3	1	3	2
CO 2	3	1	2	2	3	2
CO 3	3	1	3	1	1	2
CO 4	3	1	3	2	3	1
CO 5	3	2	2	2	2	1

High Correlation – 37%
Moderate Correlation –36%
Low Correlation –27%

TEXTILE FINISHING & FABRIC CARE
UCDM403

Semester : IV **Credit : 4**
Category : Major Core paper-VIII **Hours/Week : 5**
Class &Major: II B.Sc. Costume Design and Fashion **Total Hours : 65**
Course Objectives

CO No.	To enable the students
CO 1	Compare to study desizing and bleaching methods
CO 2	Classify the different types of fabric finishes
CO 3	Identify the environmental impacts of textile industry
CO 4	Discover the basic textile finishing process
CO 5	Choose the different methods of fabric washing

UNIT: I Fabric preparatory process **13 hours**

Fabric Preparatory Process: Preparatory process- Preparation of fabric for dyeing - Singeing – Singeing Machine – Desizing — Scouring – Bleaching –Bleaching J-Box- Process and equipment's used.

UNIT: II Classification of fabric finishes **13 hours**

Classification of finishing: Classification of finishing – mechanical finishing functional finishing- special purpose finishing. Mechanical finishing- Aesthetic finishes: Luster – glazed, moiré, schreiner, embossed; Drape – crisp and transparent, burnt out, sizing, weighting; Texture sheared, brushed, embossed, plisse, pleated, flocked ,embroidered, napped, fulled.

UNIT: III Functional finishes **13 hours**

Functional finishes: Functional finishes- wrinkle free finish, water repellent finishes, flame retardants, Anti-microbial finishes, Antistatic finishes, Soil Release finishes.

UNIT: IV Garment care techniques. **13 hours**

Garment dyeing, dye selection, garment-dyeing machinery. Washing: Stone washing, acid washing, enzyme washing, biopolishing, mercerisation, bleaching, laser fading and ozone fading. Study of laundry equipment and reagents – soaps – detergents – cleaning action of soaps, study of modern and industrial cleaning agents. Finishing; Optical brightening, mercerization, liquid ammonia, treatment, stiffening, softening, crease resistant and crease retentive finish, anti-static finish, anti-bacterial finish, water proofing, flame proofing, soil release finish, mildew and moth proofing.

UNIT: V Machinery and equipments for garment care **13 hours**

Principles of laundering – stain removal – various solvents for stain removing blood, tea, rust, oil/grease etc. – different methods of washing – application of friction by hand rubbing –scribing – tumble wash. Stain removal – Oil, colour matter, chemicals. Use of care labels and standards / norms for care labels. Garment laundering equipments and procedures. Study of different types of house hold/industrial washing machines- rotary –swirling – pressure – tumble wash etc

Text Books:

- Dantyagi S.(1980), "Fundamentals of Textile and their care", Oriental longmans Ltd, New Delhi.
- Denlkar(1993), "Household Textiles & laundry work", Atma Ram & Sons, Delhi.
- Harrison. P (Editor)(1988), "Garment Dyeing: Ready to wear fashion from the dye house", The Textile Institute, U.K..
- Noemia D' Souza.(1998), "Fabric Care", New Age International (P) Ltd. Publisher, Chennai.

Reference Books:

- Marsh, J.T.(1979), "An Introduction to Textile Finishing", Chapman and Hall Ltd., London.
- Shenai, V.A.(1995), "Technology of Textile Finishing", Sevak Publications, Bombay.
- Hall, A.J.(1986), "Textile Finishing" Elsevier Publishing Co. Ltd..

Course Outcomes

CO No.	On completion of the course, the students will be able to	Bloom's Level
CO 1	Extend the methods for preparing the fabric	K1,K2
CO 2	Select the various fabric finishes	K3
CO 3	Categories fabric functional finishing	K4
CO 4	Justify the methods of caring for clothes.	K5
CO 5	Develop the garment care machinery and equipment.	K6

CO – PSO MAPPING

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	3	3	2	2
CO 2	3	2	3	3	3	1
CO 3	3	1	3	2	3	2
CO 4	3	2	3	3	2	3
CO 5	3	2	3	3	1	1

High Correlation – 57%
Moderate Correlation –27%
Low Correlation –16%

III & IV Evaluation Components of CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
III	Major Core – IV /DSC – IV	UCDM301	Fabric Manufacturing Techniques	Assignment	Seminar
	Major core Practical-V	UCDR301	Fabric Structure and Design	Assignment	Seminar
	Major core Practical-VI	UCDR302	Computer Aided Designing - practical-I	Exhibits	Exhibits
	Allied Paper-III	UCDA301	Visual Merchandising	Exhibits	Exhibits
	Major Core - V	UCDM302	Fashion clothing and Psychology	Seminar	Assignment
	Major Core Practical - VII	UCDR303	Women's Apparel practical	Design Making	Assignment
IV	Major Core Paper-VI	UCDM401	Textile wet processing	Assignment	Seminar
	Major core Practical-VIII	UCDR401	Textile wet processing Practical	Exhibits	Exhibits
	Major core Paper-Practical -IX	UCDR402	Men's Apparel Practical	Exhibits	Exhibits
	Allied – Practical-II	UCDR401	Fashion Accessories	Exhibits	Exhibits
	Major Core Paper-VII	UCDM402	Boutique Management	Assignment	Seminar
	Major Core Paper-VIII	UCDM403	Textile Finishing & Fabric Care	Seminar	Viva-Voce