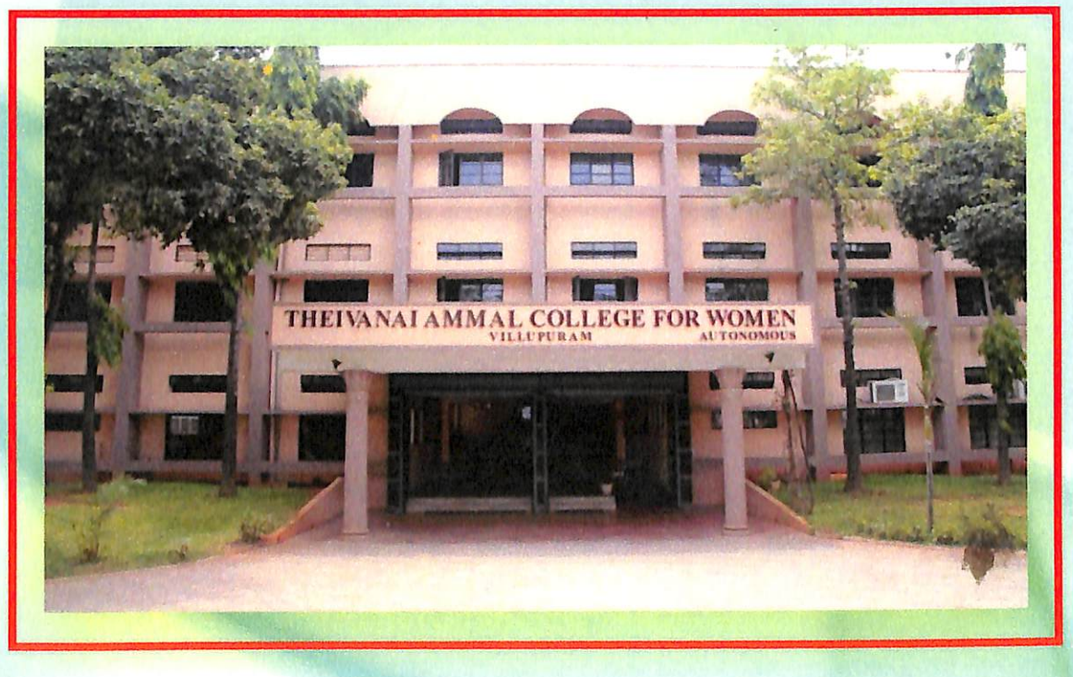
Theivanai Ammal College for Women (Autonomous)

(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 - XV
(Arts, Science and IQAC)



12th August 2022

CONTENT

Department of Tamil

- B.A., Tamil 1

Department of English

- B.A., English 15

Department of Business Administration

- B.B.A 29

Department of Commerce

- B.Com 42
- B.Com with Computer Applications 45

Department of Biochemistry

- B.Sc., Biochemistry 61

Department of Chemistry

- B.Sc., Chemistry 78

Department of Physics

- B.Sc., Physics 96

Department of Mathematics

- B.Sc., Mathematics 114
- M.Sc., Mathematics 129

Department of Computer Science

- B.Sc., Computer Science 134

Department of Computer Application

- B.C.A 157

Department of Psychology

- B.Sc., Psychology 173

Department of Journalism and Mass Communication

- B.A., Journalism and Mass Communication 187

Department of Clinical Nutrition and Dietetics

- B.Sc., Clinical Nutrition and Dietetics 203

Department of Costume Design and Fashion

- B.Sc., Costume Design and Fashion 225

Internal Quality Assurance Cell 246

- CIA & ESE Question Paper Pattern – OBE
- Guidelines for Research Publications
- Evaluation Procedure for Professional English

Percentage of Syllabus Revision 252

தமிழாய்வுத்துறை

இளங்கலைத்தமிழ்

முகவுரை

ஆறு பருவங்களுக்குரிய பாடத்திட்ட வடிவமைப்பு இடம் பெற்றுள்ளது. **ஐந்தாம் பருவத்திற்கு** உரிய பாடத்திட்டம் மற்றும் அகமதிப்பீட்டுக் கூறுகள் இடம் பெற்றுள்ளன. இப்பாடத்திட்டமானது **2021 - 2024** ஆம் கல்வியாண்டுகளில் பயிலும் மாணவியர்களுக்கு உரியது.

பாடத்திட்ட அமைப்பு : இளங்கலைத்தமிழ் (B.A)

பாடத்திட்டப் பயன்கள்

PSO-1	தமிழ் இலக்கியம் மற்றும் இலக்கணங்களின் தோற்றம் வளர்ச்சி நிலைகளை அறிந்து கொள்வர்.
PSO-2	தமிழ் இலக்கியம் மற்றும் இலக்கணம் வழி தமிழர் வரலாற்றினையும் பண்பாட்டினையும் புரிந்து கொள்வர்.
PSO-3	இலக்கியம் வழி கண்டறிந்த நெறிகளை வாழ்க்கையில் பொருத்திப் பார்க்கும் திறனைப் பெறுவர்.
PSO-4	தமிழியலில் கூறுகின்ற மெய்மைகளைக் காரண காரிய அடிப்படையில் பகுத்தாய்வர்.
PSO-5	தமிழ் இலக்கியம் முன்மொழிகின்ற செந்நெறிகளை மதிப்பிடும் ஆற்றலைப் பெறுவர்.
PSO-6	தமிழ் இலக்கிய வகைமைகளை கற்றுத்தெளிந்து புத்திலக்கியங்களைப் படைக்கும் திறன் மற்றும் பணிவாய்ப்புகளைப் 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	-	5	4
		அலுவல்சார் ஆங்கிலம்	UPEM101	Professional English I	-	5	4
	IV	மதிப்பீட்டுக் கல்வி			-	2	1
				மொத்தம்		**34**	**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	UTAE201	படைப்பிலக்கியம் - I	-	3	2
	V	கூடுதல் செயல்பாடு (Extension Activites)			-	-	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	-	4	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		**29**	**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	UTAE401	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**	**26/28**
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	4
		முதன்மைப்பாடம் - XVIII	UTAM610	இணையத்தமிழ்	-	5	4
		முதன்மைப்பாடம் - XIX	UTAM607	தண்டியலங்காரம்	-	6	5
		முதன்மைப்பாடம் - XX	UTAM609	சங்க இலக்கியம்	-	5	4
		முதன்மைப்பாடம் - XXI	UTAR201	பயிற்சி பட்டறை - III		2	1
		துறைசார் விருப்பப்பாடம் - II	UTAO610 UTAO611 UTAO612	புலம்பெயர்வு இலக்கியம் பெண்ணியப் படைப்புகள் விளம்பரவியல்	-	5	4
	III	புறவாய்மொழித்தேர்வு	UTAC606	மீள் ஆய்வு	-	-	1
	VI	திறன்சார்கல்வி			-	2	1
		கள ஆய்வு	UTAF601				
	V	கூடுதல் செயல்பாடு (Extension Activites)			-	-	2
		கிராமபுறப் பயன்பாட்டு திட்டம்					
				மொத்தம்		**30**	**26**
				கூட்டு எண்ணிக்கை		**192**	**148/158**

கவின் கலைகள்

UTAM505

பருவம் : ஐந்தாம் பருவம் **தரம் : 05**

பிரிவு : முதன்மைப்பாடம் -XIII **மணிநேரம் / வாரம் : 06**

வகுப்பு : III BA. தமிழ் **மொத்த மணி நேரம் : 78**

கற்றலின் நோக்கம் வரிசை எண்	**கற்றலின் நோக்கம்**
கற்றலின் நோக்கம் -1	பண்டையத் தமிழ் கலைஞர்களின் கலைகள் குறித்து அறிந்து கொள்ளச் செய்தல்
கற்றலின் நோக்கம் -2	தமிழரின் பண்பாட்டைக் கட்டமைப்பதில் கவின் கலைகளின் பங்களிப்பினைப் புரிந்து கொள்ளச் செய்தல்
கற்றலின் நோக்கம் -3	கலைகளின் செயல்பாட்டுத் தன்மையை அறிந்து, கலைஞர்களுக்கான சமூக மதிப்பை மதிப்பிடச் செய்தல்
கற்றலின் நோக்கம் -4	கலைகளின் வளர்ச்சி நிலைகளை சமூக மாற்றத்தோடு பகுப்பாய்வு செய்தல்
கற்றலின் நோக்கம் -5	தமிழ் நுண்கலைகளின் நுட்பங்களை அறிந்துகொண்டு இக்கால தொழில் நுட்பக்கருவிகளில் நுண்கலைகளைப் பயன்படுத்தி பணி வாய்ப்புப் பெறச் செய்தல்.

அலகு 1 கலைகளின் தோற்றம் **14 மணி நேரம்**

கலைகள் விளக்கம் - கவின் கலைகள் - கலைகளின் தோற்றமும் வளர்ச்சியும் - பாணர் - விறலி - புலவர்கள் - புரவலர்கள் - இலக்கியங்கள்

அலகு 2 இசைக்கலை **20 மணி நேரம்**

தமிழில் இசைக்கலை தோற்றம் வளர்ச்சி - சங்க கால இசை - இசைக்கருவிகள் - காலந்தோறும் இசைக்கலை - கோயில்கள் வளர்த்த இசைக்கலை

அலகு 3 ஆடற்கலை **15 மணி நேரம்**

தமிழகத்தில் ஆடற்கலை தோற்றம் வளர்ச்சி - வகைகள் - பரத நாட்டியம் - கோயில்கள் மூலம் வளர்த்த நாட்டியக் கலைகள்

அலகு 4 சிற்பமும் ஓவியமும் **14 மணி நேரம்**

தமிழகச் சிற்பக்கலை, ஓவியக்கலை தோற்றம் வளர்ச்சி - வகைகள் - தமிழகக் கோயில்களில் சிற்பங்களும், ஓவியங்களும் - சிற்ப ஓவிய வகைகள்

அலகு 5 நாடகக் கலை **15 மணி நேரம்**

நாடகக் கலை தோற்றம் - நாடகக் கலையின் வளர்ச்சி நிலைகள் - இன்றைய திரைப்படம் முதல் சின்னத்திரை வரை

பாடநூல்

1. வேங்கடசாமி, மயிலை சீனி. (1960). தமிழர் வளர்த்த அழகுக் கலைகள். பாரி நிலையம். சென்னை.

பார்வை நூல்கள்

1. வேங்கடசாமி, மயிலை சீனி. (1972). *நுண்கலைகள்*, மணிவாசகர் நூலகம். சென்னை.
2. சதாசிவப் பண்டாரத்தார். தி.வை. (2000). *இலக்கியமும் கல்வெட்டும்.* தமிழ் மண் பதிப்பகம். சென்னை.
3. இந்திரன். (2022). *தமிழ் அழகியல்*, டிஸ்கவரி புக் பேலஸ், சென்னை.
4. மம்மது, நா. (2022). *என்றும் தமிழிசை*, நாதன் பதிப்பகம், சென்னை.
5. பாலுசாமி, சா. (2014). *நாயக்கர் கால கலைக்கோட்பாடுகள்*, காலச்சுவடு பதிப்பகம். சென்னை.

கற்றலின் பயன்கள் வரிசை எண்	**கற்றலின் பயன்கள்**	**Bloom's Level**
கற்றலின் பயன்கள் -1	பண்டையத் தமிழ் கலைஞர்களின் கலைகள் குறித்து அறிந்து கொள்வர்	K1
கற்றலின் பயன்கள -2	தமிழரின் பண்பாட்டைக் கட்டமைப்பதில் கவின் கலைகளின் செயல்பாட்டைப் புரிந்து கொள்ளும் திறம் பெறுவர்	K2
கற்றலின் பயன்கள் -3	கலைகளின் செயல்பாட்டுத் தன்மையை அறிந்து, கலைஞர்களுக்கான சமூக மதிப்பை விமர்சன ரீதியில் மதிப்பிடும் ஆற்றல் பெறுவர்.	K1, K5
கற்றலின் பயன்கள் -4	கலைகளின் வளர்ச்சி நிலைகளை சமூக மாற்றத்தோடு பகுப்பாய்வு செய்யும் திறன் பெறுவர்.	K1,K4
கற்றலின் பயன்கள் -5	தமிழ் நுண்கலைகளின் நுட்பங்களை அறிந்துகொண்டு இக்கால தொழில் நுட்பக் கருவிகளில் நுண்கலைகளைப் பயன்படுத்தி பணி வாய்ப்புப் பெறுவர்.	K6

சமய இலக்கியம்
UTAM506

பருவம் : ஐந்தாம் பருவம் **தரம் : 04**
பிரிவு : முதன்மைப்பாடம் - XIV **மணிநேரம்/வாரம் : 06**
வகுப்பு : III B.A.தமிழ் **மொத்தமணிநேரம் : 78**

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் -1	தமிழரின் சமயக் கோட்பாட்டை உலகு தழுவிய சிந்தனை தளத்தில் அறிந்து கொள்ளச் செய்தல்
கற்றலின் நோக்கம் -2	பக்தி இலக்கியங்கள் சுட்டுகின்ற அறக் கருத்துகளைப் புரிந்து கொள்ளச் செய்தல்
கற்றலின் நோக்கம் -3	தமிழ் பக்தி இலக்கியங்களின் பன்முகத்தன்மையை இக்காலச்சூழலுக்கு ஏற்ப மதிப்பிடச் செய்தல்
கற்றலின் நோக்கம் -4	பக்தி இலக்கியம் முன்மொழிகின்ற சிந்தனைகளைப் பகுப்பாய்வு செய்தல்.
கற்றலின் நோக்கம் -5	இக்காலச் சூழலுக்கு ஏற்ப புதிய பக்தி இலக்கியப் படைப்புகளை உருவாக்கச் செய்தல்

அலகு 1 சைவ இலக்கியங்கள் **14 மணி நேரம்**

திருஞானசம்பந்தர் தேவாரம் - இடர்களையும் பதிகம் (மறையுடையார் எனத் தொடங்கும் பாடல்) - திருநாவுக்கரசர் தேவாரம் - நமச்சிவாய திருப்பதிகம் (சொற்றுணை வேதியன்) - மாணிக்கவாசகர் திருவாசகம் - நீத்தல் விண்ணப்பம் (முதல் பத்து பாடல்கள்) - சுந்தரர் (மற்றுப் பற்றெனக்கின்றி (முதல் பத்துப் பாடல்கள்).

அலகு 2 வைணவ இலக்கியங்கள் **20 மணி நேரம்**

குலசேகராழ்வார் - பெருமாள் திருமொழி (வித்துவக்கோட்டம்மான் 5ஆம் திருமொழி) - பெரியாழ்வார் திருப்பல்லாண்டு - ஆண்டாள் திருமொழி (முதல் பத்துப் பாடல்கள்) - தொண்டரடிப் பொடியாழ்வார் திருப்பள்ளி எழுச்சி (முதல் பத்துப் பாடல்கள்).

அலகு 3 சித்தர் நாட்டுப்புறப் பாடல்கள் **15 மணி நேரம்**

திருமூலர் - திருமந்திரம் - யாக்கை நிலையாமை (முதல் பத்துப் பாடல்கள்) - சிவவாக்கியார் - ஈணெருமை (151 - 160 பாடல்கள்) - பட்டினத்தார் - தாயாருக்குத் தகனக்கிரியை (191 – 200 பாடல்கள்)

அலகு 4 சமண,பௌத்த இலக்கியங்கள் **14 மணி நேரம்**

சிறுபஞ்சமூலம் பொருளுடையான் (முதல் பத்துப் பாடல்கள்) - நாலடியார் - கல்வி (131 - 140 பாடல்கள்) - ஆசிய ஜோதி (முழுவதும்).

அலகு 5 கிறித்துவ, இசுலாமிய இலக்கியங்கள் **15 மணி நேரம்**

தேம்பாவணி – ஐயம் நீங்கு படலம் (முதல் பத்துப் பாடல்கள்) - சீறாப்புராணம் - மழைப்பிழைத்த படலம் (முதல் 20 பாடல்கள்).

பாடநூல்கள்

1. கந்தசாமி. சோ.ந. (2010), *திருமுறை இலக்கியம்*, உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை.
2. அருணாசலம், ப. (2011), *வைணவ சமயம்*, பாரி புத்தகப் பண்ணை, சென்னை.

பார்வை நூல்கள்

1. கிருஷ்ணபிரசாத். (2014), *பட்டினத்தார் பாடல்கள்*, காவ்யா பதிப்பகம், சென்னை.
2. மஸ்தான் *சாகிபு பாடல்கள், (2014),* மணிவாசகர் பதிப்பகம், சென்னை.
3. மாணிக்கவாசகன். ஞா, (2013), *பதினெண் கீழ்க்கணக்கு நூல்கள்*, உமா பதிப்பகம், சென்னை.
4. நாராயணசாமி. க, (2010), *சித்தர் தத்துவம்*, தமிழ்ப் புத்தகாலயம், திருவல்லிக்கேணி, சென்னை.

கற்றலின் பயன்கள் வரிசை எண்	கற்றலின் பயன்கள்	Bloom's Level
கற்றலின் பயன்கள் -1	தமிழரின் சமயக் கோட்பாட்டை உலகு தழுவிய சிந்தனை தளத்தில் அறிந்து கொள்வர்.	K1
கற்றலின் பயன்கள -2	பக்தி இலக்கியம் முன்மொழிகின்ற சிந்தனைகளைப் பகுப்பாராயும் திறம் பெறுவர்.	K4
கற்றலின் பயன்கள் -3	தமிழ் பக்தி இலக்கியங்களின் பன்முகத்தன்மையை இக்காலச்சூழலுக்கு ஏற்ப மதிப்பிடுவர்	K3
கற்றலின் பயன்கள் -4	பக்தி இலக்கியங்கள் சுட்டுகின்ற அறக் கருத்துகளை புரிந்து கொள்வர்	K2
கற்றலின் பயன்கள் -5	இக்காலச் சூழலுக்கு ஏற்ப புதிய பக்தி இலக்கியப் படைப்புகளை உருவாக்கும் திறம் பெறுவர்.	K5

நம்பியகப் பொருள்
UTAM509

பருவம் : ஐந்தாம் பருவம் **தரம் : 05**
பிரிவு : முதன்மைப்பாடம் -XV **மணிநேரம்/வாரம் : 06**
வகுப்பு : III BA தமிழ் **மொத்தநேரங்கள் : 78**

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் -1	அகத்திணைக்கான இலக்கணக் கூறுகளை அறியச் செய்தல்.
கற்றலின் நோக்கம் -2	சங்க இலக்கிய அகநூல்களை இலக்கணத்தோடு பொருத்திப் புரிந்து கொள்ளச் செய்தல்.
கற்றலின் நோக்கம் -3	தமிழ் மொழியின் தொன்மையான இலக்கியங்களைப் பற்றிய புரிதலை இலக்கணத்தின் வழி மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் -4	அகஇலக்கணத்தின் வழி வாழ்விற்குரிய கூறுகளை பகுத்து ஆராயச் செய்தல்.
கற்றலின் நோக்கம் -5	சங்ககாலம் முதல் இக்காலம் வரை அகஇலக்கணங்களை ஆராய்ந்து ஆராய்ச்சியாளராக உருவாகச் செய்தல்.

அலகு 1 அகத்திணையியல் - I **14 மணி நேரம்**

அகப்பொருளின் வகைகள் - திணையின் பெயர் - ஐந்திணைக்கும் உரிய பொருள்கள் - முதல், கரு, உரிப்பொருள்கள் - கைக்கோள் - கைக்கிளை – களவு பிரிவு – வரைவு - அறத்தொடுநிற்றல் - கற்பு பிரிவு

அலகு 2 அகத்திணையியல் - II **20 மணி நேரம்**

ஊடல் - ஊடல் தணிக்கும் வாயில்கள் - செலவழுங்கல் - களவியல் - களவின் இயல்பு - கைக்கிளையின் பாகுபாடு - களவிற்கு உரிய கிளவிகள் - தெய்வப்புணர்ச்சி - வன்புறை - தெளிவு - பிரிவுழி மகிழ்ச்சி - பிரிவுழி கலங்கல் - இடந்தலைப்பாடு - பாங்கற் கூட்டம் - பாங்கிமதி உடன்பாடு.

அலகு 3 களவியல் **15 மணி நேரம்**

பாங்கியிற் கூட்டம் - பகற்குறி - ஒருசார் பகற்குறி - பகற்குறி இடையீடு - இரவுக்குறி - இரவுக்குறி இடையீடு - வரைதல் வேட்கை – வரைவு கடாதல் - ஒருவழி தணத்தல் - வரைவிடைவைத்து பொருள்வயின் பிரிதல்

அலகு 4 வரைவியல் **14 மணி நேரம்**

வரைவின் இலக்கணம் - கிளவித்தொகை - வரைவுமலிதல் - அறத்தொடுநிற்றல் - களவுவெளிப்பாடு - உடன்போக்கு - கற்பொடு புணர்ந்தகவ்வை - மீட்சி - வரைதல் - உடன்போக்கு இடையீடு.

அலகு 5 கற்பியல் **15 மணி நேரம்**

கற்பின் இலக்கணம் - கற்பிற்குரிய கிளவித்தொகை - இல்வாழ்க்கை - பரத்தையிற் பிரிவு - ஊடல் வகைகள் - ஓதல் முதலாகிய ஐவகைப் பிரிவுகள் .

பாடநூல்கள்

1. நாற்கவிராசநம்பி. (1990), *நம்பி அகப்பொருள்*, கழக வெளியீடு, சென்னை.

பார்வை நூல்கள்

1. திருஞானசம்பந்தர். ச. (2010). *அகப்பொருள் விளக்கம்*. கதிர் பதிப்பகம். மூன்றாம் பதிப்பு. திருவையாறு.
2. வைத்தியநாததேசிகர். (1980). *நம்பியகப்பொருள்*. சரஸ்வதி மஹால். தஞ்சாவூர்.
3. மாணிக்கம், வ. சுப. (1990). *தமிழ்க் காதல்*. மணிவாசகர் பதிப்பகம்.
4. தேவிரா. (2012). நம்பியகப்பொருள் விளக்கம். தேவிரா உரை. நந்தினி பதிப்பகம். சென்னை.

கற்றலின் பயன்கள் வரிசை எண்	கற்றலின் பயன்கள்	Bloom's Level
கற்றலின் பயன்கள் -1	அகத்திணைக்கான இலக்கணக் கூறுகளை அறிந்துக் கொள்வர்.	K1
கற்றலின் பயன்கள -2	சங்க இலக்கிய அகநூல்களை இலக்கணத்தோடு பொருத்தி பார்த்து புரிந்துக் கொள்வர்.	K2
கற்றலின் பயன்கள் -3	தமிழ் மொழியின் தொன்மையான இலக்கியங்களைப் பற்றிய புரிதலை இலக்கணம் வழி அறிந்துக் கொள்வர்.	K5
கற்றலின் பயன்கள் -4	சங்ககால களவு வாழ்விற்குரிய கூறுகளை அறிந்து திறன் பெறுவர்.	K4
கற்றலின் பயன்கள் -5	சங்ககால கற்புநெறிகள் குறித்த அறப் பண்புகளை வளர்த்துக் கொள்வர்.	K6

திட்டக்கட்டுரை
UTAP501

பருவம் : ஐந்தாம் பருவம் **தரம் : 04**
பிரிவு : திட்டக்கட்டுரை **மணி நேரம் வாரம் : 05**
வகுப்பு : III BA. தமிழ் **மொத்த மணிநேரங்கள் : 65**

நோக்கம்

- மாணவிகளிடம் ஆய்வு பார்வையை அறிமுகப்படுத்துதல்.

ஒரு குறிப்பிட்ட பொருண்மைத் தொடர்பாக ஆசிரியர்களின் நெறிபடுத்துதல் துணையோடு சுமார் 50 பக்க அளவில் திட்டக்கட்டுரையைச் சமர்ப்பிக்கச் செய்தல்.

ஊடகத்தமிழ்
UTAM510

பருவம் : ஐந்தாம் பருவம் **தரம் : 04**
பிரிவு : முதன்மைப்பாடம் - XVI **மணிநேரம்/ வாரம் : 05**
வகுப்பு : III B.A தமிழ் **மொத்த மணி நேரம் : 65**

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் -1	ஊடகங்களின் திறன்மிக்க கருத்துப் பரிமாற்ற செயல்படும் முறையை அறிந்து கொள்ளச் செய்தல்.
கற்றலின் நோக்கம் -2	சமூக ஊடாட்டத்தின் வாயிலாக பண்பாட்டைக் கட்டமைப்பதில் ஊடகங்களின் செயல்படும் முறையினைப் புரிந்து கொள்ளச் செய்தல்.
கற்றலின் நோக்கம் -3	ஊடகங்களில் வெளிவரும் செய்திகளின் மெய்மைத் தன்மையை விமர்சன ரீதியில் மதிப்பிடச் செய்தல்
கற்றலின் நோக்கம் -4	ஊடகங்களின் செயல்பாட்டு முறைகளை பகுத்து ஆராயச் செய்தல்.
கற்றலின் நோக்கம் -5	நவீன தகவல் தொழில்நுட்ப ஊடகங்களில் செயல்முறை அறிவோடு ஊடகவியலாளராக பணி வாய்ப்புப் பெறச் செய்தல்.

அலகு – 1 ஊடகம் - அறிமுகம் **10 மணி நேரம்**

ஊடகம் விளக்கம் - தகவல் தொடர்பு – அடிப்படைகள் - விளைவுகள் - பணிகள் - தடைகள் - தகவல் ஏற்போரின் தகுதிகள் - தகவல் தொடர்பு கோட்பாடுகள்.

அலகு – 2 செய்தித்தாள் **15 மணி நேரம்**

செய்தி இலக்கணம் - செய்தி எழுதும் முறை - செய்தி நிறுவனங்கள் - செய்தித்தாள் வரலாறு - இதழியல் சட்டங்கள் - செய்தித்தாள் தொடங்குவதற்கான வழிமுறைகள் - இதழ் நிர்வாக அமைப்பு - செய்திகளைச் செப்பனிடுதல் நுட்பங்கள் - செய்தியின் கட்டமைப்பு - பக்க வடிவமைப்பு - அச்சுப்படி திருத்துதல்

அலகு – 3 வானொலியும் தொலைக்காட்சியும் 15 மணி நேரம்

வானொலியின் வரலாறு - வானொலி நிகழ்ச்சி - செய்தி ஒலிபரப்பு - கிராம ஒலிபரப்பு - நாடகங்கள் - உரைக்கோவை - நகர்வலம் - நேர்காணல் - கலந்துரையாடல் - பிறநாட்டு தமிழ் ஒலிபரப்புகள் - வானொலியும் தன்னாட்சியும் - அரசு, தனியார் வானொலி சேவை ஒப்பீடு, இணைய வானொலி, தொலைக்காட்சி வரலாறு -பல்வேறு நிகழ்ச்சிகள் - தயாரிப்பு முறை - நேரடி ஒளிபரப்பு - தொலைக்காட்சியும் பிற தகவலியல் சாதனங்களும் - தகவல் ஒளிப்படங்கள் - அரசு, தனியார் ஒளிபரப்பு ஒப்பீடு - தொலைக்காட்சியால் ஏற்படும் மன உணர்வுகள்.

அலகு – 4 திரைப்படங்கள் 15 மணி நேரம்

திரைப்படம் தோற்றம் வளர்ச்சி - இந்தியாவில் திரைப்பட வளர்ச்சி - தமிழில் படத் தயாரிப்புகள் - தணிக்கைகள் - தேசியப் படச்சுருள் - திரைப்பட விழாக்கள் - ஊடகங்களில் இணையம், மின்னஞ்சல், வரைகலை (கிராபிக்ஸ்), அசைவுபடம் (அனிமேஷன்) தொழில்நுட்பங்கள் - பல்லூடகம், மின்னிதழ், வலைப்பூ.

அலகு – 5 இணைய ஊடகம் 10 மணி நேரம்

இணையம் செயல்பாடுகள் - இணையதள முகவரி - வலைப்பூக்கள் - இணையவழி நூல்கள் - இணையதளம் - இணைய நூலகம்

பாடநூல்கள்

1. இராசா, கி. (2003). *மக்கள் தகவல் தொடர்பியல்.* பாவை பப்ளிகேஷன்ஸ். சென்னை.
2. குருசாமி, மா.பா. (1988). *இதழியல் கலை.* தாயன்பகம். திண்டுக்கல்.

பார்வை நூல்கள்

1. துரையரசன், க, (2009). *இணையமும் இனிய தமிழும்.* இசைப்பதிப்பகம். கும்பகோணம்.
2. சாந்தா, அ. மோகன்.வீ. (பதி.ஆ). (2007), *மக்கள் ஊடகத் தொடர்பியல் அடிப்படைகள்.* மீடியா பப்ளிகேஷன்ஸ். மதுரை.
3. சுரேஷ் பால், (1999). *மீடியா உலகம்.* தீபிகா. சென்னை.
4. செல்வம். கோ, (1992). *உங்கள் வானொலி*, புவனம் பதிப்பகம். சென்னை.
5. பவா.சமத்துவன், (2007). *தொலைக்காட்சி உலகம்*, புதுயுகம் செய்முறை செம்மையாக்கம். சென்னை.

கற்றலின் பயன்கள் வரிசை எண்	கற்றலின் பயன்கள்	Bloom's Level
கற்றலின் பயன்கள் -1	ஊடகங்கள் திறன்மிக்க கருத்துப் பரிமாற்றத்தில் செயல்படும் முறையை அறிந்து கொள்வர்.	K2
கற்றலின் பயன்கள் -2	சமூக ஊடாட்டத்தின் வாயிலாக பண்பாட்டைக் கட்டமைப்பதில் ஊடகங்களின் செயல்பாட்டைப் புரிந்து கொள்வர்.	K4
கற்றலின் பயன்கள் -3	ஊடகங்களில் வெளிவரும் செய்திகளின் மெய்மைத் தன்மையை விமர்சன ரீதியில் மதிப்பிடுவர்.	K3
கற்றலின் பயன்கள் -4	ஊடகங்களின் செயல்பாட்டு முறைகளை பகுத்து ஆராய்வர்	K2
கற்றலின் பயன்கள் -5	நவீன தகவல் தொழில்நுட்ப ஊடகங்களில் செயல்முறை அறிவோடு ஊடகவியலாளராகப் பணி வாய்ப்பினைப் பெறுவர்.	K2

நாடகவியல்
UTAO511

பருவம் : ஐந்தாம் பருவம் **தரம் : 04**
பிரிவு : துறைசார் விருப்பப்பாடம் - I **மணிநேரம் / வாரம் : 05**
வகுப்பு : III B.A. தமிழ் **மொத்த மணிநேரம் : 65**

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் -1	நாடகத்தின் தோற்றம் வளர்ச்சியினை அறியச் செய்தல்.
கற்றலின் நோக்கம் -2	நாடகம் படைக்கும் திறன்களைப் புரியச்செய்தல்.
கற்றலின் நோக்கம் -3	பல்வகையான நாடக வகைகளை மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் -4	மேலைநாட்டு நாடகக் கோட்பாடுகளை அறிந்து தமிழ் நாடகக்கலையில் பொருத்திப் பார்த்து பகுத்தாராயச் செய்தல்.
கற்றலின் நோக்கம் -5	நாடக நுணுக்கங்களையும் நடிப்புத் திறன்களையும் வளர்த்துக் கொண்டு நாடக ஆசிரியராக அல்லது நடிகராக தம்மை வளர்த்துக் கொள்ள செய்வர்.

அலகு 1 நாடகத்தின் தோற்றம் வளர்ச்சி **15 மணிநேரம்**

நாடகம் உருவாக்கமும் செயல்பாடும் - நாடகவழக்கு - தொல்காப்பியர் காட்டும் நாடக வழக்கு - மெய்ப்பாடுகள், சிலப்பதிகாரம் - வேத்தியல் பொதுவியல் - நாடக வர்ணனை - நாடக அரங்கம் - நடிப்பு விளக்கம் - நடிப்பியல் வரைவிலக்கணம் - நடிப்பினை மதிப்பிடும் அளவு கோள்கள் - நடிகர்களும் நாடக ஒருமைப்பாடும் - தமிழ் நாடக ஆசிரியர்கள் - சங்கரதாஸ் சுவாமிகள், பம்மல் சம்பந்த முதலியார், மனோகர், விஸ்வநாததாஸ், டி.கே.எஸ்.சகோதரர்கள்.

அலகு 2 நாடக வகைகள் **15 மணிநேரம்**

நாடக வகைகள் - புராண நாடகங்கள் - வரலாற்று நாடகங்கள் - கவிதை நாடகங்கள் - சமூக நாடகங்கள் - குழந்தைகளுக்கான நாடகங்கள் - ஓரங்க நாடகங்கள் - அமெச்சூர் நாடகங்கள் - புதிய உத்தி நாடகங்கள் - வானொலி, தொலைக்காட்சி நாடகங்கள்.

அலகு 3 நாடகக் கூறுகள் **10 மணிநேரம்**

அரங்கம் - உருவாக்கமும் செயல்பாடும் - கிரேக்க அரங்கு - சீன அரங்கு - ஜப்பானிய அரங்கு – வடமொழி - அரங்கு - தமிழக அரங்கு – மேலைநாட்டு அரங்க இயக்கங்கள் - இருபதாம் நூற்றாண்டில் தமிழக அரங்குகள் - தற்கால நாடக அரங்குகள்.

அலகு 4 நாடக ஒப்பனைகள் **15 மணிநேரம்**

ஒப்பனை - விளக்கம் - இன்றியமையாமை - ஒப்பனை வகைகள் - நாடக உடைகள் - அரங்க ஒலி - ஒளி அமைப்புகள் - ஒளி விளக்கின் தன்மைகள் - விளக்கின் வகைகள் - நாடகத்தில் ஒலி அமைப்பு - இன்றியமையாமை - பின்னணி ஒலிகள்.

அலகு 5 நவீன நாடகங்கள் **10 மணிநேரம்**

1. நா. முத்துசாமி - இந்திரா பார்த்தசாரதி - அ. ராமசாமி - மு. ராமசாமி

பாட நூல்கள்

1. சக்திபெருமாள் (1990). தமிழ் நாடக வரலாறு. ஜி.பதிப்பகம். மதுரை.
2. அழகப்பன். ஆறு, (1987), *தமிழ் நாடகத் தோற்றமும் வளர்ச்சியும்*, அண்ணாமலைப் பல்கலைகழகம், சிதம்பரம்.
3. சக்திபெருமாள், (1991), *அரங்கக்கலை*, ஜி.பதிப்பகம், மதுரை.

பார்வை நூல்கள்

1. சண்முகம், டி.கே. (1967). நாடகக்கலை. மீனாட்சி கலா நிலையம். சென்னை.
2. சண்முகம், டி.கே. (1972). எனது நாடக வாழ்க்கை. ஔவை அகம். சென்னை.
3. சூரியநாராயண சாஸ்திரி, வி.கோ. (1956). நாடகவியல். வி.ஆ.சுவாமிநாதன் பதிப்பு. மதுரை.

கற்றலின் பயன்கள் வரிசை எண்	கற்றலின் பயன்கள்	Bloom's Level
கற்றலின் பயன்கள் -1	நாடகத்தின் தோற்றம் வளர்ச்சியினை அறிந்து கொள்வர்.	k1
கற்றலின் பயன்கள -2	நாடகத்தின் வகைமைகளைப் புரிந்து கொள்வர்.	k1
கற்றலின் பயன்கள் -3	பல்வகையான நாடக அரங்கங்களை அறிந்து தெளிவு பெறுவர்.	k1
கற்றலின் பயன்கள் -4	மேலைநாட்டு நாடகக் கோட்பாடுகளை அறிந்து தற்கால நாடகக்கலையில் பொருத்திப் பார்த்து பகுத்தாராய்வர்.	k6
கற்றலின் பயன்கள் -5	நாடக நுணுக்கங்களையும் நடிப்புத் திறன்களையும் வளர்த்துக் கொண்டு நாடக ஆசிரியராக அல்லது நடிகராக தம்மை வளர்த்துக் கொள்வர்.	k5

பெண்ணியம்
UTAO512

பருவம் : ஐந்தாம் பருவம் **தரம் : 04**
பிரிவு : துறைசார் விருப்பப்பாடம் - I **மணிநேரம் / வாரம் : 05**
வகுப்பு : III B.A. தமிழ் **மொத்த மணிநேரம் : 65**

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் -1	பெண்ணியத்தின் நோக்கம், தேவைகளை அறியச் செய்தல்.
கற்றலின் நோக்கம் -2	பெண்ணிய படைப்புகளின் வாயிலாக பெண்ணியத்தின் இயல்புகளைப் புரியச்செய்தல்.
கற்றலின் நோக்கம் -3	பெண் உரிமைக்கான பெண்ணியப் படைப்பாளர்களின் செயல்பாடுகளை அறிந்து மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் -4	பெண்ணிய கோட்பாடுகளை அறிந்து வாழ்வில் பொருத்திப் பார்த்து பகுத்தராயச் செய்தல்.
கற்றலின் நோக்கம் -5	பெண்ணியக் கோட்பாடுகளை வாழ்க்கையில் பொருத்திப் பார்த்து ஆண்பெண் சமத்துவத்தினை சமூகத்தில் உருவாக்கச் செய்தல்.

அலகு 1 பெண்ணியம் அறிமுகம் **15 மணி நேரம்**

பெண்ணியம் - சொற்பொருள் விளக்கம் - மேலை நாடுகளில் பெண்ணியத்தின் தோற்றமும் வளர்ச்சியும் - பெண்ணியம் தோன்றக் காரணங்கள் - பெண்களுக்கு வாக்குரிமை - பெண்ணியத்தின் தேக்கநிலை - பெண்விடுதலை இயக்கம் - பென்ணியத்தின் வளர்ச்சி.

அலகு 2 பெண்ணியம் தோற்றம் வளர்ச்சி **15 மணி நேரம்**

இந்தியாவில் பெண்ணியத்தின் தோற்றமும் வளர்ச்சியும் - இந்தியப் பெண்ணியம் அறிமுகம் - இந்தியப் பெண்களின் சமூக நிலை - முன்முயற்சிகளும் சமூக மாற்றங்களும்.

அலகு 3 பெண்ணிய சட்டங்களும் அமைப்புகளும் **10 மணி நேரம்**

பெண்களும், சட்டங்களும் - பெண்கள் முன்னேற்றத்தில் அரசின் கொள்கைகள் - பெண்ணியக் கோட்பாடுகளும், வகைகளும் - மிதவாதம் - மார்க்சிசம் - சோஷலிசம் - தீவிரவாதப் பெண்ணியம் - மகளிர் தற்சார்பு அமைப்புகள்.

அலகு 4 பெண்ணியக் கவிதைகள் **10 மணி நேரம்**

கவிதை - ஜெ. செல்வகுமாரி - பெண்ணியம் பேசுகிறேன் - பாரதிக்கு வணக்கம் - நாணயமற்ற உறவுகள் - இலக்கியத்தில் பெண்கள் - அடையாளம் வேண்டுமோ? - கனிமொழி - கருவறை வாசனை - என் வீடு - தாமரை - ஒரு கதவும் கொஞ்சம் கள்ளிப்பாலும் - விடியல் - பொது மகளிர்.

அலகு 5 பெண்ணியச் சிறுகதை மற்றும் நாவல் **15 மணி நேரம்**

அம்பை - காட்டில் ஒரு மான் - அ. வெண்ணிலா - இந்திர நீலம் - பாமா - கருக்கு (நாவல்)

பாடநூல்கள்

1. முத்துச்சிதம்பரம், (2010), *பெண்ணியம் தோற்றமும் வளர்ச்சியும்*, திருநெல்வேலி.
2. பிரேமா. இரா, (2021), *பெண்ணியம்*, தமிழ்ப் புத்தகாலயம், சென்னை.
3. செல்வகுமாரி. ஜெ, (2005), *பெண்ணியம் பேசுகிறேன்*, நியூ செஞ்சுரி புக்ஹவுஸ், சென்னை.
4. கனிமொழி, (2012), *கருவறை வாசனை*, வ.உ.சி. நூலகம், சென்னை.
5. கவிஞர். தாமரை, (2012), *ஒரு கதவும் கொஞ்சம் கள்ளிப்பாலும்*, குமரன் பதிப்பகம், சென்னை.

பார்வை நூல்கள்

1. மங்கை, (2005), *பெண்ணியம் அரசியல்*, பரிசல் பதிபகம், சென்னை.
2. வெண்ணிலா. அ, (2020), *இந்திர நீலம்*, அகநி வெளியீடு, சென்னை.
3. பாமா, (1992), *கருக்கு*. காலச்சுவடு பதிப்பகம், சென்னை.

கற்றலின் பயன்கள் வரிசை எண்	கற்றலின் பயன்கள்	Bloom's Level
கற்றலின் பயன்கள் -1	பெண்ணியத்தின் நோக்கம், தேவைகளை அறிந்துக் கொள்வர்.	K1
கற்றலின் பயன்கள -2	பெண்ணிய படைப்புகளின் வாயிலாக பெண்ணியத்தின் இயல்புகளைப் புரிந்துக் கொள்வர்.	K2
கற்றலின் பயன்கள் -3	பெண் உரிமைக்கான பெண்ணியப் படைப்பாளர்களின் செயல்பாடுகளை அறிந்து மதிப்பிட்டு ஆராய்வர்.	k1
கற்றலின் பயன்கள் -4	பெண்ணிய கோட்பாடுகளை அறிந்து வாழ்வில் பொருத்திப் பார்த்து பகுத்து ஆராய்வர்.	K4
கற்றலின் பயன்கள் -5	பெண்ணியக் கோட்பாடுகளை வாழ்க்கையில் பொருத்திப் பார்த்து ஆண்பெண் சமத்துவத்தினை சமூகத்தில் உருவாக்குவர்.	K5

சிந்தனையியல்
UTAO513

பருவம் : ஐந்தாம் பருவம் **தரம் : 04**
பிரிவு : துறைசார் விருப்பப்பாடம் - I **மணிநேரம் / வாரம் : 05**
வகுப்பு : III B.A. தமிழ் **மொத்த மணிநேரம் : 65**

கற்றலின் நோக்கம் வரிசை எண்	கற்றலின் நோக்கம்
கற்றலின் நோக்கம் -1	மனித சமூக சிந்தனையின் தோற்றம் குறித்து அறியச் செய்தல்.
கற்றலின் நோக்கம் -2	இந்திய ஒருமைப்பாட்டினை சிந்தனைகளின் வாயிலாக புரியச்செய்தல்.
கற்றலின் நோக்கம் -3	மேலைநாட்டு சிந்தனைகளுடன் இந்தியச் சிந்தனைகளை மதிப்பிடச் செய்தல்.
கற்றலின் நோக்கம் -4	மேலைநாட்டு அறிஞர்களின் சமூகம் சார்ந்த சிந்தனைக் கோட்பாடுகளை அறிந்து தற்கால வாழ்வில் பொருத்திப் பார்த்து பகுத்தராயச் செய்தல்.
கற்றலின் நோக்கம் -5	இந்திய அறிஞர்களின் சிந்தனைகளை அறிந்து சுயமாக சிந்தனைகளை வெளிப்படுத்தும் திறன் பெறச் செய்தல்.

அலகு 1 சிந்தனையியல் தோற்றம் வளர்ச்சி **10 மணி நேரம்**

சிந்தனையியல் விளக்கம் - மேலைநாட்டுச் சிந்தனையாளர்கள் - சாக்ரடீஸ் அரிஸ்டாட்டில் - பிளாட்டோ - தமிழில் சிந்தனையியல் வளர்ந்த வரலாறு - திருவள்ளுவர் சிந்தனைகள் - சித்தர்களின் சமூகச் சிந்தனைகள் - வள்ளலார் சிந்தனைகள்.

அலகு 2 காந்தியச் சிந்தனைகள் **10 மணி நேரம்**

அகிம்சை - சமயக்கோட்பாடு - பெண்கள் - சமுதாய ஒற்றுமை - அரசியல் பொருளாதார விடுதலை

அலகு 3 அம்பேத்கரிய சிந்தனைகள் **15 மணி நேரம்**

அம்பேத்காரின் அனுபவங்களும் சிந்தனைகளும் - மதம் சாதி பற்றிய சிந்தனைகள் - அரசியல் அமைப்புக் குறித்த சிந்தனைகள்.

அலகு 4 காரல் மார்க்ஸ் சிந்தனைகள் **15 மணி நேரம்**

மார்க்சிய கோட்பாடுகள் - சமூக பொருளாதார மாற்றங்கள்.

அலகு 5 பெரியாரிய சிந்தனைகள் **15 மணி நேரம்**

மதம் - கடவுள் - மொழி - சாதி - பெண்ணடிமை - சமுதாய ஏற்றத்தாழ்வு.

பாடநூல்கள்

1. சாமிநாதசர்மா. வெ, (2017). *காரல் மார்க்ஸ்*, கவிதா பதிப்பகம், சென்னை.
2. ம.பொ.சி. (2017), *வள்ளலார் கண்ட ஒருமைப்பாடு*, கௌரா பதிப்பகம், சென்னை.
3. ஆனைமுத்து. வே, (2010), பெரியாரின் சிந்தனைகள் (மூன்று தொகுதிகள்), பெரியார் - நாகம்மை அறக்கட்டளை, சென்னை.

பார்வை நூல்கள்

1. காந்தியடிகள், (2016), *சத்திய சோதனை*, சப்னா புக்ஹவுஸ், சென்னை.

கற்றலின் பயன்கள் வரிசை எண்	கற்றலின் பயன்கள்	Bloom's Level
கற்றலின் பயன்கள் -1	மனித சமூக சிந்தனையின் தோற்றம் குறித்து அறிந்து கொள்வர்.	K1
கற்றலின் பயன்கள -2	இந்திய ஒருமைப்பாட்டினை சிந்தனைகளின் வாயிலாக புரிந்து கொள்வர்.	K2
கற்றலின் பயன்கள் -3	மேலைநாட்டு சிந்தனைகளுடன் இந்தியச் சிந்தனைகளை மதிப்பிடுவர்.	k1
கற்றலின் பயன்கள் -4	மேலைநாட்டு அறிஞர்களின் சமூகம் சார்ந்த சிந்தனைக் கோட்பாடுகளை அறிந்து தற்கால வாழ்வில் பொருத்திப் பார்த்து பகுத்தராய்வர்.	K4
கற்றலின் பயன்கள் -5	இந்திய அறிஞர்களின் சிந்தனைகளை அறிந்து சுயமாக சிந்தனைகளை வெளிப்படுத்தும் திறன் பெறுவர்.	K5

அகமதிப்பீட்டிற்கான உட்கூறுகள்

இளங்கலைத்தமிழ்

பருவம்	பிரிவு	வகை	பாடக் குறியீடு	பாடத்தலைப்பு	III உட்கூறுகள்	IV உட்கூறுகள்
V	III	முதன்மைப்பாடம் - XIII	UTAM505	கவின் கலைகள்	ஒப்படைப்புத்தாள்	அட்டவணை தயாரித்தல்
		முதன்மைப்பாடம் - XIV	UTAM506	சமய இலக்கியம்	ஒப்படைப்புத்தாள்	கருத்தரங்கம்
		முதன்மைப்பாடம் - XV	UTAM509	நம்பியகப்பொருள்	ஒப்படைப்புத்தாள்	இலக்கண வினாடி வினா
		முதன்மைப்பாடம் - XVI	UTAP501/ UTAM510	திட்டக்கட்டுரை / ஊடகத்தமிழ்	தகவல் அட்டவணை	தலையங்கம் எழுதுதல்
	IV	துறைசார் விருப்பாடம் - I	UTAO511 UTAO512 UTAO513	நாடகவியல் பெண்ணியம் சிந்தனையியல்	ஒப்படைப்புத்தாள்	கருத்தரங்கம்

DEPARTMENT OF ENGLISH

PREAMBLE

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

PROGRAMME PROFILE B.A. ENGLISH

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No. **Upon Completion of the Programme, the Students will be able to**

PSO -1 Understand the structureand function of grammatical units in English.
PSO -2 Apply the Critical Pondering in different Forms of Literature.
PSO -3 Analyze the Socio-Political aspects in Literary Texts.
PSO -4 Pronounce and Transcribe the Sounds of English Language with Perfect Stress and Intonation
PSO -5 Construct the Cultural Context in different Literature and Analyze the LiteraryText.

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, UENM403 UENM305	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/ UFRL201	Basic Tamil II Advanced Tamil II Hindi II/ French II	UTAL203/ UTAL204	5	3/4
	II	English/AECC-I	UCEL209/ 210	English for Communication (Stream – I) English for Communication (Stream – II)	-	5	3/4

II	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	-	30 (Hour)	-/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 Eductaion/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 project	-	30 (Hour)	-/1
	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	UENO602	Comprehensive Viva Voce	UENC601	-	1
		Major Elective/DSE II	UENO605 /606	Creative Writing/ English for Competitive Exams	-	5	4
		INTERNSHIP	UENI201	Internship/Field work /Field project	-	30 (Hour)	-/1
	IV	Soft Skill/SEC		Career skill/ Foundation course c Entrepreneurship and Innovation		2	1
	V	Extension Activity/ Physical Education				-	-/2
		Extension Activity		Rural Outreach Programme		-	-/1
				TOTAL		**30**	**26/30**
				GRAND TOTAL		**192**	**148/166**

NON MAJOR ELECTIVES

Semester	Part	Category	Course Code	Course Title	Contact Hour / week	Credit
II	IV	NON MAJOR ELECTIVES	UENE202	Business Writing	3	2
			UENE203	Film Studies		
			UENE204	Public Speaking		
IV	IV	NON MAJOR ELECTIVES	UENE401	One Act Play	3	2
			UENE402	Media Writing		
			UENE403	Media Studies		
			UENE404	News Reporting: Theory and Practice		

MAJOR ELECTIVES

Semester	Part	Category	Course Code	Course Title	Contact Hour/week	Credit
V	III	MAJOR ELECTIVES	UENO501	Detective Fiction	5	4
			UENO502	World Classics in Translation		
VI	III	MAJOR ELECTIVES	UENO605	Creative Writing	5	4
			UENO606	English for Competitive Exam		

EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Course Code	Course Title	Contact Hour/week	Credit
II	III	Core	UENI201	Summer Internship	-	1
IV	III	Core	UENI401	Summer Internship	-	1
V	III	Core	UENS502	Practice of Translation (Self – Study)	26	1
VI	III	Core	UENP601	Mini-Project	26	1

EXPERIENTIAL LEARNING (MANDATORY)

Semester	Part	Category	Course Code	Course Title	Collaborating Agency	Hours/Days /Months	Mode of Evaluation	Credits Max/Min
III	III	Allied	UENA304	Introduction to English Language Teaching	MSME	2 days	Reflection	1

POPULAR LITERATURE

UENM516

Semester : V **Credits : 5**
Category : Major Core IX/ DSC- IX **Hours/Week : 6**
Class & Major : III BA English **Total Hours : 78**

Course Objectives:

CO.NO	To Enable Students
CO 1	Learn the popular works in literature.
CO 2	Expose the salient features of popular literature.
CO 3	Appreciate the popular works in literature.
CO 4	Analyse the changing trends in English Literature.
CO 5	Develop the skills of relating Popular Literature in reality.

UNIT- I INSPIRATION **15 Hours**

M.Scott Peck : Road Less Travel
Robin Sharama : The Monk who sold His Ferrari

UNIT- II ROMANCE **16 Hours**

Ajay K. Pandey : An Unexpected Gift
Ravinder Singh : I Too Had A Love Story.

UNIT-III FANTASY **16 Hours**

Neil Gaiman : Startust
Richard Bech : Rescue Ferrets at Sea

UNIT-IV AUTOBIOGRAPHY **16 Hours**

Malala Yousafzai : I Am Malala
Nadia Murad : The Islamic State

UNIT-V THRILLER **15 Hours**

Dan Brown : The Da Vinci Code

David Baldacci **:** Tuesday with Morrie

Text Books

- Albom. M, (2009), *Tuesdays with Morrie: An old man, a young man, and life's greatest lesson,* Hachette UK.
- Bond. A. C, (2003, September), *Dan Brown. The Da Vinci Code. In Phi Kappa Phi Forum (Vol. 83, No. 4, pp. 42-44),* Honor Society of Phi Kappa Phi.

R**eference Books**

- Peck. M. S, (2002), *The road less traveled: A new psychology of love, traditional values, and spiritual growth*, Simon and Schuster.
- Sharma. R, (2003), *The Monk Who Sold His Ferrari: A Fable about Fulfilling Your Dreams & Reaching Your Destiny*, Jaico Publishing House.
- Singh. R, (2017), *I Too Had a Love Story*, Random House.
- Gaiman. N, (2010), *Stardus*, Hachette UK.

Course Outcomes:

CO. NO	The Students will be able to	Cognitive Level
CO 1	Describe the new features of literature	K1
CO 2	Understand the changing trends in English literature	K2
CO 3	Appreciate the works in literature from the point of view of the refugees	K3
CO 4	Analyze the popular works in literature.	K4
CO 5	Formulate new trends in popular literature	K5

AUSTRALIAN & CANADIAN LITERATURE

UENM517

Semester : V **Credits : 5**

Category : Major Core X/ DSC- X **Hours/Week : 6**

Class & Major : III BA English **Total Hours :78**

Course Objectives:

CO No.	To enable the students
CO1	Recognize the major trends in Australian and Canadian literature.
CO2	Interpret the ethnic and cultural diversity of Canada and Australia.
CO3	Apply the various concepts and techniques in Australian and Canadian literature.
CO4	Evaluate the concept of culture in Australian and Canadian literary texts.
CO5	Design research papers in Australian and Canadian literature

UNIT I INTRODUCTION **10 Hours**

An Introduction to Australian & Canadian Literature – Life & History of Australia & Canada- Landscape & Environment- Isolation & Estrangement – Identity of Settlers-Migrant Writing- Border Issues-Multiculturalism –Urban vs Rural- Archetypes- Explorations-Travel Narratives- Poetry- Short Story- Drama & Fiction.

UNIT – II POETRY **16 Hours**

A.D. Hope	:	Moschus Moschiferous: A Song for St. Cecilia's Day.
Kenneth Slessor	:	Country Towns
Judith Wright	:	Woman to Man
Himani Bannerji	:	Wife
Margaret Atwood	:	The Rest
P.K. Page	:	First Neighbors

UNIT – III SHORT STORY **14 Hours**

Tim Winton	:	Neigbours
Maxine Beneba Clarke	:	Foreign Soil
Alice Munroe	:	Face
Stephen Leacock	:	My Financial Career

UNIT – IV DRAMA **15 Hours**

George Ryga	:	The Ecstasy of Rita Joe
Ray Lawler	:	Summer of the Seventeenth Doll

UNIT - V FICTION **10 Hours**

Sally Morgan	:	My Place
Sinclair Ross	:	As for Me and My House

Text Books

- Brown, Russell M. and Donna Bennett, ed. (1982), *An Anthology of Canadian Literature in English. 2 vols*. Oxford UP, Toronto.
- Webby, Elizabeth, (2000), *The Cambridge Companion to Australian Literature*., Cambridge UP, Cambridge.

Reference Books

- Kinsella, John. (2008). *The Penguin Anthology of Australian Poetr*, Penguin, Melbourne.
- Sarwal, Amit and Reema Sarwal, eds. (2009). *Reading Down Under: Australian Literary Studies Reader,* SSS Publishers, New Delhi.
- Wilde. H, William ed. (1991). *The Oxford Companion to Australian Literature*, OUP, New Delhi.
- Moss, John, *Reader's Guide to a Canadian Novel. (1987)*, McClelland & Stewart., (2nd ed) Canada.

e –Resources

- https://canlitguides.ca/nadine-fladd/an-introduction-to-the-short-story-in-canada-reading-alice-munros-who-do-you-think-you-are/
- https://digital.library.adelaide.edu.au/dspace/bitstream/2440/72181/8/02whole.pdf
- https://scindeks-clanci.ceon.rs/data/pdf/0354-3293/2012/0354-32931202113L.pdf
- https://www.youtube.com/watch?v=JrmI0sln4VU
- https://www.youtube.com/watch?v=2qDSRekRPh4

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO1	Recall the effects of colonization in Australian and Canadian literature.	K1
CO2	Understand the familiar Australian literary works from the early nineteenth century to the present.	K2
CO3	Distinguish theoretical approaches to literature and race, sexuality and cultural difference.	K3
CO4	Analyze Australian and Canadian literature in relation to other literature.	K5
CO5	Examine the major traumas of land and its boundaries in Australian and Canadian literature.	K5
CO6	Develop the socio-political concerns of Australia and Canada through the genres of literature.	K6

LITERARY CRITICISM

UENM 518

Semester : V **Credit : 6**
Category : Major Core XI/ DSC- XI **Hours/Week : 6**
Class & Major : III BA English **Total Hours : 78**

Course Objectives:

CO No.	To enable the students
CO1	Define critical aspects in Literature.
CO2	Compare the various literary pieces and evaluate critically.
CO3	Apply the various concepts and techniques used in Literary text.
CO4	Evaluate the structure and language of the text.
CO5	Produce the text using literary theories.

UNIT- I INTRODUCTION **15 Hours**

Structuralism, Post- Structuralism, Deconstruction, Feminism, Eco- Criticism – New Historicism.

UNIT –II TRADITION AND FORMALISM **15 Hours**

Matthew Arnold – Functions of Criticism in the Present Times

T.S.Eliot – Tradition and Individual Talents

UNIT- III PSYCHOANALYTICAL CRITICISM **15 Hours**

Sigmund Freud – Creative Writers and Daydreaming

Jacques Lacan – The Mirror Stage

UNIT- IV FEMINISTIC CRITICISM **15 Hours**

Virginia Woolf - A Room of one's Own

Kate Miller - Sexual Politics

UNIT -V POST- COLONIAL CRITICISM **15 Hours**

Chinua Achebe - An image of Africa: Racism in Conrad's Heart of Darkness

Gayathri Spivak - Can the Subaltern Speak?

Text Books

- Eliot. T.*S, Tradition and the Individual Talent in The Egoist at the Modernist Journals Project: Part I* in vol. 6, no. 4 (Sept. 1919), Parts II-III in vol. 6, no. 5 (Dec. 1919)
- Millett, Kate, 1970 (2000), *Sexual Politics,* University of Chicago Press. pp. ix–x
- Woolf, Virginia (1935) [1929*]. A Room of One's Own*, London: Hogarth Press.
- Spivak, Gayathri, *Can the Subaltern Speak?,* Columbia University Press, 2010

Reference Books

- Evan, Dylan. *An Introductory Dictionary of Lacanian Psychoanalysis*, London: Routledge Publication p.193.
- Joseph J. Sandler ed, *On Freud's Creative Writers and Daydreaming (2013)*
- Longworth, Deborah (1 March 2017). *Virginia Woolf and Feminist Aesthetics, lecture on A Room of One's Own*, University of Birmingham.
- Hudson, William Henry, *An introduction to study of literature*, Emerald publications: New Delhi, 2002.
- Gilbert. S. M, &Gubar, S. (2020).*The Madwoman in the Attic: the woman writer and the nineteenth century literary Imagination*, Yale University Press.
- Arnold, Matthew. *Essays in Criticism*, Macmillan and Company, 1865.
- Barry, Peter. *Beginning Theory: An Introduction to Literary & Cultural Theories*, 2nded., Manchester: Manchester University Press, 2004.
- Achebe, Chinua. *An Image of Africa: Racism in Conrad's Heart of Darkness,* Oxford: Blackwell, 1977.

e- Resources

- Https://publiclibraryu.kthe functions of literary criticism in the present times.
- https://studymoose.com>Achebe's the image of Africa
- https://www.enotes.com> madwoman in the attic

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO1	Describe the various methods and technique used by the critics.	K1
CO2	Explain the traditional framework of literary criticism.	K2
CO3	Illustrate the analysis of literary text	K3
CO4	Differentiate the function and practice of different literary methodologies.	K4
CO5	Evaluate the literature in accordance with race, sexuality and cultural difference	K5
CO6	Create new work by using various literary techniques	K6

DETECTIVE FICTION

UENO501

Semester : V **Credit : 4**
Category : Major Elective I /DSE- I **Hours/Week : 5**
Class & Major: III BA English **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO1	Understand mysteries and how it is solved in literatures.
CO2	Describe the techniques used in Detective Fiction.
CO3	Apply the problem solving strategies inherent from investigating a case in crime fiction.
CO4	Implement the problem-solving techniques in social issues
CO5	Construct the tradition of detective fiction

UNIT- I **16 Hours**

Introduction, Definition, Types of detective fiction**(**Hardboiled, Inverted, Police procedural, Historical mystery, Cozy mystery, Serial killer mystery, Legal thriller, Locked room mystery)

UNIT- II **15 Hours**

Raymond Chandler : The Long Goodbye

UNIT- III **15 Hours**

Walter Mosley : Devil in a Blue Dress

UNIT- IV **16 Hours**

Arthur Conon Doyle : A Study in Scarlet

UNIT- V **16 Hours**

Agatha Christie : The Murder at the Vicarage

Text Books

- Raymond Chandler. *The Long Goodbye by Raymond Chandler*, U.K. : Penguin Books Ltd., UK.
- Walter Mosley. *Devil in a Blue Dress* , WW Norton & Co., NY, USA.
- Arthur Conan Doyle (2021). *A Study in Scarlet*, Storymirror Infotech Pvt. Ltd., India.
- Agatha Christie (2011 - 2004). *The Murder at the Vicarage by Agatha Christie*, Harper, USA.

Reference Book

- Frank, Lawrence. (2009). *Victorian Detective Fiction and the Nature of Evidence: The Scientific Investigations of Poe, Dickens, and Doyle,* Edition. Palgrave Macmillan. New York.
- M.H. Abrams and Geoffrey Galts (2015). *A Glossary of Literary Terms,* India: Cengage Learning India Pvt. Limited: 11th Edition. India.

e - Resources

- http://www.editoreric.com/greatlit/books/Long-Goodbye.html
- https://library.buffalo.edu/specialcollections/rarebooks/kelley/plotsummaries/detail.html?ID=9
- https://www.supersummary.com/devil-in-a-blue-dress/summary/
- https://phdessay.com/a-critical-analysis-on-a-study-in-scarlet-by-sir-arthur-conan-doyle/
- https://fictionfanblog.wordpress.com/2018/09/24/the-murder-at-the-vicarage-miss-marple-by-agatha-christie/

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO1	Understand the historical and social events in the fiction	K1
CO2	Describe the structure of detective stories in reference with the historical events	K2
CO3	Differentiate the different plots and techniques used by authors	K3
CO4	Demonstrate the depiction of law and legal system in literature	K4
CO5	Develop the habit of investigating and problem solving skills	K6

WORLD CLASSICS IN TRANSLATION

UENO502

Semester : V **Credit : 4**
Category : Major Elective II /DSE- II **Hours/Week : 5**
Class & Major : III BA English **Total Hours : 65**

Course Objectives:

CO No	To enable the students
CO1	Define perception of the classical texts amidst the whole gamut of world literatures.
CO2	Describe the richness of the culture and tradition in World Classic Literature
CO3	Compare literary genres and periods.
CO4	Defend the essence of exposing to different cultures and background
CO5	Develop the knowledge of the major literary movements of the period and to apply in translation oriented works

UNIT- I POETRY **15 Hours**

Rabindranath Tagore : Upagupta
Salma : Green Angel
Bertolt Brecht : The Burning of the Books
Ovid's Metamorphoses, Selections : Bacchus'(Book III) lines from 512-733

UNIT - II PROSE **15 Hours**

The Book of Mathew : Good News Bible (Chapter1-8)

UNIT- III SHORT STORIES **15 Hours**

Leo Tolstoy : The Empty Drum
Fyodor Dostoyevsky : A Christmas tree and a Wedding

UNIT- IV DRAMA **17 Hours**

Sophocles : Oedipus Rex
Euripides : Medea

UNIT –V FICTION **16 Hours**

Alexander Dumas : The Count of Monte Cristo

Text Books

- Guy De Maupaussant (2014). *Masterpieces of World Fiction: Selected Stories*, India: Rupa Publications India.
- Leo Tolstoy (2014). *Selected Stories by Leo Tolstoy (Masterpieces of World Fiction)*, Rupa Publications India.
- Alexandre Dumas (1802-1870). *The Count of Monte Cristo*, Penguin Books, 2001.
- Sophocles., & Fagles, R. (1994). *The three Theban plays*. New York: Penguin

Reference Books

- TheoD'hean, César Domínguez, Mads Rosendahl Thomsen. *World Literature Reader: A Reader* , United Kingdom: Taylor & Francis Ltd.
- Sarah Lawall (2010). *Reading World Literature: Theory, History, Practice* , University of Texas, USA.
- J.M. Cohen (1961). *A History of Western Literature*, J.M.Cohen. Great Britain: H4o Books, U.K.
- Blackman (2021): *1789:The French Revolution Begins by Blackman,* India Cambridge University Press, India.
- Walter Cohen (2018). *A History of European Literature: The West and the World from Antiquity to the Present,* Edinburgh University Press, India.
- Malcolm Bradbury and James McFarlane (1991). *Modernism: A Guide to European Literature 1890-1930*, Penguin Random House India Pvt. Ltd., India.

e- Resources

- https://www.poetryfoundation.org/poems
- https://archive.org/details/mghadtaorcloudm00wilsgoog/page/n136/mode/2up
- https://www.thefreshreads.com/the-blizzard/
- https://www.poetrynook.com/poem/returning-live-country
- https://www.berfrois.com/2013/12/two-christmas-short-stories-fyodor-dostoyevsky/

Course Outcomes:

CO No	The student will be able to	Cognitive Level
CO1	Recognize the historical and cultural knowledge of the past	K1
CO2	Understand world classic literature	K2
CO3	Interpret original ideas and philosophies used in World Classics.	K3
CO4	Analyse early literature, writers and their literary styles	K4
CO5	Formulate the function and practice of different literary methodologies.	K6

.

III AND IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course code	Course Title	Component – III	Component – IV
V	Major Core IX/ DSC	UENM516	Popular Literature	Album Making	Poster Presentation
	Major Core X/ DSC	UENM517	Australian and Canadian Literature	Seminar	Case Study
	Core Major Core XI/ DSC	UENM518	Literary criticism	Paper Presentation	Seminar
	Major Elective/ DSE I	UENO501/ UENO502	Detective Fiction/ World Classics in Translation	Assignment	Paper Presentation

DEPARTMENT OF BUSINESS ADMINISTRATION

PREAMBLE

UG: Programme Profile and Syllabi of courses offered in semester V along with its Evaluation Components (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	Identify the need to adapt business practices to the opportunities and challenges of an evolving global environment.
PSO-3	Identify, evaluate, analyze, interpret and apply information to address problems and make reasoned decisions in a business context.
PSO-4	Communicate in a business context in a clear, concise, coherent and professional manner.
PSO-5	Demonstrate the ability to apply professional standards, theory, and research to address business problems within specific concentrations.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hours/ Week	Credit Min/Max
I	I	Languages/ AECC-II	UTAL107/ UTAL108	Basic 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	5	4
		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	**35**	**24/26**

II	I	Language AECC –II	UTAL207/ UTAL208 UFRL202/ UHIL 202	Basic 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	4	3
		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	**35**	**25/28**
III	III	Major Core VII(DSC)	UBAM308	Marketing Management	UBAM402	5	5
		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**	**24/25**
IV	III	Major Core XI(DSC)	UBAM405	Production & Materials Management	-	4	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	5
		Major Core XIV (DSC)	UBAR401	Workshop On Creative Thinking Skill	-	1	1
		Allied IV	UMAA410	Quantitative Techniques In Business	UMAA505	6	4

IV	III	Internship	UBAI401	Iternship/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	**29**	**25/27**
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**	**26**
VI	III	Major Core X (DSC)	UBAM608	Strategic Management	-	5	4
		Major Core XI (DSC)	UBAM610 UCOM614 UCCM614	Financial Management	UBAM610	6	4
		Major Core XII (DSC)	UBAM612	Entrepreneurial Development	-	6	5
		Major Core XXIII (DSC)	UBAR601	Workshop On Leadership Skills	-	1	1
		Major Core XXIV (DSC)	UBAM613	Global Business in Management	-	5	4
	IV	Viva Voce	UBAM611	Comprehensive viva	-	-	1
		Internship	UBAI601	Internship/Field work/ Field Project	-	-	-/1 (Extra Credit)
		Major Elective	UBAO609	Consumer Affairs	-	5	4
			UBAO604	Customer Relationship Management			
			UBAO606	Operation Management			
			UBAO607	Consumer Production			
		Soft Skill			-	2	1
	V	Extension activity / Physical Education/NCC				-	-/2
		Extension Programme	UROX601	Rural Outreach Programme (30 Hours)	-	-	-/1 (Extra Credit)
					TOTAL	**30**	**24/28**
					GRAND TOTAL	**189**	**148/160**

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

RESEARCH METHODOLOGY IN BUSINESS

UBAM507

Semester : V **Credit : 03**
Category : Core XIV **Hours/week : 03**
Class & Major : III BBA **Total Hours : 39**

Course Objectives:

CO No.	Course Objectives To enable the students to
CO-1	Understand the role of research in business.
CO-2	Formulate research problem and use different methods of sampling and tools
CO-3	Identify various sources of information for literature review and data collection.
CO-4	Develop an understanding of various research designs and techniques.
CO-5	Design a good quantitative purpose statement and good quantitative research questions and hypotheses.

UNIT - I INTRODUCTION **8Hour**

Definition - Types- Role of research in business studies - Research Problem Identification- Selection -Formulation of research problem - Research design.

UNIT- II FORMULATION OF RESEARCH PROBLEM AND DESIGN **7 Hour**

Research methods - Case study, Survey, Experimental study - Relative advantages.

Sampling Methods- Methods of Data Collection - Observation - Questionnaire-Interview Schedule.

UNIT - III RESEARCH METHODS **8 Hour**

Measurement techniques - Scaling - Meaning – Classification - Techniques. Data collection; Meaning- Methods- Primary and secondary methods.

UNIT - IV ANALYSIS AND INTERPRETATION **8 Hour**

Hypothesis - Meaning- - Types - Characteristics- Formulation - source. Testing of hypothesis. Tools.

UNIT -V WRITING RESEARCH REPORT **8 Hour**

Preliminary steps of writing research report- Essentials of a good report- Style of writing reports tables, figures - format of the report

Note: Only Theory.No Problems.

Text Books

- Ravilochanan, P. (2018).*Research Methodology,*Margham Publications.
- Wiliam G. Zikmund, Barry J.Babin (2017).*Business Research Methods.* South-Western Cengage Learning.

Reference Books

- DonalCopper, R. (2017).*Business research methods*. Tata Mcgraw Hill.
- Kothari, C.R. (2018).*Research methodology.*WishvaPrakashan.
- Gopal M H. (2018). An *Introduction to Research Procedure in Social Sciences.*

E- Resources

- https://www.library.cornell.edu/research/introduction
- www.tru.ca › Open Learning
- www.skillsyouneed.com/learn/research-methods.html

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Identify the overall process of designing a research study from its inception to its report.	K2
CO-2	Apply a range of quantitative and / or qualitative research techniques to business and management problems / issues.	K3
CO-3	Analyse the research problem stated in a study.	K4
CO-4	Evaluate the independent, dependent, and mediating variables in a study.	K5
CO-5	Develop necessary critical thinking skills in order to evaluate different research approaches utilised in the service industries	K6

SERVICES MARKETING
UBAM508

Semester : V **Credit :04**
Category : Core XV **Hours/Week: 05**
Class &Major: III BBA **Total Hours : 65**

Course Objectives:

CO No.	Course Objectives To enable the students to
CO-1	Understand the various concepts of services marketing.
CO-2	Identify critical issues in service design including the nature of service products &markets, building the service model, and creating customer value.
CO-3	Demonstrate ability in evaluating service designs.
CO-4	Develop an understanding of the "state of the art" service management thinking.
CO-5	Assess customer service-oriented mindset.

UNIT - I INTRODUCTION **13 Hour**

Definition – Service Economy – Evolution and growth of service sector – Nature and Scope of Services – Unique characteristics of services - Challenges and issues in Services Marketing.

UNIT - II SERVICES MARKETING OPPORTUNITIES **12 Hour**

Assessing service market potential - Classification of services – Expanded marketing mix – Service marketing – Environment and trends – Service market segmentation, targeting and positioning.

UNIT - III SERVICES DESIGN AND DEVELOPMENT **14 Hour**

Service Life Cycle – New service development – Service Blue Printing – GAP‟s model of service quality – Measuring service quality – SERV-QUAL – Service Quality function development.

UNIT - IV SERVICES DELIVERY AND PROMOTION **13 Hour**

Positioning of services – Designing service delivery System, Service Channel – Pricing of Services, methods – Service marketing triangle - Integrated Service marketing communication.

UNIT - V SERVICES STRATEGIES **13 Hour**

Service Marketing Strategies for health – Hospitality – Tourism – Financial – Logistics - Educational – Entertainment & public utility Information technique Services – case studies

Text Books

- Balaji. B. (2011).*Services Marketing & Management*, S.Chand Publication.
- Alan Wilson, Valarie A. Zeithaml and Mary Jo Bitner. (2014).*Service Marketing*, McGraw-Hill Education.

Reference Books

- Hoffman, (2018).*Marketing of Services*.Cengage Learning, II nd Edition.
- ZeithamlParusuraman and Berry, (2015). *Delivering Quality services*. The free press Macmillian.
- Philip Kotler, (2017).*Marketing of Non ProfitOrganization.* Prentice Hall of India (P) Ltd, India, New Delhi.
- ChiristropherH.Lovelock and JochenWirtz, Services Marketing, Pearson Education, New Delhi,2018.

E- Resources

- www.managementstudyguide.com/definition-and-characteristics-of-servi
- www.businessdictionary.com/definition/service-marketing.html
- www.slideshare.net/ch_paki/services-marketing

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Describe the nature and scope of services marketing	K2
CO-2	Apply relevant services marketing theory, research and analysis skills to contemporary case studies and communicate outcomes employing professional discourse and formats.	K3
CO-3	Analyse the role and relevance of quality in services	K4
CO-4	Evaluate the integrative knowledge of marketing issues associated with service productivity, perceived quality, customer satisfaction and loyalty	K5
CO-5	Develop and justify marketing planning and control systems appropriate to service-based activities	K6

STRESS MANAGEMENT

UBAM510

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

Course Objectives:

CO No.	Course Objectives To enable the students to
CO-1	Understand the nature of stress
CO-2	Know the benefits from methods of managing stress
CO-3	Comprehend the psychological and physiological effects of stress
CO-4	Assess individual risk factors as related to stress (behavioral, emotional, physical, spiritual)
CO-5	Develop the ability to tap personal strengths for preventing stress and achieving meaningful goals

UNIT - I INTRODUCTION TO STRESS **13 Hour**

STRESS: Meaning – Approaches - Environment - Eustress Vs Distress - The Individual and Work-Adaptive and Maladaptive Behavior-Individual and Cultural Differences.

UNIT - II STAGES OF STRESS **12 Hour**

Manifestation of Stress – Stages of Stress - Signs of Stress at Work - Personality Types and Stress.

UNIT III SOURCES OF STRESS **12 Hour**

General Sources of Stress – Stress and Health- Physiological and Psychological Illness- Psychological - Social - Environmental- Academic - Family and Work Stress

UNIT - IV STRESS REDUCTION TECHNIQUES **16 Hour**

Stress Management – Stress Diary - Becoming Change Skilled - Adopting a Healthy Lifestyle - Like Attitude -Thought Awareness- Imaginary (Auto – Genic Therapy) - Learning to Relax Correct Breathing Value and Goal Planning - Time Management – The Ten Commandments for Effective Stress Management for Individuals – Work Life Balance – Stress Busters.

UNIT - V STRESS CONTROLLING TECHNIQUES **12 Hour**

Organization and Stress Management – Remedies the Sign - Approaches to the Problem- Providers Assistance – Detailed Case Studies in Controlling Techniques.

Text Books:

- Ann Edworthy (2015), *Managing Stress*, Open University Press, Buckingham, Philadelphia, 2015.

Reference Books

- Hari Gopal.K (2016), *Organizational stress*, University press.
- Mary Reynolds (2014), *Stress Management Techniques*, Speedy Publishing LLC, Pp.50.

e-Resource:

- https://www.studocu.com/in/document/i-k-gujral-punjab-technical-university/computer-science-engineering/stress-management-notes/13703743

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Describe the nature of stress, the stress response, causes of stress, the relationship between stress and disease and a holistic approach to stress managements.	K2
CO-2	Analyze the impact of stress on one's own body, mind, spirit and emotions.	K4
CO-3	Practice research-based coping strategies and relaxation techniques that contribute to managing life's stress	K2

CO-4	Develop a personal lifestyle plan incorporating with coping strategies and relaxation techniques to decrease the impact of stress on one's body, mind, spirit and emotions.	K5
CO-5	Devolop a long term action plan to kminimize and better manage stress	K6

MANAGEMENT ACCOUNTING

UBAM504/UCOM507/UCCM507

Semester : V **Credit : 5**
Category : Core XIV / XIII **Hours/Week : 5**
Class & Major : III BBA/IIIB.Com/III B.Com (CA) **Total hours : 65**

Course Objectives:

CO No.	Course Objectives To enable the students to
CO-1	Understand the basic concepts of management accounting.
CO-2	Analyze and interpret the financial statements.
CO-3	Apply the Capital Budgeting methods in decision making.
CO-4	Analyze the estimated working capital requirements of the entity.
CO-5	Evaluate the various ratios and interpret it.

UNIT - I INTRODUCTION TO MANAGEMENT ACCOUNTING 13 Hour

Management Accounting – Meaning, scope, importance and limitations – Management Accounting vs. Cost Accounting – Management Accounting vs Financial Accounting.

UNIT- II ANALYSIS AND INTREPRETATION OF FINANCIAL STATEMENT 13Hour

Financial statement – Nature, objectives and tools– Methods– Comparative Statements , Common Size statement – Trend Analysis.

UNIT- III RATIO ANALYSIS 11 Hour

Ratio analysis – Benefits and Limitations, Classification of Ratios – Liquidity, Solvency, Profitability and Turnover Ratios.

UNIT- IV FUND FLOW& CASH FLOW ANALYSIS 13 Hour

Fund Flow and Cash Flow Statement – Differences – Advantages – Limitations- Conversion method only.

UNIT-V BUDGETARY CONTROL AND MARGINAL COSTING 15 Hour

Budgets and Budgetary Control – Meaning, objectives, Merits and Demerits – Types of Budgets – Production, Cash and Flexible Budget, Marginal Costing (excluding decision making) Absorption Costing and Marginal Costing – CVP analysis – Break Even analysis and Break even Chart.

Note-Theory – 30%, Problems – 70%

Text Books

- Srinivasan, N.P. (2017).*Management Accounting.*Sterling Publishers Ltd. , New Delhi.
- Reddy & Murthy,(2018).*Management Accounting*. Margham Publications.
- Maheswari,S.N. (2017).*Cost and Management Accounts.* Sultan Chand & Sons.

Reference Books

- Jain AndNarang. (2016).*Cost and Management Accounts*, Kalyani Publications.
- Pillai.R.S.N& Bhagirathi. (2016).*Management Accounting,* S.Chand& Co. Ltd.
- Khan.P.K. (2016). *Jain, Management Accounting*, *Publisher*-Tata McGraw-Hill Education.

E- Resources

- www.pondiuni.edu.in/storage/dde/downloads/finiii_ma.pdf
- www.ddegjust.ac.in/studymaterial/mcom/mc-105.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Explain the significance of basic concept, importance & Functions of Management Accounting	K2
CO-2	Apply different types of activity-based management accounting tools through the preparation of estimates.	K3
CO-3	Demonstrate knowledge of various advanced accounting issues related to Financial Accounting within a global and or ethical framework.	K3
CO-4	Analyze the relationship between the cost-volume and profit.	K4
CO-5	Evaluate the cost-volume-profit techniques to determine optimal managerial decisions	K5

TOTAL QUALITY MANAGEMENT

UBAO501

Semester : V **Credit : 4**
Category : Major Elective (DSE) **Hours / Week: 5**
Class & Major : III BBA **Total Hours : 65**

Course Objectives:

CO No.	To enable the students to
CO-1	Facilitate the understanding of Quality Management principles and process.
CO-2	Train them with various tools and techniques of Quality Management.
CO-3	Inculcate the importance of Quality in an organization.
CO-4	Understand the ISO Quality systems.
CO-5	Make them to aware of the quality concepts adopted in industry scenario.

UNIT – I INTRODUCTION **13 Hour**

Introduction - Need for Quality - Evolution of Quality - Definition of quality - Dimensions of Manufacturing and Service Quality - Basic concepts of TQM - Definition of TQM – TQM Framework - Contributions of Deming - Juran and Crosby – Barriers to TQM.

UNIT – II TQM PRINCIPLES **13 Hour**

Leadership – Strategic Quality Planning - Quality Statements - Customer Orientation - Customer Satisfaction - Customer Complaints - Customer Retention - Employee Involvement – Team and Teamwork - Recognition and Reward - Performance Appraisal - Continuous Process Improvement –Plan-Do-Study-Act (PDSA) cycle - 5s, Kaizen.

UNIT – III TQM TOOLS & TECHNIQUES I **14 Hour**

The Seven Traditional Tools of Quality – New Management Tools – Six-Sigma: Concepts - Applications to Manufacturing- Lean Manufacturing - Service Sector including IT – Bench Marking – Reason to Bench Mark - Bench Marking Process – Failure Mode and Effects Analysis (FMEA) – Stages - Types.

UNIT – IV TQM TOOLS & TECHNIQUES II **12 Hour**

Quality circles – Quality Function Deployment (QFD) – Taguchi quality loss function – Total Productive Maintenance (TPM) – Concepts - Improvement needs – Cost of Quality – Performance measures.

UNIT – V QUALITY SYSTEMS **13 Hour**

Need for ISO 9000 - ISO 9000-2000 Quality System – Elements - Documentation - Quality Auditing- QS 9000 – ISO 14000 – Concepts - Requirements and Benefits – Case studies of TQM Implementation in Manufacturing and Service Sectors including IT.

Text Books:

- Naagarazan, RS .Arivalagar, AA (2015), *Total Quality Management*, New Age International (P) Ltd Publishers, Third Edition, Pp.280.

Reference Books:

- Bagad. V.S (2019), *Total Quality Management*, Technical Publishers, 3rd Edition, Pp.280.
- John S. Oakland (2015), *Total Quality Management: Text with Cases*, Taylor & Francis Ltd, 3rd Edition, Pp.496.

e-Resource:

- https://easyengineering.net/ge6757-total-quality-management/

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Describe the dimensional barrier regarding Quality.	K2
CO-2	Understand the total quality principles.	K2
CO-3	Demonstrate the tools for utilizing the quality improvement.	K3
CO-4	Identify requirements of quality improvement programs.	K6
CO-5	Apply the various quality systems for implementing total quality management.	K3
CO-6	Analyze the various types of techniques which are used to measure the quality.	K4

CORPORATE GOVERNANCE

UBAO502

Semester : V **Credit : 4**
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 concept of corporate governance and its various principles
CO-2	Evaluate the duties and powers of board of directors
CO-3	Standardize business ethics in various areas of corporate sectors
CO - 4	Create a management accountable for corporate functioning
CO -5	Evaluate the effectiveness of the different legal systems in terms of minority shareholders protection

UNIT-I INTRODUCTION TO CORPORATE GOVERNANCE 13 Hour

Corporate Governance – Definition – Principles of Corporate Governance – Reasons Necessitated Corporate Governance.

UNIT- II CORPORATE ADMINISTRATION 14 Hour

Corporate Administration – Corporate Board Structure –Board of Directors – Size of the Board – Composition of Board – Board Management – Advantages of Corporate Governance – Corporate Governance Failures- Suggestions – Emerging Trends in Corporate Governance.

UNIT- III BOARD OF DIRECTORS DUTIES AND POWERS 13 Hour

Board of Directors – Kinds of Directors - External - Internal and Independent Directors – Appointment Duties and Powers.

UNIT- IV SHAREHOLDERS DEMOCRACY 12 Hour

Shareholders Democracy – Rights of Shareholders – Individual Rights – Group Rights – Case studies

UNIT- V BUSINESS ETHICS **13 Hour**

Nature - Scope and Purpose of Ethics - Relevance of Values - Importance of Ethics and Moral Standards - Ethics and Moral Decision Making - Cases of Companies Violating Ethics.

Text Books:

- Sandeep Goel (2019), *Corporate Governance: Principles and Practices*, McGraw-Hill India.
- Taxmann (2015), *Corporate Governance*, Indian Institute of Corporate Affairs, New Delhi.

Reference Books:

- Fernando. A.C et.al., (2018), *Corporate Governance: Principles, Policies and Practices,* Pearson Publishers, Third Edition.
- Bob Tricker (2021), *Corporate Governance*, Oxford University Press,Pp.568.

e-Resource:

- https://ebooks.lpude.in/management/mba/term_3/DMGT301_DMGT503_CORPORATE_GOVERNANCE_AND_ETHICS.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understanding the purpose and nature of corporations.	K3
CO-2	Examine the different stakeholders' roles and significance in relation to corporate governance.	K3
CO-3	Understand the importance of regulation, markets and information in corporate governance.	K2
CO-4	Analyze the international differences and similarities for the development of institution.	K4
CO-5	Critically analyze the governance for individual corporations and their stakeholders.	K4

III &IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
V	Major Core XVII (DSC)	UBAM510	Stress Management	Assignment	Case Study
V	Major Elective (DSE)	UBAO501	Total Quality Management	Seminar	Poster Presentation
V	Major Elective	UBAO502	Corporate Governance	Poster Presentation	Assignment

PG & RESEARCH DEPARTMENT OF COMMERCE

PREAMBLE

UG: Programme Profile and the Syllabi of Courses offered in Semester V 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 these courses the students would have
PSO-1	Understood the Financial, Cost and Management concepts and convention.
PSO-2	Apply the knowledge of business correspondent in drafting business letters, circulars etc.
PSO-3	Acquired the knowledge of Tax, Investment and business consultancy skills for the societal benefits.
PSO-4	Learn to manage all the factors of production.
PSO-5	Apply the knowledge on tax laws for tax planning.
PSO-6	Create and manage business ethically through entrepreneurial skills.
PSO-7	Acquired the position of Cost and Management Accountant / Company Secretary / Bank officer.

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

II	III	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/ PhysicalEducation				-	1 / 2
				TOTAL		**36**	**26/30**
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/ PhysicalEducation				-	0 / 2
				TOTAL		**30**	**24/27**

V	III	Core XVII / (DSC)	UCOM506/ UCCM506/ UIAM501	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)	UCOM612/ UBAM609/ UIAM601	Women Entrepreneurship	---	5	5
		Core XXII/ (DSC)	UCOM614/ UCCM614/ 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)	UCCM616/ UCOM616/ UIAM604	Goods and Services Tax	---	6	5
		Core XXV/ (DSC)	UCOM617/ UCCM617/ UIAM605	Service Marketing	---	5	5
		Viva Voce	UCOM607/ UCCM607/ UIAM606	Comprehensive Viva	---	-	1
		Major Elective/ (DSE)	UCOO606/ UCCO606/ UIAO608	Logistics Management	UCOM602/ UCCM602	5	4
			UCOO606/ UCCO606/ UIAO608	Income Tax Law & Practice II			
			UCOO607/ UCCO607/ UIAO609	Consumer Protection			
	IV	SS/(SEC)				2	1
		Internship	UCOI601/ UCCI601/ UIAI601	Internship / Field Work / Field Project			-/1
		Extension Activity	UROX601	Rural Outreach Programme			-/1
	V	Extension				-	0/2
					TOTAL	**30**	**27/31**
					GRAND TOTAL	**192**	**148/162**

DEPARTMENT OF COMMERCE

PREAMBLE:

UG : Programme Profile and Syllabi of Courses Offered in Semester V 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 International Accounting and Taxation concepts and conventions
PSO-2	Describe the knowledge of International Business correspondence in drafting business communications.
PSO-3	Relate the knowledge on E-Banking, E-Marketing, E-Entrepreneurship and IT
PSO-4	Demonstrate how to manage Business to Business (B2B) and Business to Customer (B2C) Businessess
PSO-5	Apply the knowledge of Tax laws for Tax Planning.
PSO-6	Develop E- business ethically through E-Entrepreneurial Skills
PSO-7	Acquired position of Cost and Management Account, Accounts Executive/ Bank Officers/ Web designer and Software Developer.

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

II	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**	**26 /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	IV	NME/(SEC)				3	2
		Soft skills/(SEC)		Personality Development		2	1
		Internship	UCOM401/	Internship / Field Work / Field			-/1
			UCCM401/ UIAM401	Project			
	V	Extension Activity				-	0 /2
				TOTAL		**30**	**24/27**
V	III	Core XV/(DSC)	UCOM506/ UCCM506/ UIAM501	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**
	III	Core XIX/(DSC)	UCCM615	E- Entrepreneurship	---	5	4
		Core XX/(DSC)	UCCM614/ UCOM614/ 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	5
		Viva Voce	UCCM607/ UCOM607/ UIAM606	Comprehensive Viva	---	-	1

VI	IV	Major Elective/ (DSE)	UCOO606/ UCCO606/ UIAO608	1. Logistics Management	---	5	4
			UCCO606/ UCOO606/ UIAO608	2.Income Tax Law & Practice II	UCCM602		
			UCCO607/ UCOO607/ UIAO609	3. Consumer Protection	---		
		Soft skills/(SEC)				2	1
		Internship	UCOI601/ UCCI601/ UIAI601	Internship / Field Work / Field Project			-/1
		Extension Activity	UROX601	Rural Outreach Programme			-/1
	V	Extension Activity				-	0/2
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

COMPANY LAW

UCOM506/UCCM506/ UIAM501

Semester : V **Credit : 4**
Category : Core XVII/XV **Total Hrs : 6**
Class & Major : III B.Com. / B.Com CA / B.Com (IAT) **Total hours : 78**

Course Objectives:

CO No.	To enable the students
CO 1	Understand the Provisions of Company law.
CO 2	Develop the knowledge on incorporation of a Company.
CO 3	Analyze procedure for issue and transfer of shares
CO 4	Analyze various company registration documents
CO 5	Apply the knowledge of company law in Company Management

UNIT- I INCORPORATION OF A COMPANY UNDER COMPANIES ACT, 1956 & 2013 12 Hrs

Company – Definition –Characteristics-Corporate Veil- Kinds of Companies – Incorporation – Memorandum of Association – Ultra vires – Alteration of Memorandum.

UNIT- II REGISTRATION DOCUMENTS 14 Hours

Articles of Association – Contents – Alteration – Doctrine of Constructive Notice – Indoor Management – Prospectus-Contents-Consequences for Misstatement in Prospectus.

UNIT- III ISSUE OF SHARES 14 Hours

Shares – Kinds of Shares-Equity-Preference shares-Allotment of Shares-Minimum Subscription-Share Certificate -Share Warrant – Issue of Shares on Premium and discount – Redemption of Preference shares- Forfeiture of shares**.**

UNIT-IV TRANSFER OF SHARES 13 Hours

Membership of Companies – Transfer and Transmission of Shares – Blank transfer – Forged transfer.

UNIT-V MANAGEMENT OF COMPANIES 12 Hours

Management of Companies – Board of Directors –Appointment-Duties and Powers of the Board- Managing Director –Manager-Appointment-Duties and Powers- Company meetings – Notice, Quorum ,Proxy, Minutes, Resolution.

Text Books

- Kapoor N.D , (2019), *Company Law*, Sultan Chand, New Delhi.
- Avatar Singh, (2019), *Company Law*, Book Well Publishers, New Delhi

Reference Books

- Kathiresan and Radha, (2020). *Company Law*, Prasanna Publishers, Chennai.
- Balanchandran B, Bose P.K., (2019). *Company Law*, Sultan Chand, New Delhi.

e-Resources

- www.indianlawjournal.org
- www.icsi.edu
- www.clioindia.com

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Identify different kinds of companies	K1
CO 2	Apply the knowledge of company law for preparing registration documents.	K2
CO 3	Explain the ability to manage issue and transfer of shares.	K3
CO 4	Summarise the procedure for issues of shares.	K3
CO 5	Write the agenda of the company meetings	K4

INCOME TAX LAW AND PRACTICE – I

UCOM509/UCCM509/UIAM503

Semester : V **Credit : 5**
Category : Core XIX/ XVI **Total Hrs : 6**
Class & Major: III B.Com. / B.Com CA / B.Com (IAT) **Total hours : 78**

Course Objectives:

CO No.	To enable the students
CO 1	Identify the various sources of Income of a person
CO 2	Understand the Principles and Practice of Income Tax Act
CO 3	Analyze the various residential status of a person
CO 4	Compute Income from Salary and House Property
CO 5	Evaluate head wise deductions

UNIT- I INTRODUCTION **15 Hours**

Meaning of Income – Canons of Taxation – Important definitions under the Income Tax Act -Scope of Total income – Residential Status – Incomes Exempt from Tax

UNIT- II COMPUTATION OF INCOME FROM SALARIES **16 Hours**

Income from Salaries – Scope of Salary Income – Deductions from Salary Income

UNIT-III COMPUTATION OF INCOME FROM HOUSE PROPERTY **16 Hours**

Income from House Property – Deductions- Profit and Gains of Business or Profession – Deemed Business profits – Allowed and Disallowed Expenses.

UNIT- IV COMPUTATION OF CAPITAL GAIN **15 Hours**

Capital Gain – Short Term and Long Term Capital Gain – Exempted Capital Gain

UNIT- V COMPUTATION OF INCOME FROM OTHER SOURCES **16 Hours**

Income from Other Sources – Deductions.

Note: Theory 20% and Problem 80%

Text Books

- Gaur V.P. & Narang D.B., (2022-23). *Income Tax Law & Practice*, Kalyani Publishers, Ludhiana.
- Dr. N. Hariharan, (2022-23). *Income Tax*, Vijay Nichole Imprint Pvt. Ltd, Chennai.

Reference Books

- Vinod Singhania, (2022-23). *Students Guide to Income Tax*, Taxmann Publication Pvt. Ltd., New Delhi.
- Dinkar Pagare, (2022-23). *Income Tax Law & Practice*, Sultan Chand & Sons, New Delhi.

e-Resources:

- www.incometaxindia.gov.in
- www.incometaxindiaefiling.gov.in
- www.onlineservices.tin.egov-nsdl.com
- www.cleartax.in

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Identify the head-wise taxable income	K1
CO 2	Apply income tax provisions for tax planning.	K2
CO 3	Acquire knowledge on canons of taxation.	K3
CO 4	Explain the head-wise deductions allowed.	K3
CO 5	Examine the allowed and disallowed business expenses.	K4

ACCOUNTING PACKAGE-THEORY

UCOM512/UCCM512/UIAM512

Semester : V **Credit : 2**
Category : Core XX/XVII **Total Hrs : 3**
Class & Major : III B.Com. / B.Com CA / B.Com (IAT) **Total hours :39**

Course Objectives:

CO No.	To enable the students
CO 1	Identify various vouchers used in Tally
CO 2	Understand the basic knowledge in computerized accounting
CO 3	Apply knowledge to prepare Final Accounts
CO 4	Analyze various cost categories and cost centre
CO 5	Develop knowledge on Accounting Package and GST

UNIT-I INTRODUCTION TO COMPUTERIZED ACCOUNTING 7 Hours

Meaning of Computerized Accounting – Meaning of Computers – Importance of Computerized Accounting – Computerized Accounting Vs Manual Accounting- Introduction to Architecture of Tally – Creation of Company – Creation of Groups – Various Kinds of Groups – Multiple & Single – Creation of Ledgers – Various Kinds of Ledgers.

UNIT-II CREATION OF VOUCHERS AND PREPARATION OF FINAL ACCOUNTS 8 Hours

Entering Vouchers – Journal Voucher, Purchase Voucher, Sales Voucher, Receipt Voucher, Payment Voucher – Role and the importance of Function Keys. Extraction of Trial Balance, Trading Account, Profit and Loss Account and Balance Sheet – Simple Sums with and without Adjustments

UNIT-III CREATION OF INVENTORY & CREATION OF COST CENTRE 8 Hours

Introduction to Inventories – Creation of Stock Category – Stock Groups – Stock Items – Editing and Deletion of Stock items – Usage of Stock in Voucher Entry – Stock Voucher or Purchase Orders – Sales Orders - Introduction to Cost – Creation of Cost Category – Cost Center Category – Editing and Deleting Cost Centre –Usage of Cost Category and Cost Centers in Voucher Entry

UNIT – IV GOODS AND SERVICES TAX (GST) 8 Hours

Activating Tally In GST - Setting Up GST (Company Level, Ledger Level Or Inventory Level) - GST Taxes & Invoices - SGST, CGST & IGST - Creating GST Masters In Tally, Purchase Voucher With GST: Updating GST Number For Suppliers -Intra-State Purchase Entry In GST (SGST + CGST) - Inter-State Purchase Entry In GST (IGST).

UNIT -V REVERSE CHARGE MECHANISM ENTRY FOR GST IN TALLY, SALES VOUCHER WITH GST 8 Hours

Updating GST Number for Suppliers - Intra-State Sales Entry in GST (SGST + CGST) - Inter-State Sales Entry in GST (IGST) - Printing GST Sales Invoice from Tally ERP9 Software, GST Reports and Returns: GSTR 1 and 2 in Tally.

Proportion: Problem: 80%, Theory: 20%

Text Books

- Nadhani A.K, (2020). *Implementing Tally, BPB Publications, New Delhi.*
- Palanivel. S, (2020*). Tally Accounting Software, Margham Publications, Chennai.*

Reference Books

- Vishnu Priya Singh, (2019). *Quick Learn Tally*, Computech Publication Pvt., New Delhi.
- Srinivasa Valaban, (2019). *Computer Applications in Business*, Sultan Chand & Sons

e-Resources

- https://tallysolutions.com/learning-hub/
- https://tallysolutions.com/

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Explain the various kinds of stock groups in Tally	K1
CO 2	Apply the knowledge in creating vouchers	K2
CO 3	Examine the ability to prepare final accounts .	K3
CO 4	Discuss the importance of computerized accounting.	K3
CO 5	Acquire knowledge on the creation of cost centre	K4
CO 6	Compute GST Liability and prepare GST Return in Tally	K5

ACCOUNTING PACKAGE-LAB

UCOR502/UCCR502/UIAR502

Semester : V **Credit : 3**
Category : Core Practical I **Total Hrs : 3**
Class & Major: III B.Com. / B.Com CA / B.Com (IAT) **Total hours :39**

Course Objectives:

CO No.	To enable the students
CO 1	Identify various vouchers used in Tally
CO 2	Understand basic concepts in computerized accounting
CO 3	Apply knowledge to prepare Final Accounts
CO 4	Analyze various cost categories and cost centre
CO 5	Develop knowledge on Accounting Package and GST

PRACTICAL

1. Creation of Company, alteration and deletion
2. Creation of groups, single and multiple
3. Vouchers and Journals
4. Entering values and preparation of Trial balance, Trading account and Balance Sheet
5. Use of function keys and entering various journals to understand adjustments
6. Preparation of final accounts with adjustments
7. Creation of stock groups, stock category and stock store
8. Entering data in stock groups of a departmental store
9. Multiple stock group
10. Cost Centre
11. **Tax Invoice**
12. **GSTR 1**
13. **GSTR 2**

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Explain the various kinds of stock groups in Tally	K1
CO 2	Apply the knowledge in creating vouchers	K2
CO 3	Examine the ability to prepare final accounts.	K3
CO 4	Discuss the importance of computerized accounting.	K4
CO 5	Compute GST Liability and prepare GST Return in Tally	K5

COMMODITIES MARKET
UCOO502

Semester : V **Credit : 5**
Category : Major Elective **Total Hrs : 6**
Class & Major : III B.Com. **Total hours :78**

Course Objectives:

CO No.	To enable the students
CO 1	Identify the various commodities traded in markets
CO 2	Understand trading and settlement system
CO 3	Analyze the performance of commodity markets
CO 4	Examine the derivative contracts
CO 5	Evaluate the risks involved in derivative markets

UNIT I: INTRODUCTION TO COMMODITY MARKETS 15 Hours

History of Commodity Trading-Spot and Derivatives Trading in Commodities-Major Commodities Traded in Derivatives Exchanges in India - Participants in Commodity Derivatives Markets-Commodities Trading vis-à-vis Trading in Other Financial Assets-Commodity Markets Ecosystem-Commodity Market Indices-Factors Impacting the Commodity Prices

UNIT II: COMMODITY FUTURES 16 Hours

Introduction to Futures-Distinction between Forwards and Futures-Cost-of-Carry-Convergence-Fair Value of a Futures Contract-Convenience Yield-Commodity Futures and Commodity Forwards-Pay-off profile for Futures Contracts-Spot Price Polling

UNIT III: COMMODITY OPTIONS 15 Hours

Introduction to Options-Option Terminology-Pay off Profiles of Options Contracts-Determinants of Option Premium-Options on Commodity Futures

UNIT IV: USES OF COMMODITY DERIVATIVES 16 Hours

Hedging-Long Hedge and Short Hedge Strategy: Using Futures-Speculation-Arbitrage- Spread Trading-Basis-Option Trading Strategies.

UNIT V: CLEARING SETTLEMENT AND RISK MANAGEMENT OF COMMODITY DERIVATIVES **16Hours**

Clearing and Settlement-Delivery Process-Entities Involved in the Clearing and Settlement Process-Premium/Discount-Penalty for Delivery Default by the Seller-Deliveries in the Case of Physical Delivery-Risk Management for Exchange Traded Commodity Derivatives Markets-Position Limits and Computation of Open Position-Salient Features of Risk Containment Measures-Margin Mechanism.

Text Books:

- Kul Karni B, (2020). *Commodities Markets*, Vikash Publishing House New Delhi
- Gowriya khaoon,(2020). *Stock and Commodities Markets*, Vikash Publishing House New Delhi
- Venkaramana K, (2021). *Stock and Commodities Markets*, Himalaya Publishing House New Delhi

Reference Books

- *Commodity Derivatives, (2020) Indian Institute of Banking and Finance*, MacMillan Publishers India limited,1st edition.
- *Derivatives: Valuation and Risk Management (2020)*, David.A.Dubofsky and Thomas W.Miller, JR. Oxford University Press, First Indian edition.

e-Resources

- www.nseindia.com
- www.mcx india.com
- www.bseindia.com

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Explain the determinants of price of commodity markets	K1
CO 2	Apply the principles of commodity markets to trade.	K2
CO 3	Examine clearing settlement and delivery process	K3
CO 4	Appraise the characteristics of commodity trading	K3
CO 5	Discuss the functions of commodity exchanges	K4
CO 6	Develop commodity trading skills	K5

HUMAN RESOURCE MANAGEMENT

UCOO502

Semester : V **Credit : 5**
Category : Major Elective **Total Hrs : 6**
Class & Major : III B.Com. **Total hours :78**

Course Objectives:

CO No.	To enable the students
CO-1	Understand the HR Management and system at various levels in general and in certain specific industries or organizations
CO-2	Analyze the issues and strategies to develop manpower resources
CO-3	Identify the skills necessary for application related to HR issues
CO-4	Evaluate various techniques of performance appraisal
CO-5	Analyze the strategic issues and strategies required to select and develop manpower resources.

UNIT I: INTRODUCTION **15 Hours**

Human Resource Management: Concept and Functions, Role HR Manager, HR Policies, Evolution of HRM. HRM vs. HRD. Emerging Challenges of Human Resource Management; workforce diversity, empowerment, Downsizing; VRS and other challenges;

UNIT II: ACQUISITION OF HUMAN RESOURCE **16 Hours**

Human Resource Planning; job analysis – job description and job specification; Recruitment – Concept and sources; Selection – Concept and process; test and interview; placement induction.

UNIT III: TRAINING AND DEVELOPMENT **16 Hours**

Training and Development; Concept and Importance; Identifying Training and Development Needs; Designing Training Programmes; Role Specific and Competency Based Training; EvaluatingTraining Effectiveness; Training Process Outsourcing.

UNIT IV: PERFORMANCE APPRAISAL **15 Hours**

Nature and objectives and importance; Modern Techniques of performance appraisal; job changes -transfers and promotions.

UNIT V: HUMAN RESOURCES AUDIT **16 Hours**

Compensation: concept and policies; job evaluation; methods of wage payments and incentive plans; fringe benefits; performance linked compensation.

Text Books:

- Prasad, L M. (2020). *Human Resource Management*, Himalaya Publising House New Delhi
- Satapathy, S K. (2021). *Human Resource Management*, Himalaya Publishing House New Delhi.
- Gary Dessler, A. (2021). *Framework for Human Resource Management*. Pearson. Publising House USA

- DeCenzo, D.A. and S.P. Robbins, (2020). *"Personnel/Human Resource Management",* Prentice Hallof India, New Delhi.

Reference Books

- Bohlendar and Snell (2020), *Principles of Human Resource Management,* Cengage Learning, Australia
- Ivancevich, John M. (2020), *Human Resource Management*, McGraw Hill, Chennai.
- Wreather and Davis. (2020), *Human Resource Management*, Pearson Education, House USA

e-Resources

- https://www.researchgateElectronic_Human_Resources_Management
- https://canvas.santarosa.edu/courses/18506/assignments/syllabus HRM_Adoption_Studies_Past_and_Future_

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Explain the employment relationship, and responsibility among the employers, management, human resources specialists, and employees.	K2
CO-2	Evaluate the human resource needs of an organization or department.	K2
CO-3	Examine the procedures and practices used for recruiting and selecting suitable employees	K3
CO-4	Appraise the job description from job analysis.	K4
CO-5	Develop the skills and concepts needed to resolve actual human resource management problems or issues	K6

PROJECT

UCOP501/UCCP501

Semester : V **Credit : 4**
Category : Core XXI/XVIII **Hours/Week: 4**
Class & Major : III B.Com & III B.Com CA **Total hours : 52**

Guidelines:

- This course is offered as group project .
- No of students is limited to 5 to 6 in a group.

Research Area:

- Finance
- Marketing and
- Banking

Evaluation Pattern for the project (Internal -60, External -40)

S.No	Components	CIA	ESE
1	Title of the Topic & Research Design	10	
2	Review of Literature	10	
3	Collection of Data	10	
4	Analysis and Interpretation	10	
5	Viva voce	10	10
6	Project Report	10	30
	Total	**60**	**40**

PRINCIPLES AND PRACTICE OF INSURANCE

UCOM511/UCCM511

Semester : IV &V **Credit : 4**
Category : Core XXI/XVIII **Hours/Week: 6 (2+4)**
Class & Major : III B.Com & III B.Com CA **Total hours : 78**
Course Objectives:

CO No.	To enable the students
CO 1	Understand the principles and practices of insurance
CO 2	Identify nature of insurances
CO 3	Examine the business and personal risk
CO 4	Evaluate the performance of insurances companies
CO 5	Analyze the importance of life and general insurance market in India

UNIT- I INTRODUCTION TO INSURANCE **10 Hours**

Insurance – Meaning – Functions– Nature and Principles of Insurance – Growth of insurance business in India – Insurance regulation and IRDAI – Insurance organizations.

UNIT- II LIFE INSURANCE **16 Hours**

Life Insurance: Meaning – Overview of the Indian life insurance market – Types of life insurance – Personal financial planning and life insurance – Insurance agents and their functions– Investment of Funds – Surrender Value –Bonus Option – Policy Condition – Annuity Contracts.

UNIT- III GENERAL INSURANCE **16 Hours**

General Insurance: Meaning – Overview of Indian general insurance market – Types of general insurance – General insurance companies in India – Insurance broking firms.

UNIT- IV MARINE &FIRE INSURANCE **18 Hours**

Contract of Marine Insurance – Elements of Marine Insurance –Clause in a Marine Insurance Policy –Marine losses – Fire Insurance – Features of a Fire Insurance – Kinds of Policies – Policy Conditions– Payment of Claims – Reinsurance.

UNIT–V HEALTH & MISCELLANEOUS INSURANCE **18 Hours**

Health Insurance: Meaning and Importance of Health insurance and Mediclaim policies – Types of health insurance policies – Miscellaneous Insurance – Motor insurance – Agricultural insurance – Personal Accident Insurance.

Note: Unit I & II under IV semester, Remaining III unit to V unit under Vth semester

Text Books

- Mishra M.N., (2019), *Insurance Principles and Practice*, S.Chand & Co, New Delhi.
- Srinivasan, (2019), *Principles of Insurance Law*, Ramanujam Publisher, Bangalore.

Reference Books

- Varadharajan B, (2019), *Insurance Vol.1 and 2* , Tamilnadu Text Book Society, Chennai.
- Sharma R.S, (2019), *Insurance: Principles and Practice,* S.Chand & Co, New Delhi.
- Ye-Sho Chen, (2019), *E-Entrepreneurship and Innovation in Franchising,* Louisiana State University, Baton Rouge, USA.

e-Resources

- https://www.insuranceinstituteofindia.com/downloads/Forms/III/Professional%20Exams/SYLLABUS/Syllabus%20.pdf
- https://www.libertyinsurance.in/Docx/IC-38.pdf

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Evaluate the growth of Insurance business in India	K1
CO 2	Apply the knowledge to protect themselves from the business risk	K2
CO 3	Examine the knowledge to protect them selves from the personal risk.	K3
CO 4	Appraise marine and fire insurance	K3
CO 5	Discuss the importance of life and general insurance	K4
CO 6	Explain the insurance regulations.	K5

III & IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
V	Core XV/(DSC)	UCOM506/ UCCM506/ UIAM501	Company Law	Case study	Seminar
	Core XVI/(DSC)	UCOM509/ UCCM509 UIAM503	Income Tax Law and Practice- I	Case Study	Seminar
	Major	UCOM512/ UCCM512 UIAM512	Accounting Package-Theory	Poster Presentation	Seminar
	Major Elective	UCOO502	Commodities Markets	Assignment	Case Study
		UCOO502	Human Resource Management	Assignment	Case Study

DEPARTMENT OF BIOCHEMISTRY

PREAMBLE

UG: Programme Profile & the Syllabi of Courses offered in the Semester V 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	Recognize their Own Ability to improve their Competence in Using the Language through Professional English for Life Science Course.
PSO-2	Understand the Various Biological Components Present in Living Cells, Functions and their Clinical Significance.
PSO-3	Inculcate the Basic Concepts of Biochemistry Including an Understanding of the Fundamental Biochemical Principles and their Applications in a Systematic, Methodical and Scientific, Evidence - Based Process.
PSO-4	Develop Problem Solving and Analytical Skills through Case Studies, Research Projects, Experimentation, Internship, Experiential Learning and Hands-on-Experience.
PSO-5	Analyze the Applications of Biochemistry in the Fields of Clinical Biochemistry, Biochemical Techniques, Molecular Biology, Biotechnology, Microbiology Etc.,
PSO-6	Relate the Biochemistry Oriented Theoretical and Practical Knowledge in securing a Successful Career and Pursue Higher Studies.

Semester	Part	Category	Course Code	Course Title	Previous course code	Hours per week	Credit
							Min /Max
I	I	Language/ AECC- II / Tamil (2Levels) 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 (2Levels)	UCEL101/ UCEL102	Communicative English I / Effective Communicative English I	--	5	3/4
	III	Core I/ DSC-I	UBCM108	Basics of Biochemistry	UBCM106	3	2
		Core II/DSC -II	UBCM107	Cellular Biology	UBCM105	6	6
		Core Practical I	UBCR103	Cellular Biology Practical	UBCR102	3	3
		Allied I / GEI	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**

Semester	Part	Category	Course Code	Course Title	Previous course code	Hours per week	Credit
							Min /Max
II	I	Language / AECC -II /Tamil (2Levels) 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(2Levels)	UCEL201/ UCEL202	Communicative English II / Effective Communicative English II	--	5	3/4
	III	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 (2Levels) 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 (2Levels)	UENL309/ UENL310	General English I/Advanced English I	UENL307/ UENL308	5	3/4
	III	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
		Online Course		NPTEL		3	1/2
	IV	Value Education/ SEC				2	1
TOTAL						**30**	**21/24**

IV	I	Language/ AECC-II / Tamil (2Levels) 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 (2Levels)	UENL409 / UENL410	General English II/ Advanced English II	UENL407/ UENL408	5	3/4
	III	Core V/DSC-V	UBCM404	Immunology	UBCO603/ UBCM403	5	4
		Core VI /DSC -VI	UIDM402	Pharmaceutical Biochemistry	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/ FieldProject	-	-	-/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	Core VII/DSC-VII	UBCM507	Enzymology	--	5	5
		Core VIII/DSC-VIII	UBCM508	Intermediary Metabolism	UBCM504	5	5
		Core IX /DSC-IX	UBCM509	Human Physiology	UBCM502	5	5
		Core Elective - I / DSE-I	UBCO501	Nutritional Biochemistry	--	5	4
			UBCO502	Stem Cell Biology	UBCO604		
		Core practical V	UBCR501	Enzymology Practical	-	4	3
		Major Core X / DSC-X	UBCP501	Project	UBCP601	4	4
		Value Education/SEC				2	1
				TOTAL		**30**	**27**
VI	III	Core XI/ DSC-XI	UBCM605	Introduction to Biotechnology	UBCM601	5	5
		Core XII/DSC-XII	UBCM606	Clinical Biochemistry	UBCM602	5	4
		Core XIII/DSC - XIII	UBCM607	Molecular Biology	UBCM603	5	4
		Core XIV/DSC-XIV	UBCM604	Comprehensive Viva voce	--	-	1
		Core Practical VI	UBCR601	Clinical Biochemistry practical	--	5	3
		Core Practical VII	UBCR602	Hematology & Urineanalysis	--	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

VI	IV	Soft Skill/SEC				2	1
	V	Extension activity/ Physical Education/NCC				-	-/2
		Extension Programme	UROX601	Rural Outreach Programme		30	-/1
				TOTAL		**30**	**24/28**
				GRAND TOTAL		**192**	**148/166**

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
II	IV	Non Major Elective	UBCE202	Biomedical Techniques	--	**3**	**2**
			UBCE204	Nutrition & Health	UBCE401		
			UBCE204/ UBCE502	Women's Health, Nutrition & Disorders	--		
			UBCE208/ UBCE304	Mushroom Cultivation	--		
			UBCE209	Clinical Diagnostics	--		
			UBCE210	Reproductive Biology	--		
IV	IV	Non Major Elective	UBCE403/ UBCE301	Hormonal Biochemistry	--	3	2
			UBCE404/ UBCE302	Food Microbiology	--		
			UBCE402/ UBCE303	Clinical Nutrition	--		
			UBCE401/ UBCE304	Mushroom Cultivation	--		

EXTRA CREDIT EARNING PROVISION (ONLY FOR INTERESTED STUDENTS)

Semester	Part	Category	Course Code	Course Title	Credit
II	III	Internship	UBCI201	Summer Internship	1
IV	III	Internship	UBCI401	Summer Internship	1
VI	III	Self-Study paper	UBCS601	Experimentation	2

EXPERIENTIAL LEARNING OFFERED IN SEMESTER VI

Course Mapping				Collaborating Agency –MSME & E.S. Hospital		
Semester	**Course Code**	**Course Title**	**Assessment**	**Course Title**	**Hours/ Days/ Month**	**Mode of Evaluation**
VI	UBCM606	Clinical Biochemistry	Component III	Clinical Biochemistry	5 days	Reflection
VI	UBCM605	Introduction to Biotechnology	Component IV	Organic Farming	2 days	Reflection

ENZYMOLOGY
UBCM507

Semester	**: V**	**Credits**	**5**
Category	**: Core VII/ DSC-VII**	**Hours/Week**	**5**
Class & Major	**: III B.Sc Biochemistry**	**Total Hours**	**65**

Course Objectives:

CO No.	To enable the students to
CO -1	Understand the classification, nomenclature, activity of enzymes and its action in biochemical reactions.
CO -2	Acquire knowledge on the role of co-factors and co-enzymes in enzyme catalyzing reactions.
CO -3	Integrate the practical aspects of enzymology with the kinetic theories.
CO -4	Gain knowledge on types of enzyme inhibitions.
CO -5	Interpret the role of enzymes in Industries, disease diagnosis and therapeutic measures.

UNIT I: BASIC CONCEPTS OF ENZYMES 13 Hours

Classification and nomenclature of enzymes, isoenzymes, multi-enzyme complexes. Enzyme specificity, Active site. Measurement and expression of enzyme activity – Definition of IU, Enzyme turnover number and nature of non-enzymatic and enzymatic catalysis, enzyme assays.

UNIT II: ENZYMES CATALYSIS & ROLE OF COFACTORS IN ENZYME CATALYSIS 13 Hours

Theories of enzyme catalysis – Lock and key model and Koshland's induced fit model. Role of co-factors in enzyme catalysis - NAD/NADP+, FMN/FAD, coenzyme A, biotin, TPP, pyridoxal phosphate, tetrahydrofolate and metal ions with special emphasis on coenzyme functions.

UNIT III: ENZYME KINETICS & FACTORS AFFECTING ENZYME ACTIVITY

15 Hours

Factors affecting rate of enzyme catalyse reaction - enzyme concentration, substrate concentration, pH and temperature. Derivation of Michaelis - Menten equation for uni-substrate reactions. Km and its significance. Line Weaver Burk plot and its limitations. Importance of Kcat / Km.

UNIT IV: ENZYME INHIBITION **12 Hours**

Reversible and irreversible inhibition, competitive, non–competitive and uncompetitive inhibitions, determination of Km &Vmax in presence and absence of inhibitor, Allosteric enzymes.

UNIT V: APPLICATIONS OF ENZYME **12 Hours**

Industrial Enzymes – Cellulase, Amylase, Lipase, Invertase & Zymase; Marker Enzymes – AST, ALT; Therapeutic Enzymes –Asparginase, Streptokinase, Collagenase.

Text Books

- Trevor Palmer, Philip Bonner (2007) *Enzymes: Biochemistry, Biotechnology, Clinical Chemistry, (2nd Ed.),* Horwood Publishing Limited,
- Dixon and Webb, (2000) *Enzymes, (3rd Ed.),* Academic Press, New York.
- Meenakshi Meena D.C (2009). *Fundamentals of Enzymology,* Aavinshankar Publisher – ISBN – 10:8179102807/ISBN – 13:978 – 8179102800.

Reference Books

- Donald Voet.C.W (2012). *Principles of Biochemistry (4th Ed.,),* Wiley – ISBN 10:1118092449/ISBN 13:9781118092446.
- Sathyanarayana. (2017) *Biochemistry,* Elsevier – ISBN:9788-131236017.
- David L. Nelson Michael M. (2008) *Cox Lehninger Principles of Biochemistry,* W. H. Freeman; **(**5th Ed.)

e-Resources

- https://storeiyta.firebaseapp.com/.../enzymes-biochemistry-biotechnology-clinical-che.
- https://quacktradition4ahz.files.wordpress.com/.../fundamentals-of-enzymology-the-ce.
- https://www.kobo.com/us/en/ebook/enzymes-6
- https://www.elsevier.com/books/the-enzymes/dalbey/978-0-12-373916-2

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Summarize the fundamental concept of enzymes and their importance in biological reactions.	K2
CO-2	Explain the factors that affect enzyme activity and the rate of Biochemical reaction.	K4
CO-3	Differentiate the chemical catalyst and the biocatalyst.	K1
CO-4	Classify the different types of inhibitors and its role.	K2
CO-5	Integrate the applications of enzymes in disease, diagnosis and therapeutic measures.	K5

INTERMEDIARY METABOLISM
UBCM508

Semester	**: V**	**Credits**	**: 5**
Category	**: Core VIII/ DSC-VIII**	**Hours/Week**	**: 5**
Class &Major	**: III B.Sc Biochemistry**	**Total Hours**	**65**

Course Objectives

CO No.	To enable the students to
CO -1	Study the transformation of energy within living organisms and between living organisms and their environment.
CO -2	Elucidate the anabolic and catabolic pathways of carbohydrate metabolism.
CO -3	Familiar with importance of biochemical metabolic pathways of lipids.
CO -4	Understand how amino acids are converted into specialized products.
CO -5	Connect how the denovo and salvage pathways form purine and pyrimidine nucleotides.

UNIT - I BIOENERGETICS **15 Hours**

The electron transport chain – organization and role in electron capture. Oxidative phosphorylation - electron transfer reactions in mitochondria. F1F0 ATPase - structure and mechanism of action. The chemiosmotic theory. Inhibitors of respiratory chain and oxidative phosphorylation - uncouplers, ionophores. Regulation of oxidative phosphorylation.Mitochondrial transport systems - ATP/ADP exchange, malate / glycerophosphate shuttle**.**

UNIT-II CARBOHYDRATE METABOLISM **13 Hours**

Glycolysis - Aerobic and anaerobic pathway, Oxidation of Pyruvate, TCA cycle and its energetics - Anaplerotic reactions; Regulation, Gluconeogenesis, Glycogenesis, Glycogenolysis – pathway and Regulation. Pentose phosphate pathway.

UNIT-III LIPID METABOLISM **12 Hours**

Biosynthesis of Fatty acid. Oxidation of Fatty acids - α, β and γ oxidation; Biosynthesis and Degradation of Lecithin, Cephalin, Phospatidly Inositol, Phosphatidyl Serine, Sphingomylin and Plasmalogen. Biosynthesis and Degradation of Cholesterol.

UNIT-IV PROTEIN METABOLISM **12 Hours**

Fate of Dietary Proteins. Catabolism of Aminoacids –Transamination, Oxidative and Non - Oxidative Deamination, Transdeamination, Decarboxylation, Urea cycle and its Regulation and Biosynthesis of Creatinine.

UNIT-V NUCLEICACID METABOLISM **13 Hours**

Metabolism of Purines - Biomedical importance. Biosynthesis of Purine Nucleotides by De novo and Salvage Pathway, Regulation and Degradation, Metabolism of Pyrimidines – Biosynthesis of Pyrimidine Nucleotides by De novo and Salvage pathway and Degradation.

Text Books

- David L. Nelson, Michael M.Cox (2017), *Lehninger-Principles of Biochemistry (7th Ed.),* W.H.Freeman and company Newyork
- Robert k.Murray.et.al., (2015), *Harpers Biochemistry, (30th Ed.),* Prentices Hall international

Reference Books

- Voet & Voet, John Wiley & Sons (2018), *Biochemistry, (5th Ed.,* Prentices Hall International,
- Champe P.C and Richard A Harvey (2017), *Lippincotts Biochemistry, (7th Ed.),* Williams & Wilkins Publishers.

e-Resources

- https://www.kobo.com/us/en/ebook/metabolic-regulation
- https://www.kobo.com/us/en/ebook/hepatic-de-novo-lipogenesis-and-regulation-of-metabolism.
- https://www.elsevier.com/books/metabolic-regulation/vogel/978-0-12-299255-1

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Describe the importance of high energy compounds, electron transport chain and synthesis of ATP under aerobic and anaerobic conditions.	K1
CO-2	Summarize the various metabolic pathways of carbohydrate.	K2
CO-3	Illustrate the anabolic and catabolic pathways of lipids.	K3
CO-4	Explain the catabolism of amino acids into specialized products and the reactions of urea cycle.	K4
CO-5	Differentiate the biosynthesis and degradation of nucleic acids.	K4

HUMAN PHYSIOLOGY
UBCM509

Semester	**: V**	**Credits**	**5**
Category	**: Core VIII/ DSC-IX**	**Hours/Week**	**5**
Class & Major	**: III B.Sc Biochemistry**	**Total Hours**	**65**

Course Objectives

CO No.	To enable the students to
CO -1	Understand the physical structure and functioning of human body.
CO -2	Recognize the importance of human organs (Heart, Lungs & Kidneys).
CO -3	Learn about the body fluids and its importance.
CO -4	Understand the different parts of nervous and muscular system.
CO -5	Illustrate the blood coagulation and blood grouping.

UNIT - I BLOOD AND CIRCULATORYSYSTEM 13 Hours

Blood and Body fluids - Composition and Functions; Types of Blood Cells-Morphology and Function; Blood coagulation; Blood groups– ABO, Rhesus System and h. Blood pressure, Sphygmomanometer.

Circulation - Structure and functions of Heart and Blood Vessels, Cardiac Cycles, Cardiac Factors Controlling Blood Pressure, Electrocardiogram.

UNIT - II DIGESTION AND EXCRETORYSYSTEM 13 Hours

Digestive System - Structure and Function of different components of Digestive System, Mechanism of Digestion and Absorption of Carbohydrates, Lipids and Proteins, Gastric Secretion - Mechanism of HCl formation in Stomach.

Excretory system - Kidney structure and its organization, Mechanism of Urine Formation- Glomerular Filtration Rate (GFR), Selective Reabsorption (active and passive) of substances and Secretion.

UNIT –III RESPIRATION 12 Hours

Respiration – Types, Components of the respiratory system; **Structure and functions of Lungs:** Diffusion of gases in Lungs- Transport of oxygen from Lungs to Tissues, Transport of CO_2 from Tissues to Lungs.

UNIT – IV NERVOUS SYSTEM **13 Hours**

Central Nervous System- General organization. Functional Units. Resting and Action potential- Conduction of Nerve Impulse, Structure of Synapses, Synaptic transmission; Structure of Neuromuscular Junction and Mechanism of Neuromuscular transmission; Neurotransmitters. Biochemical aspects of learning and memory. Encephalin and Endorphins.

UNIT – V MUSCULAR SYSTEM **14 Hours**

Types of Muscles and their Functions; Structure of Skeletal Muscle, Myosin, Actin and Regulatory proteins, Sarcomere unit, Mechanism of Contraction and Relaxation of Skeletal Muscles; Chemical changes during Muscle Contraction, Source of energy for Muscle Contraction.

Text Books

- C.C. Chatterjee (2018), *Human Physiology*, Vol I & II, (12th Ed.).
- Sembulingam.K and PremaSembulingam (2019), *Essentials of Medical Physiology, (8th Ed.),* Jaypee Brothers, New Delhi.

Reference Books

- Guyton & Hall (2020), *Textbook of Medical Physiology, (14th Ed.).*, Reed Elsevier India Private Limited, New Delhi.
- Murray et al, (2012), *Harper's Physiological Biochemistry, (29th Ed.).*, Tata McGraw Hill Publication. Co. Limited, New Delhi.
- Chaudhri, K. (2016) *Concise Medical Physiology*, 7th Edition, New Central BookAgency (Parentral) Ltd., Calcutta Fox.

e-Resources

- https://openstax.org/details/books/anatomy-and-physiology
- https://open.umn.edu/opentextbooks/textbooks/anatomy-and-physiology
- https://oer.galileo.usg.edu/cgi/viewcontent.cgi?article=1004&context=bio logy- collections
- https://opentextbc.ca/anatomyandphysiology/
- https://libguides.com.edu/c.php?g=649894&p=4556867

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Explain the components of blood, blood grouping & cardio vascular system.	K2
CO-2	Illustrate the mechanism of digestion, absorption of macromolecules and explain urine formation.	K3
CO-3	Describe the process of gaseous exchange in tissues and lungs, respiratory adaption to high altitude.	K1
CO-4	Measure and give results for identifying the physiological functions.	K5
CO-5	Determine the mechanism of contraction and relaxation of muscles.	K5

NUTRITIONAL BIOCHEMISTRY

UBCO501

Semester : V **Credits :4**
Category : Core Elective **Hours/Week : 5**
Class & Major : III B.Sc Biochemistry **Total Hours : 65**

Course Objectives:

CO No.	To enable the students to
CO -1	Understand the basic concepts of food and RDA.
CO -2	Evaluate the roles and nutritive significance of carbohydrates, lipids and proteins.
CO -3	Study the role of vitamins and minerals for good health.
CO -4	Understand the differential functions of nutritional food constituents and deficiency states.
CO -5	Understand the categorization and assessment of nutritional foods status and national nutrition institutions roles.

UNIT-I CONCEPTS OF FOOD AND NUTRITION 12 Hours

Principle food components, Diet, Balanced diet, Nutritional Requirement, Recommended dietary allowances (RDA), Definition of Calorie and joule, Measurement of Calorific values of foods, Physical, Physiological fuel value. Basal metabolism – (BMR), Factors affecting BMR, specific dynamic action of foods, Energy needs of the body measurement of energy balance of the body. Direct and indirect calorimetry. Calculation of energy requirement, the ideal proportion of calories from protein, carbohydrates and fats. Respiratory quotient (RQ) of nutrients and factors affecting the RQ.

UNIT-II MAJOR FOOD CONSTITUENTS / MACRO NUTRIENTS 15 Hours

Carbohydrates - Dietary requirements, source and functions of carbohydrates, Dietary fiber, and its fiber in lipid metabolism.

Proteins - Sources, RDA & Nutritional Significance. Essential and Nonessential amino acids. NPU, Biological Value , Nitrogen balance.

Lipids - Essential Fatty Acids; Functions of EFA, RDA, – excess and deficiency of EFA. Lipotropic factors, role of saturated fat, cholesterol, lipoprotein and triglycerides.

UNIT-III MINOR FOOD CONSTITUENTS / MICRO NUTRIENTS 13 Hours

Vitamins - definition and types of vitamins. Sources, requirement, biological functions, deficiency symptoms of fat soluble and water soluble vitamins.

Minerals - sources, requirement, physiological functions, deficiency of Calcium, Sodium, Potassium, Iron, Phosphorous, Chloride, Magnesium, Chromium.

Water - Sources, Requirements, Functions, Mechanism of water balance Electrolyte and acid base balance

UNIT IV NUTRITIONAL DISORDERS & ASSESSMENT OF NUTRITIONAL STATUS 13 Hours

Role of nutrition in Obesity, Cardiovascular disease, diabetes, Gastrointestinal disorders other than cancer, Marasmus and Kwashiorkar, Night blindness, Iron deficiency anemia, Osteomalacia, PCOD.

Anthropometric measurements; Z scores, BMI, skinfold, circumference ratios. Basal metabolic panel, Comprehensive metabolic panel, CBC, Urine Analysis, Assessment of Anemia, ROS assessment, GTT and Glycosylated Hb, Differential diagnosis of B12 and folate.

UNIT-V COMMUNITY NUTRITION & NUTRACEUTICALS 12 Hours

Assessment of Nutritional Status – Anthropometry, Malnutrition – Definition causes of Malnutrition. International organizations, National agencies in community nutrition - FAO,WHO, UNICEF and CARE, ICDS, Midday meal programme, Role of National Institutions ICMR, CSIR, NIN, CFTRI. Nutraceuticals – Definition, Benefits and Importance of fortified dairy products (e.g., milk) and citrus fruits (e.g., orange juice).

Text Books

- M.Swaminathan, (2005), *Advanced Text book of Food and Nutrition*, Bappco Press. Bappco.
- Sathyanarayana, (2017), *Biochemistry*,. Elsevier – ISBN: 9788-131236017.
- Srilakshmi.B, (2019), *Dietetics – (Multi Colour Edition Ed)*, New age International Publisher – ISBN 10: 93866492091, ISBN 13: 9789386649201.

References

- Andreas M. Papas, *Antioxidant Status, Diet, Nutrition, and Health* , CRCPress.
- Margaret Mc Williams (2012), *Food Fundamentals (10th Ed)*, Prentice Hall.
- Tom Brody, *Nutritional Biochemistry*, Academic Press, USA.Aravind Kumar (1999), *Human rights and social movements*, Anmol publisher.
- Krause's (2013), *Food, Nutrition & diet therapy (11th Ed.,)* , W.B Saunders – ISBN – 10 : 0721697844; ISBN – 13: 9780721697840.

e-Resources

- https://www.amazon.in/Nutritional-Biochemistry-Tom-Brody-ebook/dp/B0087GZCUW
- amazon.in/Nutritional-Biochemistry-D-C-Sharma-ebook/dp/B08FR1MHD8
- https://www.elsevier.com/books/nutritional-biochemistry/brody/978-0-12-134836-6

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Define the fundamental concept in food and nutrition.	K1
CO-2	Summarize the nutritional significance of macromolecule.	K2
CO-3	Illustrate the importance of Vitamin & Minerals in day to day life.	K3
CO-4	Analyze nutrition-related conditions and prepare balanced diet.	K4
CO-5	Express the community nutrition and role of national institutions.	K2

STEM CELL BIOLOGY
UBCO502

Semester : V **Credits : 4**
Category : Core Elective **Hours/Week : 5**
Class &Major: III B.Sc Biochemistry **Total Hours :65**

Course Objectives:

CO No.	To enable the students to
CO -1	Understand physiology of stem cells at cellular level.
CO -2	Study the role of growth factors in cell development.
CO -3	Understand the culture of stem cells.
CO -4	Illustrate the methods to produce differentiated cells.
CO -5	Identify the diagnosis and management of diseases and disorders with stem cells

UNIT –I INTRODUCTION TO STEM CELLS **15 Hours**

Stem cell definition, kinds of stem cells - Embryonic and adult stem cells. Characteristics of stem cells.Totipotent, Unipotent, oligopotent and pluripotent cells.

UNIT- IIGROWTH INDUCING AGENTS **10 Hours**

Role of bone marrow in cell synthesis, Growth factors – Types and their role in cell development.

UNIT- IIICELL LINES **12 Hours**

Cell lines – Types, Commonly used cell lines and selection of cell lines; maintenance of cell culture; Sub culture – Mono layer culture, Criteria for sub culture of mono layer, technique; Suspension cultures.

UNIT- IV EMBRYONIC STEM CELLS **13 Hours**

Stem cell culture – Embryonic stem cell, methods to produce differentiated cells, maintenance of stem cells. Stem cell bank.

UNIT- V APPLICATIONS OF STEM CELLS **15 Hours**

Human embryonic stem cell research- Parkinson's Diseases, Diabetes, Heart muscle repair. Applications of stem cells in study of tissue differentiation, molecular signals and testing of new drugs.

Text Books

- U. Sathiyanarayana, (2007).*Biotechnology*. Books & Allied (P) Ltd.
- V. Kumaresan, (2009). *Biotechnology*. Saras publication. Nagercoil revised edition.

Reference Books

- Old R.W, Primrose S.B, (2003). *An introduction to Genetic Engineering*. Blackwell Science.
- Sasidhara ,(2006).*Animal Biotechnology*. MJP publishers.

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Define the characterizes of a stem cell	K1
CO-2	List and compare the different types of stem cells	K2
CO-3	explain stem cell differentiation in vivo and in vitro	K3
CO-4	Describe the methods of stem cell culture	K4
CO-5	Enumerate the role of human embryonic stem cell research.	K2

ENZYMOLOGY PRACTICAL
UBCR501

Semester	**: V**	**Credits**	**: 3**
Category	**: Core Practical V**	**Hours/Week**	**: 4**
Class & Major	**: III B.Sc Biochemistry**	**Total Hours**	**: 52**

Course Objectives:

CO No.	To enable the students to
CO -1	Plan and execute an enzyme assay &Understand enzyme activity.
CO -2	Develop technical competence with respect to kinetics of specific enzymes.
CO -3	Inculcate the ability to engage in critical enquiry.
CO -4	Analyse kinetic inhibition data and to determine the mechanism of inhibition.
CO -5	Describe the factors affecting enzymatic reactions &Experimental approach to enzyme action.

Experiments

1. Assay of Salivary Amylase activity.
2. Effect of pH on Salivary Amylase activity.
3. Effect of Temperature on Salivary Amylase activity.
4. Effect of Substrate Concentration on Salivary Amylase activity.
5. Assay of Urease activity.
6. Effect of pH on Urease activity.
7. Effect of Temperature on Urease activity.
8. Effect of Substrate Concentration on Urease activity.
9. Assay of Serum Alanine Transaminase activity.
10. Assay of Serum Alkaline Phosphatase activity.
11. Assay of Serum Aspartate Transaminase activity.

Text Books

- David T.Plummer (1999), *An Introduction to practicalBiochemistry*,(3rd revised edition).
- J.Jayaraman (2011), *Laboratory MannualinBiochemistry*,New Age international limited publication.

Reference Books

- Pattabiraman (2015), *Laboratory Mannual in Biochemistry (4th Ed.).*
- Singh .S.P. (2013), *Practical Mannual of Biochemistry, (6th Ed.),* CBS Publication

e-Resources

- https://www.worldcat.org/title/practical-enzymology/oclc/827358447
- https://onlinelibrary.wiley.com/doi/book/10.1002/9783527659227
- https://www.kobo.com/us/en/ebook/practical-enzymology
- https://books.google.co.in/books/about/Practical_enzymology.html?id=dxZrAAAAMAA J&redir_esc=y
- https://www.amazon.in/Practical-Enzymology-Hans-Bisswanger-ebook/dp/B00DOX8ESA

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Identify the influence of enzyme structure on catalytic properties.	K1
CO-2	Explain the factors influencing the enzyme activity.	K2
CO-3	Analyze the action of enzymes as biocatalysts and in factors that influence enzyme activity.	K4
CO-4	Estimate the activity of enzymes of salivary amylase, urease, ALT, AST and ALP	K5
CO5	Produce the results on enzyme activity for their own biological specimens.	K6

PROJECT
UBCP501

Semester : V **Credit: 4**
Category : Core X **Hours/Week: 4**
Class & Major: III B.Sc. Biochemistry **Total Hours:52**

Course Objectives:

CO No.	To enable the students to
CO -1	Acquire knowledge in biological science and interdisciplinary research
CO -2	Develop problem solving and decision making skills
CO -3	Articulate a clear research question or problem and formulate a hypothesis
CO -4	Identify and demonstrate appropriate research methodologies and know when to use them
CO -5	Reflect on their own research, identifying lessons learned, strengths, and ways to improve

Guidelines:

- Project is offered for final year B.Sc Biochemistry students in semester V.
- 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.
- Project proposal and final project report are to be presented in power point presentation.
- Evaluation scheme for the project will be Internal 60 and External 40.

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Acquire effective knowledge in experiential learning for the students which plays a key role in bridging the gap between industry and academia.	K1
CO-2	Identify practical problem solve using the laboratory techniques and biochemistry underpinning the set experiment.	K1
CO-3	Apply fundamental and disciplinary concepts and methods in ways appropriate to their principal areas of study	K3
CO-4	Demonstrate an awareness and application of appropriate personal, societal, and professional ethical standards.	K4
CO-5	Design, perform, and analyze results from the area of study.	K6

Assessment:

S. No	Internal	Evaluation	
	Component	**CIA (Valuation by Faculty Guide)**	**ESE (Average of Internal & External Marks)**
1	Research Proposal – Statement of the problem, Research methodology	10	-
2	Analysis of data / Implementation, Results & Findings, Conclusion	10	-
3	Report Preparation	10	-
4	Research publications	30	-
5	Project report	-	30
6	Viva Voce	-	10
	Total	**60**	**40**

III & IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
V	Core VII / DSC-VII	UBCM507	Enzymology	Assignment	Seminar
	Core VIII / DSC-VIII	UBCM508	Intermediary Metabolism	Assignment	Seminar
	Core IX/ DSC - IX	UBCM509	Human Physiology	Model presentation	Seminar
	CORE PRACTICAL-V	UBCR501	Enzymology Practical	DPA	Viva
	MAJOR ELECTIVE-I / DSE - I	UBCO501	Nutritional Biochemistry	Balanced diet chart	Case study
		UBCO502	Stem Cell Biology	Culture preparation	Seminar

DEPARTMENT OF CHEMISTRY

PREAMBLE

UG : Programme Profile and the Syllabi of Courses Offered in Semester V Along with I and II Evaluation Components (With Effect from 2022 – 2025 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 concepts of theoretical and experimental aspects of chemistry
PSO-2	Explain the basic principles, definitions, structures, reactivity, mechanism and stereochemistry of the chemical reactions
PSO-3	Encourage the capability to synthesize, separate and characterize compounds using laboratory and instrumentation techniques
PSO-4	Solve problems in different branches of Chemistry
PSO-5	Developing employability skills and entrepreneurial skills enable the students to find Jobs in core-chemistry fields.
PSO-6	Develop research oriented skills
PSO-7	Make use of the chemistry oriented theoretical and practical knowledge in securing a successful career such as chemist, analytical chemist and nanotechnologist and to pursue higher studies

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	UCHM109	Inorganic Chemistry-I	-	5	5
		Core II/ DSC-II	UCHM111	Analytical Chemistry	-	4	4
		Core Practical I/ DSC Practical-I	UCHR101	Inorganic 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
		Core IV/ DSC-IV	UCHM203	Organic Chemistry-I		5	5
		Core V/ DSC-V	UCHM205	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
	IV	NME			-	3	2
	V	Extension Programme/ Physical Education/NCC			-	-	1/2
					Total	**36**	**27/30**
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
	IV	NME				3	2
		Soft skill	USKS401			2	1
	V	Extension Programme/ Physical Education/NCC				-	-/2
					Total	**30**	**23/27**
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 Bio inorganic chemistry Heterocyclic Chemistry Organic Spectroscopy	-	5	4
		Core Practical IV / DSC Practical IV	UCHR501	Gravimetric Analysis	-	3	2
		Core Practical V / DSC Practical V	UCHR605	Physical Chemistry Practical	-	3	-
		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	5
		Core XVI/ DSC-XVI	UCHM615	Organic Chemistry III	-	5	5
		Core XVII/ DSC-XVII	UCHM616	Physical Chemistry III	-	5	5
		Core XVIII/ DSC-XVIII	UCHM617	Advanced Material Chemistry		2	2
		Major Elective/ DSE-II	UCHO602 UCHO603 UCHO604	Polymer Chemistry Medicinal Chemistry Forensic Chemistry	-	5	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
	IV	Soft Skill	USKS601		-	2	1
	V	Extension Programme/ Physical Education			-	-	-/2
					Total	**30**	**27/29**
					Grand Total	**192**	**148/162**

COURSES OFFERED TO OTHER DEPARTMENTS

Semester	Part	Category	Course code	Course title	Pervious course code	Contact hrs per week	Credits
							Min/Max
I	III	Allied- I/GE	UCHA103	Chemistry for Biochemistry		3	2
IV	III	Allied- I/GE	UCHA402	Chemistry for physics		3	2
I	III	Allied Practical-I/ GE Practical-I	UCHR104	Organic Analysis	-	3	2
IV	III	Allied Practical-II/ GE Practical-II	UCHR404	Volumetric Analysis		3	2
V	III	Allied Optional	UCHA502 UCHA504 UCHA505 UCHA506	Industrial Chemistry Dairy Chemistry Agricultural Chemistry Environmental Chemistry	-	5	4

INORGANIC CHEMISTRY – II

UCHM510

Semester : V **Credit : 5**
Category : Core XI **Hours/Week : 5**
Class Major : III-B.Sc. Chemistry **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO-1	Learn organometallic compounds
CO-2	Understand the carbon and metal bond
CO-3	Understand organometallic compounds.
CO-4	Attain the knowledge of trace element uses
CO-5	Acquire the basic concept and theory of co-ordination chemistry and nuclear chemistry

UNIT-I BINARY AND ORGANOMETALLIC COMPOUNDS 11 Hours

Binary compounds - Hydrides, borides and nitrides - Classification, preparation, properties and uses. Organometallic compounds of alkenes like ethylene & butadiene, alkynes like acetylene & diphenyl acetylene and cyclopentadiene.

UNIT –II GRAVIMETRIC ANALYSIS 12 Hours

Principles of gravimetric analysis – Gravimetric factor – Calculations involved – conditions for precipitation – Theory of precipitation – Types of precipitants - Organic precipitants & advantages – Purity of precipitates – Co-precipitation and post-precipitation – precipitation from homogeneous solution; crucibles – Types and maintenance – Washing of the precipitates – Drying and ignition of precipitates.

UNIT- III SOLID STATE **15 Hours**

Packing of atoms (Bcc, Ccp and Hcp) - Theories of Bonding - Electron gas, pauling and band theories. Structure of alloys - Interstitial solid solutions - Hume- Rothery rule - Crystal defects in Stoichiometric and non-Stoichiometric compounds. Semi-conductors - extrinsic and Intrinsic - N-Type and P-Type - Composition, structure and uses in electronic industry

UNIT- IV NUCLEAR CHEMISTRY **12 Hours**

Introduction - Composition of nucleus and nuclear forces. Nuclear stability - n/p ratio - mass defect, binding energy, packing fraction and magic numbers - Nuclear shell and liquid drop models. Isotopes - Detection and separation - Isotopic constitution of elements - Whole number rule - Isobars, isotones and nuclear isomers.

UNIT -V RADIOACTIVITY AND NUCLEAR TRANSFORMATIONS **15 Hours**

Radioactivity - Discovery, detection and measurement (Wilson Cloud Chamber) - radioactive emission - Disintegration theory - Modes of decay - Rate of disintegration – Half life- Average life - Radioactive series. Nuclear transformations - Use of Projectiles - Nuclear Reactions - Fission and fusion - Nuclear reactor - Applications of radioisotopes - Carbon dating - Radioactive waste disposal.

Reference Books

- Madan, R.D. (2008). *Modern Inorganic Chemistry.* (2^{nd} ed.,). S. Chand and Company Ltd. New Delhi.
- Satyaprakash. Tuli, G.D. Basu,S.K. and Madan, R.D. (2006). *Advanced Inorganic Chemistry* (Vol. I & II). S. Chand. New Delhi.

Text Books

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

e-Resources

- http://dpuadweb.depauw.edu/harvey_web/eTextProject/pdfFiles/Chapter8.pdf
- https://www.fys.ku.dk/~jjensen/Book/echap1_3.pdf
- https://preparatorychemistry.com/Bishop_Book_atoms_16.pdf
- https://www.mcvts.net/cms/lib/NJ01911694/Centricity/Domain/136/chap24.pdf
- https://uomustansiriyah.edu.iq/media/lectures/6/6_2017_03_14!12_38_50_AM.pdf
- https://shodhganga.inflibnet.ac.in/bitstream/10603/24695/2/02_chapter%201%20with %20references.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO1	Understand the synthesis and structure of organometallic compounds	K1 & K2
CO2	Understand the classification, preparation, properties and uses of binary and organometallic compounds	K3
CO3	Comprehend the theories, crystal defects and semi-conducting nature of metallic state substances.	K4
CO4	Acquires the basic concepts of nuclear chemistry, radioactivity and nuclear transformations.	K5
CO5	Applying the knowledge of gravimetric and precipitation techniques in the chemical industries.	K6

ORGANIC CHEMISTRY – II

UCHM511

Semester : V **Credits: 05**

Category : Core XII **Hours/Week : 05**

Class Major : III-B.Sc. Chemistry **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO-1	Understand reactions of alcohols and phenols
CO-2	Identify the organic compounds of nitrogen
CO-3	Classify the Carbohydrates
CO-4	Develop the Carbonyl compounds
CO-5	To identify and classify different types of N-based derivatives

UNIT- I REACTION OF ALCOHOLS, PHENOLS & THIOLS **15 Hours**

Alcohols: Reactions with sodium - hx (lucas test) – Esterification. Oxidation with PCC - Alkaline.$kmno_4$ - Acidic dichromate - Con.hno_3. oxidation of diols - Pinacolpinacolone rearrangement.

Phenols: Preparation – Bicumene hydroperoxide method - Diazonium salts. reactions – Electophilic substitution - Nitration, halogenations and sulphonation. Gattermann-Koch reaction, Houben - Hoesch condensation, Schotten Baumann reaction. Acidic character of phenol, Comparative strength of alcohol and phenol.

Thiols: Nomenclature - Methods of preparation, properties and uses. Thioethers – Nomenclature - Methods of preparation, properties and uses.

UNIT- II NAME REACTIONS **15 Hours**

Mannich reaction, Birch reduction, Dakin reaction, Simmons - Smith reaction, Kolbeschmitt reaction, Mukaiyama reaction, Hundiecker reaction, Chichibabin reaction, Nef reaction, Stephen reaction, Reimer-tiemann reaction, Wurtz reaction, Ullmann reaction, Norrish type cleavage.

UNIT -III ORGANIC COMPOUNDS OF NITROGEN **15 Hours**

Nitro Compounds: Preparation of nitroalkanes and nitroarenes. reduction of nitrobenzene under various conditions, nitro-aci nitro tautomerism.

Amines (aliphatic and aromatic): Cassification, preparation from alkyl halides, gabriel- Phthalimide synthesis, Hofmann bromamide reaction. Hofmann and saytzeff Elimination, Carbylamine test, Hinsberg test, with $nano_2$+hcl, schotten-baumann reaction, Electophilic substitution in aniline: nitration, bromination and sulphonation.

Diazonium salts: preparation from aromatic amines. Conversion to Benzene, Phenol and Azodyes.

UNIT- IV CARBONYL COMPOUNDS **18 Hours**

Aldehydes and Ketones: Structural significance of the carbonyl function and Nomenclature. Formaldehye, acetaldehyde, acetone and benzaldehyde - Preparation from acid chlorides & Nitriles. Reactions with HCN, ROH, $NaHSO_3$, Amino derivatives. Iodoform test, Aldol condensation, Cannizzaro's Reaction, Wittig Reaction, Benzoin condensation, Clemmensen reduction, Wolff Kishner reduction and meerwein Pondorff-Verley reduction.

Carboxylic Acids & Their Derivatives: Preparation of formic, Acetic and benzoic acids. Synthetic applications of diethyl malonate & Ethyl acetoacetate. Preparation of acid chlorides, Anhydrides, Esters and amides from acids and their inter-Conversion. Comparative study of the Nucleophilicity of acyl derivatives. Reformatsky reaction, Perkin condensation and hell-Volhardt-Zelinsky reaction.

UNIT –V CARBOHYDRATES **15 Hours**

Carbohydrates - Classification – Aldoses and ketoses, Reducing and non-reducing sugars - Reactions of glucose and fructose – Osazone formation, mutarotation and their mechanism - Structural elucidation of glucose and fructose – Pyranose and furanose forms – Haworth's method. Determination of ring size- Haworth projection formula - Configuration of glucose and fructose - Epimerization - Chain lengthening and chain shortening of aldoses - Inter conversion of aldoses and ketoses – uses of glucose. Disaccharides and polysaccharides - Reactions and structural elucidation of sucrose and maltose - Properties, structure and uses of starch and cellulose.

Reference Books

- Morrison and Boyd, R.T. (2010). *Organic Chemistry* (VI ed.,). Prentice Hall of India. New Delhi.
- Ahluwalia,V.K & Rakesh Kumar Parashar. (2015). *Organic Reaction Mechanisms.* (IV ed.,). Narosa Publishing house.

Text Books

- Soni, P.L. (2010). *Text Book of Organic Chemistry.* Sultan Chand.
- Bahl and Arun Bahl. (2014). *Advanced Organic Chemistry.* S. Chand.
- Peter Sykes. (2013). *A Guide Book to Mechanism in Organic Chemistry.* (VI ed.,)

e-Resources

- http://www.ncert.nic.in/ncerts/l/lech202.pdf
- https://www.angelo.edu/faculty/kboudrea/index_2353/Chapter_03_2SPP.pdf
- http://www.chtf.stuba.sk/~szolcsanyi/education/files/Organicka%20chemia%20II/Prednaska%209_Sacharidy/Doplnkove%20studijne%20materialy/Carbohydrates_Boudreaux.pdf
- https://authors.library.caltech.edu/25034/17/BPOCchapter16.pdf
- http://cms.gcg11.ac.in/attachments/article/105/NITRO%20COMPOUNDS.pdf

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO1	Understands the knowledge of reaction mechanisms of nitro and carbonyl compounds.	K1 & K2
CO2	Acquires the knowledge of preparation, properties and applications of alcohols, phenols, thiols and ethers.	K3
CO3	Analyze the metal and polynuclear carbonyl complex	K4
CO4	Classifies and elucidates the structure, properties and uses of carbohydrates.	K5
CO5	Assemble the reaction mechanism of different heterocyclic compounds	K6

PHYSICAL CHEMISTRY-II

UCHM512

Semester : V **Credits : 5**

Category : Core XIII **Hours/Week : 5**

Class Major : III-B.Sc. Chemistry **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO-1	To improve the ability of mathematical calculations involved in physical chemistry
CO-2	To enable the students to understand the concepts of thermodynamics
CO-3	Apply the concepts to more space physical and chemical system
CO-4	To make the students know the concepts of chemical kinetics and
CO-5	To apply the concepts of kinetics to different processes.

UNIT-I PARTIAL MOLAR PROPERTIES **12 Hours**

Chemical potential – Gibbs Duhem equation – Effect of temperature and pressure on chemical potential – Chemical potential in systems of ideal gases – Duhem margules equation.

Homogeneous catalysis-Definition- Function of a catalyst in terms of gibbs free energy of activation. Heterogeneous catalysis- Application of catalysis.

UNIT-II PHASE RULE **13 Hours**

Concepts of phase, Components and degrees of freedom with examples. Gibb's Phase Rule-Derivation, Classius - Clapeyron equations and their applications to equilibria in Phase Transitions. (Solid– Liquid, Liquid – Vapour, Solid-Vapour)

One Component System: Phase diagram-Water and sulphur systems.

Reduced Phase Rule: Two component systems - Simple eutectic: Lead-Silver system - Formation of compound with Congruent melting point: $FeCl_3$ -Water system , Other examples formation of compound with incongruent melting point: Na-K system

UNIT-III ADSORPTION: **10 Hours**

Physisorption & chemisorption- Freundlich adsorption isotherm – Langmuir adsorption isotherm –Bet equation (no derivation) application of adsorption.

Concept of fugacity & activity: Determination of fugacity of a gas- Change of fugacity with temperature. Activity & activity coefficient- Determination of activities – variation of activity of a gas with temperature & pressure- Nernst distribution law – limitations- Thermodynamic derivation –Applications.

UNIT-IV CHEMICAL KINETICS I **15 Hours**

Order and molecularity of reactions: Definition of rate, order rate law, rate constants, molecularity – Simple reactions involving zero, first, second and third order reactions derivations of rate equations for zero, first, second and third order reactions - pseudo first order reactions. Derivation of half life time – Change with examples. Methods to determine order of reactions. Problems based on order, Rate equations and $T_{1/2}$.

Types of reactions: Reversible or opposing, consecutive and parallel reactions (simple ideas only). Thermal chain reactions (i) h_2 and br_2 reaction (ii) Dissociation of acetaldehyde steps involved only (no kinetics expressions needed)

UNIT-V CHEMICAL KINETICS II **15 Hours**

Theories of chemical reaction rates: Factors affecting chemical reactions – Nature of reactants concentration, Catalyst, Solvent polarity and ionic strength (only qualitative ideas), Arrehenius theory of chemical reaction rates collision theory of bimolecular and unimolecular reactions. Lindemann hypothesis, Transition state or absolute reaction rate theory (ARRT)

Text Books:

- Puri Sharma Pathania.(2009). *Principles of Physical Chemistry*. Shoban Lal Nagin Chand & Co. Jalandhar.
- Soni, P. L. (2006). *Text Book of Physical Chemistry.* Sultan Chand.

Reference Books:

- Negi and Anand. (2000). *Physical Chemistry.* New Age.
- Kundu and Jain. (1999). *Physical Chemistry.* S. Chand.

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO1	Understand the concepts of thermodynamics	K1 & K2
CO2	Explain and apply concepts of physical chemistry	K3
CO3	Apply it to more space physical and chemical system	K4
CO4	Know the concepts of chemical kinetics	K5
CO5	Evaluate the concepts of kinetics to different processes	K6

GRAVIMETRIC ANALYSIS

UCHR501

Semester : V **Credit : 2**

Category : Core Practical III **Hours/Week : 3**

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

Course Objectives:

CO No.	To enable the students
CO-1	To give practical exposure to estimations gravimetrically preparation
CO-2	The calculations involved in the preparation of solutions using solid and liquid solutes
CO-3	Acquire quantitative skills to get accurate result
CO-4	Analyze the ions or metals present in the given substance by gravimetric method

Experiments:

Part I : Gravimetric Estimation

1. Estimation of Sulphate as Barium sulphate.
2. Estimation of Barium as Barium sulphate.
3. Estimation of Barium as Barium chromate.
4. Estimation of Lead as Lead chromate.
5. Estimation of Calcium as Calcium oxalate monohydrate.
6. Estimation Zinc or Magnesium as oxinate.

Part-II

1. Physical constant (melting & boiling point)

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, A. O. (1999). *Practical Chemistry.* Scientific Book Center. Cannanore
- Sundaram, S. and Viswanthan, S. (1998). *Practical Chemistry.* (3 Volumes).

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO1	summarize findings in writing in a clear and concise manner	K1 & K2
CO2	Analyze the techniques involved in volumetric chemical analysis with emphasis on solution	K3
CO3	engage in safe laboratory practices handling laboratory glassware, equipment, and chemical reagents	K4
CO4	Understand the basics of gravimetric analysis	K5
CO5	Evaluate data collected to determine the identity, purity, and yield of products.	K6

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	To understand the phase rule of binary system
CO-2	To know the kinetics of acid hydrolysis of ester
CO-3	To understand the concept of partition co-efficient
CO-4	To understand the basic concepts of conductometric and potentiometric titrations
CO-5	To 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 catalysed 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
CO-2	Understand the conductivity experiments	K2
CO-3	Apply potentiometric titrations in identification of acids	K3
CO-4	Analyze the experimental data	K4
CO-5	Develop the partition co-efficient of new compounds in a mixture of two immiscible solvents	K6

ORGANOMETALLICS AND BIOINORGANIC CHEMISTRY
UCHO501

Semester	**:V**	**Credit**	**:04**
Category	**: Major Elective /DSE-1**	**Hours/Week**	**:05**
Class &Major	**: III B.Sc.,Chemistry**	**Total Hours**	**:65**

Course Objectives:

CO No.	To enable the students
CO-1	Learn organometallic compounds
CO-2	Understand the carbon and metal bond
CO-3	Predict the Structure of metal carbonyl bond
CO-4	Acquire the knowledge of trace element uses
CO-5	Get the knowledge of oxygen carrier and oxygen transport

UNIT-I ORGANOMETTALIC CHEMISTRY 11 Hours

Organometallic Compounds-Synthesis, Structure and bonding**.** Hapto nomenclature of organometallic compounds. Organometallic compounds with linear pi donor ligands -olefins, acetylenes, dienes and allyl complexes-synthesis, structure and bonding

UNIT-II METALLOCENES 12 Hours

Synthesis and structure of complexes with cyclic pi donors- metallocenes and cyclic arene complexes. Electronic structure and bonding in ferrocene and dibenzene chromium. Carbene and carbyne complexes - Metallocene-based Ziegler-Natta polymerization of alkenes - application of metallocenes - non-linear optics - medicine - molecular recognition– catalysis.

UNIT-III METAL CARBONYLS 14 Hours

Metal carbonyls: CO as a π-bonding ligand, synergism, preparation, properties, structure and bonding of simple mono and binuclear metal carbonyls, metal nitrosyls, metal cyanides and dinitrogen complexes. Polynuclear metal carbonyls with and without bridging. Carbonyl clusters-LNCCS and HNCCS, Isoelectronic and isolobal analogy, Wade-Mingos rules, cluster valence electrons. IR spectral studies of bridging and non-bridging CO-ligands.

UNIT-IV BIO INORGANIC CHEMISTRY 15 Hours

Classification of elements according to their action in biological system - Toxicity of metals ions (Cd, Hg, Cr and Pb, As) and reasons for toxicity - structure and functions of biological membranes, mechanism of ion transport across membranes, sodium pump, ionophores, valinomycin. Phosphate esters in biology, Redox metalloenzymes, cytochromes-cytochrome P450

UNIT-V OXYGEN CARRIERS AND OXYGENTRANSPORT PROTEINS 13 Hours

Oxygen transport - oxygen carriers, oxygen transport proteins, Photosystems, Porphyrins, B-Complex, Cyanocobalamin, - Structure and functions of hemoglobin and myoglobin. Oxygen transport mechanism, cooperativity, Bohr Effect. Structure and functions of hemerythrins, hemocyanin.

Text Books

- Madan, R. D. (2022). *Modern Inorganic Chemistry*. (3rd Ed.). S. Chand and Company Ltd. New Delhi.
- Lee, J.D. (2008).*Concise Inorganic Chemistry*.(5th Ed.). ELBS. London

Reference Books

- Puri, B.R. Sharma, L.R. and Khalia, K. C. (2020). *Principles of Inorganic chemistry.(33rd Ed.)*. Vishal Publishing Co.India.
- Tuli, G.D. Satyaprakash. Basu, S.K. and Madan, R.D. (2022). *Advanced Inorganic Chemistry (Vol. I & II)*. S. Chand. NewDelhi.

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO1	Understand the synthesis and structure of organometallic compounds	K1 & K2
CO2	Demonstrate the metallocene compound	K3
CO3	Analyze the metal and polynuclear carbonyl complex	K4
CO4	Evaluate and apply knowledge of element use in biological system	K5
CO5	Design the structure and function of haemoglobins and myoglobin	K6

HETEROCYCLIC CHEMISTRY
UCHO502

Semester : V **Credit: 04**
Category : Major Elective/DSE-I **Hours/Week :05**
Class & Major : III B.Sc., Chemistry **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO1	To enable the students to Nitrogen containing functional groups and their applications in organic conversions and related mechanisms.
CO2	To learn about structure, synthesis, reactivity of important heterocyclic compounds and polycyclic aromatic hydrocarbons.
CO3	To identify and classify different types of N-based derivatives
CO4	To familiarize students about different classes of N-based naturally occurring important alkaloid and terpenoid compounds, their structures
CO5	Critically examine the synthesis and reaction mechanism of different heterocyclic Compounds, as well as natural alkaloid and terpenoid molecules.

UNIT- I NITROGEN CONTAINING FUNCTIONAL GROUPS: NITRO COMPOUNDS, NITRILES AND ISONITRILES, AMINES **11 Hours**

Structure and Preparation of nitroarenes - Properties and reactions of nitroarenes - Structure, Preparation and properties of nitriles and isonitriles. Preparation of primary amines: Reduction of nitro compounds, Hofmann ammonolysis, Hofmann degradation, Gabriel phthalimide synthesis - Preparation of secondary and tertiary amines: Aminolysis of alkyl halides - Reductive amination of aldehydes and ketones - Ullmann reaction Properties of amines - Basicity - Effect of substituent and solvent on basicity - Important reactions of amines: Alkylation, acylation, Carbylamine reaction - Important reactions of amines: Mannich reaction, Hoffmann's exhaustive methylation, Diels-Alder reaction, Hofmann-elimination reaction - Diazonium Salts: Structure, Preparation and reactions/applications

UNIT- II FIVE MEMBERED HETEROCYCLIC COMPOUNDS CONTAINING ONE HETEROATOM **12 Hours**

Classification, nomenclature and structure of pyrrole, furan and thiophene (5-numbered) and pyridine (6-membered). Molecular orbital pictures and aromaticity in of pyrrole, furan and thiophene and pyridine - Synthesis, reactions and mechanism of substitution reactions of: Furan - Synthesis of Pyrrole: Knorr pyrrole synthesis, Paal-Knorr synthesis, Hantzsch synthesis - Reactions and mechanism of substitution reactions of Pyrrole - Derivatives of furan: Furfural and furoic acid - Synthesis and reactivity of Isothiazole and Isoxazole.

UNIT- III SIX MEMBERED AND CONDENSED HETEROCYCLIC COMPOUNDS **14 Hours**

Structure, synthesis and properties of Pyridine (Hantzsch synthesis), Pyrimidine, Pyrazine - Structure elucidation of indole, Fischer indole synthesis and Madelung synthesis) - Structure elucidation of quinoline and isoquinoline - Skraup synthesis, Friedlander's synthesis

UNIT- IV POLYNUCLEAR HYDROCARBONS **15 Hours**

Preparation and structure elucidation of naphthalene - Reactions of naphthalene - Important derivatives of naphthalene - Preparation, structure elucidation and important derivatives of anthracene. Synthesis and Reactivity of Two or More Heteroatoms - Azoles with Heteroatoms in the 1,2-positions, 1,2- and 1,4- and 1,3- Diazines such as Pyrimidines and Triazines

UNIT- V ALKALOIDS **15 Hours**

Natural occurrence, Isolation and their physiological action - General structural features, experimental determination - Hoffmann's exhaustive methylation, Emde's modification - Structure elucidation and synthesis of Hygrine - Structure elucidation and synthesis of Nicotine. Terpenoids: Occurrence, classification, isoprene rule - Elucidation of structure and synthesis of Citral, Neral

Text Books:

- *A Textbook of Organic Chemistry – III*, M. K. Jain, S. C. Sharma, Amita, Vishal Publishing Co.
- Kalsi, P. S. (2020) Organic Chemistry and their mechanisms, 5th Ed., New Age International (P) Ltd. Pub.
- Morrison, R. T. & Boyd, R. N. (2010). *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), 7th Edition.
- Clayden, J. Greeves, N. Warren, S. Wothers, P. (2014). *Organic Chemistry*, Oxford University Press, 2nd Edition

Reference Books:

- Acheson, R.M. (2008). *Introduction to the Chemistry of Heterocyclic compounds*, John Welly & Sons, 3rd Edition.
- J. A. Joule, K. Mills and G. F. Smith *(2010). Heterocyclic Chemistry*, 1st Edition.
- Singh, J. Ali, S.M. & Singh, J.(2010). *Natural Product Chemistry*, Pragati Parakashan.

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO1	Understand the importance, properties, synthesis and applications of various Nitrogen- functional groups	K1 & K2
CO2	Ability to learn and carry out the structure, synthesis, reactivity of important heterocyclic compounds and polycyclic aromatic hydrocarbons.	K3
CO3	Identify and classify different types of N-based derivatives	K4
CO4	Evaluate the different classes of N-based naturally occurring important alkaloid and terpenoid compounds, their structures, synthesis and reactivity	K5
CO5	Assemble the reaction mechanism of different heterocyclic compounds, as well as natural alkaloid and terpenoid molecules	K6

ORGANIC SPECTROSCOPY

UCHO503

Semester : V **Credits : 4**
Category : Major/ Elective DSC-I **Hours/Week : 5**
Class Major : III-B.Sc. Chemistry **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO-1	Learn various energy level and spectroscopic techniques
CO-2	Identify the electromagnetic spectrum and its components.
CO-3	To identify the organic molecules from characteristic absorption bands
CO-4	To find out the structure of the molecule, principle and instrumentation of NMR- Spectra
CO-5	Learn mass spectroscopic techniques and their instrumentation concept.

UNIT- I INTRODUCTION TO SPECTROSCOPY **12 Hours**

Interaction of low energy radiation with matter- Electromagnetic spectrum, quantization of energy, Electronic, vibrational, and rotational energy levels, and transitions in atoms and molecules. Absorption and emission spectra-Boltzmann distribution (formula only). Relative population- translational, rotational, vibrational, and electronic energy levels at different temperatures.

UNIT – II ELECTRONIC SPECTOSCOPY **13 Hours**

Absorption laws- calculations involving Beer – Lambert's law, verification, and its limitations. Types of electronic transitions- chromophores and auxochromes, absorption bands

and intensity, factors governing absorption maximum and intensity. Atomic absorption spectroscopy – principles, instrumentation, and applications. Application of electronic spectroscopy and Woodward rules for calculating λ_{max}. of conjugated dienes and α, β – unsaturated compounds.

UNIT- III VIBRATIONAL SPECTROSCOPY 11 Hours

Principle, types of stretching and bending vibrations- vibrational frequencies, instrumentation- block diagram, source, cell sampling techniques- detector and recorders, identification of organic molecules from characteristic absorption bands. Raman spectroscopy- Raleigh and Raman scattering, stoke's and antistoke's line. Interpretation of spectra- organic compounds like hydrocarbon, aldehyde, ketones, acids and amine with one example to each.

UNIT- IV NMR SPECTROSCOPY 12 Hours

Principle of nuclear magnetic resonance- basic instrumentation, shielding mechanism, chemical shift, number of signals, spin-spin coupling and coupling constants, splitting of signals, deuterium labelling. Spin-Spin interactions-AX, AX_2 and AB types - Applications of NMR with suitable examples - ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate, toluene and acetophenone

UNIT- V MASS SPECTROMETRY 12 Hours

Basic principles of mass spectrum- molecular peak, base peak, isotopic peak, metastable peak and their uses, fragmentation – nitrogen rule, McLafferty rearrangement, Retro-Diels-Alder reaction. Instrumentation- determination of molecular formulae with example, mass spectrum of simple organic compounds, identification – alcohols, aldehydes, aromatic hydrocarbons.

Text Books

- Skoog, D.A.West, D.M. and Holler, F.J (2021). *Analytical Chemistry: An Introduction, (10th Ed.)* Saunders college publishing, Philadelphia.
- Khopkar, S. M. (2023). *Basic concept of Analytical Chemistry, (5th edition),* New Age International Publishers. New Delhi.
- Robert M. Silverstein, Francis X. Webster, David J. Kiemle, David L. Bryce, (2014).
- *Spectrometric Identification of Organic Compounds, (8th Ed),* Wiley publishers.
- Pavia Donald, L. (2015). *Introduction to Spectroscopy, (5th edition),* Thomson Press (India) Ltd, India

Reference books

- Chand. S (2013). *Elementary Organic Spectroscopy: Principles and Chemical Applications*, company Ltd. New Delhi, 5th Edition.
- Srivastava, V.K. and Srivastava, K.K (1987). *Introduction to Chromatography: Theory and Practice*, S. Chand and company. New Delhi.

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Explain the concepts of spectroscopy, interaction, matter and various energy level	K3
CO-2	Learn the absorption and emission law of electromagnetic spectrum and determine the effect of conjugation on a UV/Vis absorption spectrum.	K5
CO-3	Determine the vibrations for a triatomic molecule and identify whether they are infrared-active and draw the design of a non-dispersive infrared spectrophotometer	K1 & K2
CO-4	Evaluate and judge the structure of organic structure and its application in various aspects	K6
CO-5	Explain the concept of mass spectroscopic techniques and explain its various activities	K4

III and IV Evaluation Component of CIA

Semester	Course Code	Course Title	Component III	Component IV
V	UCHO501	Organometallics and Bioinorganic chemistry	Assignment	Seminar
	UCHO502	Heterocyclic Chemistry	Assignment	Seminar
	UCHO503	Organic Spectroscopy	Problem Solving	Seminar

DEPARTMENT OF PHYSICS

PREAMBLE

UG: Programme Profile and Syllabi of Courses offered in the V 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, identify basic principles and concepts of various branches of Physics, correlate and solve the problems in the field of core and applied Physics.

PSO-2 Demonstrate the acquired knowledge of Physics on various scientific issues.

PSO-3 Design various experiments, electronic circuits investigate and become capable problem solvers, using mathematical, conceptual and hands on skills.

PSO-4 Apply analytical abilities acquired from the classroom / laboratory and promote scientific ideas, harness renewable and nonconventional energy resources.

PSO-5 Appreciate their experiential learning beyond the classroom; construct logical arguments, using technical language, develop programming skills, approach open-ended problems and innovate solutions.

PSO-6 Secure jobs in banks, in the field of Education, and in industries which require Scientific and Engineering knowledge.

PSO-7 Gain knowledge and skill about the electric & electronic circuits design development.

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	-	30 Hours	-/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	-	30 Hours	-/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 and Relativity	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	½
	IV	Value Education (SEC)			-	2	1
					TOTAL	**30**	**26/28**

VI	III	Major Core (DSC) – XVIII	UPHM609	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	UPHM612	Material Science	-	5	4
	III	Major Core (DSC) – XXI	UPHM613	Digital Electronics	-	5	4
	III	Major Core (DSC) – XXII	UPHR605	Major Practical VI	-	3	3
	III	Major Elective (Discipline Specific Elective) - XXIII	UPHO601/ UPHO603/ UPHO604	Nanophysics/ Functional Materials/ Astrophysics and Special Theory of Relativity	-	5	4
	III	Viva Voce	UPHM610	Comprehensive Viva Voce	-	-	1
	III	Internship	UPHI601	Internship / Field Work / Field Project	-	30 Hours	-/1
	IV	Soft Skill (SEC)			-	2	1
	V	Extension Program - me/Physical Education/NCC			-	-	-/2
	V	Extension Programme	UROX601	Rural Outreach Programme	-	30 Hours	-/1
					TOTAL	**30**	**25/29**
					GRAND TOTAL	**192**	**148/167**

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

COURSES OFFERED TO OTHER DEPARTMENTS

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)

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

QUANTUM MECHANICS AND RELATIVITY

UPHM507

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

Course Objectives

CO No.	To enable the students
CO-1	Understand the concept of quanta and its consequences in the microscopic world.
CO-2	Familiarize the new mathematical tools such as operators and linear vector space required for venturing into the realm of quantum mechanics and to introduce Schrodinger wave equation.
CO-3	Integrate the use of Schrodinger wave equation through some simple one-dimensional problems and their solutions.
CO-4	Know the concepts of Special Theory of Relativity.
CO-5	Expose the Applications of Quantum Mechanics and Relativity.

UNIT- I FOUNDATIONS OF WAVE MECHANICS **12 Hours**

Introduction–Inadequacy of Classical Mechanics – Dual Nature of Light and Matter –de Broglie Wavelength–Compton Effect - Davisson–Germer and G.P.Thomson Experiments – Heisenberg Uncertainty Principle –Electron Microscope - Gamma Ray Microscope.

UNIT -II SCHRODINGER EQUATION **13 Hours**

Schrodinger Equation – Physical Interpretation of Wavefunction– Probability Current Density –Expectation Values–Ehrenfest Theorem –Eigenfunction and Eigenvalue –Eigenvalue Equation –Orthogonal and Normalized Wavefunction.

UNIT- III APPLICATIONS OF SCHRODINGER EQUATION **14 Hours**

Free Particle –Particle in a Bound State – Eigenfunctions and Eigenvalues of a Particle in a Rectangular Potential – Reflection and Transmission Coefficient Rectangular Potential – Particle in 1-DWell of Finite Depth –Bound States –One Dimensional Linear Harmonic Oscillator.

UNIY-IV RELATIVITY THEORY **13 Hours**

Frames of References –Inertial Frames and Non-inertial Frames–Galilean Transformation – Michelson-Morley Experiment –Interpretation of the Results –Postulates of Special Theory of Relativity –Lorentz Transformation Equations –Length Contraction –Time Dilation –Variation of Mass with Velocity – Mass– Energy Equivalence – Introduction to General Theory of Relativity.

UNIT-V APPLICATIONS OF QUANTUM MECHANICS **13 Hours**

Teleportation– Instantaneous Communication –Quantum Computers –Quantum Tunneling –Quantum Sensing and Imaging –Quantum Metrology –The Transistor –Energy Harvesters –Ultra Precise Thermometer – Lasers–Randomless Generator –Quantum Cryptography –Ultra Price Clocks.

Text Books

- Murugeshan, R. & Sivaprasath Kiruthiga. (2017). *Modern Physics. (18th Ed.).* S.Chand & Company Ltd. New Delhi.
- G. Aruldhas. (2008). *Quantum Mechanics* – (2nd Ed). PHI.
- Hugh D. Young and Roger A. Freedman. (2015). *Sears & Zemansky's University Physics with Modern Physics. (14th Ed.).*
- Steven Weinberg. (2021). *Foundations of Modern Physics*. Cambridge University Press.
- Mathews, P.M. (2010). *A Text Book of Quantum Mechanics*, Tata McGraw-Hill. New Delhi.

Reference Books

- Albert Maxwell, Quantum Mechanics, *Independently Published, paperback – Large Print*, September 6, 2021, ISBN-13 : 979-8472288415.
- Jacob Dunningham, and Vlatko Vedral. (2010). *Introductory Quantum Physics and Relativity. World Scientific*.
- Ghatak and Loganathan, (2004). *Introduction to Quantum Mechanics*. Macmillan India Ltd. India.
- P.M. Mathews and K. Venkatesan. (2010). *A Textbook of Quantum Mechanics. (2nd Ed).* Tata McGraw Hill. PVT.
- K.D. Krori. (2012). *Fundamentals of Special and General Relativity*, PHI.

e-Resources

- https://www.fisica.net/mecanica-quantica/Griffiths%20-%20Introduction%20to%20quantum%20mechanics.pdf
- https://www.amazon.in/Relativity-Quantum-Mechanics-Principles-Universe/dp/1925729338

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Acquire fundamental knowledge of quanta of the microscopic world.	K1 & K2
CO-2	Understand the Mathematical Tools into the realm of Wave mechanics.	K3
CO-3	Integrate the use of Schrodinger wave equation through some simple one-dimensional problems and their solutions.	K4
CO-4	Expose the Applications of Quantum Mechanics and Relativity.	K1 & K3
CO-5	Adopt the concepts of Special Theory of Relativity.	K6

BASIC ELECTRONICS

UPHM508

Semester : V **Credit : 4**
Category : Major Core (DSC) – XII **Hours/Week : 4**
Class & Major: III B.Sc Physics **Total Hours : 52**

Course Objectives:

CO No.	To enable the students
CO-1	Understand the concepts of semiconductor devices.
CO-2	Realize the behavior of special purpose of Transistors.
CO-3	Demonstrate the Circuits for Rectifiers and Multivibrators.
CO-4	Verify the Circuits of Oscillators using basic Components.
CO-4	Explore the Construction and Working of an Operational Amplifier.

UNIT I INTRODUCTION TO SEMICONDUCTOR **10 Hours**

Classification of Solids in terms of Forbidden Energy Gap –Semiconductor Diode – Characteristics–Zener Diode– Working and Output Characteristics–Voltage Stabilization using Zener Diode.

UNIT II TRANSISTOR CIRCUITS **10 Hours**

Transistor CB, CE, CC Configurations-Common Emitter Transistor as an Amplifier - DC and AC Load Line Analysis - Transistor Biasing - Stabilization - Base Resistor Method- Feedback Resistor Method - Voltage Divider Bias Method.

UNIT III RECTIFIERS AND MULTIVIBRATORS **11 Hours**

Half–Wave and Full–Wave Bridge Rectifiers–Output and Efficiency of Full Wave Rectifier – Expressions for Efficiency and Ripple Factor –Multivibrators – Types of Multivibrators– Astable, Monostable, Bistable Multivibrator – Circuit Details and Operations.

UNIT IV CIRCUIT ANALYSIS AND OSCILLATORS **11 Hours**

Wave– Shaping Circuits: Differentiating Circuit – Output Waveforms – Integrating Circuit – Output Waveforms – Clipping and Clamping Circuits–Fundamental Principles of Oscillators – Concept of Positive Feedback – Types of Oscillators – Hartley, Colpitts, Phase Shift and Wien Bridge Oscillators.

UNIT V OPERATIONAL AMPLIFIERS **10 Hours**

Introduction – Characteristics of an Ideal OP–AMP – CMRR – Slew Rate – **Input/Output Offset Voltages** - Inverting/Noninverting Amplifiers - Adder and Difference Amplifiers– Differential Amplifier – Integrator, Voltage Follower, Comparator.

Text Books

- Hugh D. Young and Roger A. Freedman. (2015). *Sears & Zemansky's University Physics with Modern Physics. (14th Ed.).*
- Chattopadhyay, D. & Rakshit, P.C. (2015). *Foundations of Electronics*, New Age International Publishers.
- Murugeshan, R. & Sivaprasath Kiruthiga. (2017). *Modern Physics. (18th Ed.).* S.Chand & Company Ltd. New Delhi.

Reference Books

- Gupta & Kumar. (2012). *Hand book of Electronics*. Pragati Prakhasan, Meerut.
- Theraja, B.L. (2016). *Basic Electronics.(Solid State)* in multicolor ed., S. Chand & Company Ltd. New Delhi.
- Ramakant A. Gayakwad. (2015). *Operational Amplifiers and Linear Integrated Circuits*. Pearson Education. (4th Ed.). India.
- Jacob Millman; Christos C Halkias; Chetan D Parikh. (2010). *Millman's Integrated Electronics : Analog and Digital Circuits and Systems. (2nd Ed.).* Tata McGraw – Hill Education. New Delhi.

e-Resources

- https://books.google.co.in/books?id=GyZyhuY4SngC&printsec=frontcover&redir_esc=y#v=onepage&q&f=false
- Basic-Electronics-D-P-Kothari/dp/9332901589

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Attain basic concepts of semiconductors.	K1 & K2
CO – 2	Understand the transistor and its types.	K3 & K4
CO – 3	Establish Rectifier and Multivibrator.	K1 & K3
CO – 4	Display transistors in circuit, Oscillator.	K5
CO – 5	Execute the Differentiator, Integrator, Adder, Subtractor using Operational Amplifier.	K4 & K6

SOLID STATE PHYSICS

UPHM509

Semester : V **Credit : 4**
Category : Major Core (DSC) – XIV **Hours/Week : 4**
Class & Major : III B.Sc Physics **Total Hours : 52**

Course Objectives:

CO No.	To enable the students
CO – 1	Demonstrate an understanding of the crystal lattice and how the main lattice types are described.
CO – 2	Formulate the theory of X-ray diffraction in the reciprocal lattice (k-space) formalism and apply this knowledge to generalize the formulation for matter waves.
CO – 3	Analyze the Electron Theory of Metals and its Applications.
CO – 4	Classify the Mechanical Properties of Metals with Merits and Demerits.
CO – 5	Expose the concept of Magnetic and Dielectric Materials.

UNIT-I (a) CLASSIFICATION OF MATERIALS **10 Hours**

Classification of Solids – Types of Bonds and their Energies – Bond Formation Mechanism – Ionic and Covalent Bonds – Thermal and Electric Materials – Smart Materials.

(b) MECHANICAL PROPERTIES OF METALS

Elastic Deformation – Plastic Deformation – Interpretation of Tensile Stress–Strain Curves – Yield Criteria and Macroscopic Aspects of Plastic Deformation – Property Variability and Design Factor.

UNIT II CRYSTAL STRUCTURE **10 Hours**

Basics of Crystallography – Unit Cell – Crystal Lattice and Basis– Seven Classes of Crystals – Bravais Lattice – Miller Indices – Symmetry Operations – Point Groups and Space

Groups – Types of Lattice (Plane Lattice with BCC and FCC) –Structure of Crystals: Simple Cubic, HCP, FCC and BCC– Examples: NaCl, Diamond and ZnS Structures.

UNIT III DIFFRACTOMETRY **11 Hours**

X ray Spectrum - Moseley's Law - Diffraction of X-Rays by Crystals - Bragg's Law in One Dimension - Experimental Method in X-ray Diffraction – Laue's Method, Rotating Crystal Method - Powder Photograph Method – Reciprocal Lattice – Brillouin Zone.

UNIT-IV ELECTRON THEORY OF METALS **10 Hours**

Classical Free Electron Theory – Drawbacks of Classical Theory– Quantum Theory of Free Electron– Somerfield's Model for Free Electron (1D Solids, generalization for 3D Solids) – Electron Energies in a Metal – Band Theory of Solids –Energy Gaps – Density of States – Bands in Conductors, Insulators and Semiconductors – Factors Affecting Electrical Resistance of Materials.

UNIT-V MAGNETIC MATERIALS AND DIELECTRICS **11 Hours**

Types of Magnetic Materials – Magnetic Permeability, Magnetization, Susceptibility, Electric Current in Atoms – Bohr Magneton– Electron Spin – Magnetic Moment due to Nuclear Spin – I-H Curve– Magnetic Moments due to Electron Spin – Ferromagnetism the Domain Structure – Soft and Hard Magnetic Materials– Polarization Electronic, Ionic, Orientation and Space Charge Polarization – Temperature and Frequency Effects – Electric Breakdown – Ferroelectric Materials.

Text Books

- Hugh D. Young and Roger A. Freedman. (2015). *Sears & Zemansky's University Physics with Modern Physics. (14th Ed.).*
- Pillai, S.O. (2020). *Solid State Physics*, New Age International Private Limited.
- Gupta,R.B. (2001). *Material Science for AMIE*, Umesh Publications.
- Arumugam, M. (2018). *Material Science*, Anuradha Agencies.

Reference Books

- Kittel, C. (2012). *Introduction to Solid State Physics*, Wiley. (8thEd.).
- S.O. Pillai. (2012). *Rudiments of Materials Science,* New Age International Private Limited.
- Raghavan, V. (2015), *Materials Science and Engineering a First Course*, Prentice Hall of India. Learning private Limited (6th ed.)

e-Resources

- http://metal.elte.hu/~groma/Anyagtudomany/kittel.pdf
- https://www.wiley.com/en-us/Introduction+to+Solid+State+Physics%2C +8th+Edition-p-9780471415268

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Know the types of materials and mechanical properties of metals.	K1 & K2
CO – 2	Understand the basic concepts of Crystal structures.	K3
CO – 3	Recognize the Importance of X-Ray and diffraction concept.	K4
CO – 4	Analyze the effect of electrons in different kind of materials using various theories like classical, quantum.	K1 & K5
CO – 5	Manage the magnetic and dielectric materials with its uses.	K4 & K6

MEDICAL PHYSICS
UPHO501

Semester : V **Credit : 4**
Category : Major Elective (DSE) - XV **Hours/Week : 4**
Class & Major: III B.Sc Physics **Total Hours : 52**

Course Objectives:

CO No.	To enable the students
CO – 1	Understand the basics of X-rays and its Applications.
CO – 2	Realize the importance of radiation effect and safety.
CO – 3	Investigate the components of biomedical instrumentation and its Applications.
CO – 4	Categorize the image processing for medical physics.
CO – 5	Interpret the application of Laser in Medical field.

UNIT-I: X-RAYS PRODUCTION **10 Hours**

Introduction to X-Ray - X-ray tube design - tube cooling - stationary mode - Rotating anode X-ray tubes - Tube rating - quality and intensity of X-ray. X-ray generator circuits - half wave and full wave rectification - filament circuit - kilo voltage circuit - high frequency generator - exposure timers - HT cables.

UNIT –II: RADIATION SAFETY **12 Hours**

Introduction to Radioactivity-Artificial and natural - radioactivity -Physical features of radiation-units of radiation- conventional sources of radiation, Interaction of different types of radiation with matter -penetration power in living cells-radiation damage to the cell-effect of radiation on cells -radiation dosimetry.

UNIT –III: BIOMEDICAL INSTRUMENTATION **10 Hours**

Development of biomedical instrumentation-biometrics-introduction to the man-instrument system-components of man-instrument system-transducers for biomedical applications-biomedical computer applications-computer analysis of ECG-computerized axial tomography (CAT) Scanners.

UNIT-IV: MEDICAL IMAGING PHYSICS **10 Hours**

Radiological imaging - Radiography - Filters - grids - cassette - X-ray film - fluoroscopy - computed tomography scanner - principle function -display - generations – mammography-ultrasound imaging - magnetic resonance imaging.

UNIT-V LASERS IN MEDICINE **10 Hours**

Production of laser- effects of laser radiation on tissues - photo thermal effects-photochemical effects –photodynamic therapy-Laser applications in therapy and diagnosis-opthalmology-Fibreoptic endoscopy and dentistry-Laser as a beautician's tool-laser hazards-biological effects.

Text Books

- Ervin B. Podgorsak, (2016). *Radiation Physics for Medical Physicists (Graduate Texts in Physics)*, (3rd Ed.). Springer.
- P.K. Bajpai. (2010). *Biological Instrumentation and Methodology*, S. Chand & Co.
- K. Thayalan, (2017), *Basic Radiological Physics*, Jayapee Brothers Medical Publishers Pvt. Ltd. New Delhi.
- Bushberg, J.T., Anthony Seibert .J, Leidholdt, E.M, Bonne J.M *The Essential Physics of Medical Imaging: Lippincot*, Williams and Wilkins. Second Edition (2011).
- John G. Webster. and A.J. Nimunkar (2020), *Medical Instrumentation Applications and Design*, John Wiley and Sons. (5th Ed.).

Reference Books

- Biomedical instrumentation-Leslie Cromwell, Fred J. Weibel-Erich (2021) A.Pfeiffer-Pearson Publications (2nd Ed.).
- R.W. Wayanant. (2001). Lasers in Medicine. (1st Ed.). Plenum Publishing Co.
- Leslie Cromwell. (2010). Biomedical Instrumentation and Measurements. PHI Learning. (2nd Ed.).
- Ramesh Chandra, (2011). *Nuclear Medicine Physics: The Basics – Lippincot*, Williams and Wilkins.

e- Resources

- https://link.springer.com/book/10.1007/978-3-319-61540-0
- https://www.routledge.com/Medical-Physics-and-Biomedical-Engineering/Brown-Smallwood-Barber-Lawford-Hose/p/book/9780750303682

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Attain basic concepts of X-Ray in circuits.	K1 & K2
CO – 2	Understand the effect of radiation in living systems.	K3
CO – 3	Establish the biomedical instrumentation in ECG, CAT.	K1 & K3
CO – 4	Demonstrate the various scanning process in medical fields.	K5
CO – 5	Build the concept of laser application, hazards and biological systems.	K6

ENERGY PHYSICS
UPHO502

Semester : V **Credit : 4**
Category : Major Elective (DSE) - XV **Hours/Week : 4**
Class & Major: III B.Sc Physics **Total Hours : 52**

Course Objectives:

CO No.	To enable the students
CO – 1	Remember the concept of energy sources and its applications.
CO – 2	Understand the working principles of solar energy.
CO – 3	Integrate the photovoltaic generation, limitation and efficiency.
CO – 4	Detect the concepts of biomass energy in plant.
CO – 5	Expose the Applications of wind energy and other energy resources.

UNIT I INTRODUCTION TO ENERGY SOURCES 10 Hours

World's reserve of Commercial energy sources and their availability-India's production and reserves-Conventional and non-conventional sources of energy, comparison – Coal- Oil and natural gas –applications - merits and demerits – Renewable and Non-Renewable energy sources.

UNIT II SOLAR THERMAL ENERGY 10 Hours

Solar constant -Solar spectrum-Solar radiations outside earth's atmosphere –at the earth surface- on tilted surfaces -Solar Radiation geometry-Basic Principles of Liquid flat plate collector –Materials for flat plate collector -Construction and working- Solar distillation–Solar disinfection - Solar drying-Solar cooker (box type)-Solar water heating systems – Swimming pool heating.

UNIT III PHOTOVOLTAIC SYSTEMS 10 Hours

Introduction-Photovoltaic principle-Basic Silicon Solar cell- Power output and conversion efficiency-Limitation to photovoltaic efficiency-Basic photovoltaic system for power generation-Advantages and disadvantages-Types of solar cells-Application of solar photovoltaic systems.

UNIT IV WIND ENERGY AND TIDAL ENERGY 12 Hours

Wind Energy Conversion-Classification and description of wind machines, wind energy collectors-Energy storage- Energy from Oceans and Chemical energy resources-Ocean thermal energy conversion-tidal power, advantages and limitations of tidal power generation-Energy and power from waves- wave energy conversion devices.

UNIT V BIOMASS ENERGY 10 Hours

Introduction-Biomass classification- Biomass conversion technologies-Bio-gas generation-Factors affecting bio-digestion -Working of biogas plant- floating and fixed dome type plant -advantages and disadvantage of -Bio-gas from plant wastes-Methods for obtaining energy from biomass- Thermal gasification of biomass-Working of downdraft gasifier-Advantages and disadvantages of biological conversion of solar energy.

Text Books

- Rai G. D. (2021). *Solar Energy Handbook*. MLI Handbook Series.
- S. P. Sukhatme, J K. Nayak.(2017). *Solar Energy*. TMH. (4th Ed.).
- Kothari, D.P., K.C. Singal and Rakesh Ranjan. (2008). *Renewable Energy Sources and Emerging Technologies.* Prentice Hall of India.
- Kalogirou, S.A. (2013). *Solar Energy Engineering: Processes and Systems.* (2nd Ed.). Academic Press.

Reference Books

- Mukund R. Patel, Omid Beik. (2021). *Wind and Solar Power Systems: Design, Analysis, and Operation.* (3rd Ed.). CRC Press.
- Chetan Singh Solanki, (2011). *Solar Photvoltaics Fundamentals, Technologies and Applications.* (2nd Ed.). PHI Learning Private Limited.
- Rai G. D. (2010). *Non Conventional Energy Sources. 4th Edition,* Khanna Publishers.
- Jeffrey M. Gordon. (2013). *Solar Energy: The State of the Art. Earthscan*.
- Zobaa A.F. and Ramesh Bansal. (2011). *Handbook of Renewable Energy Technology. World Scientific.*

e- Resources

- https://www.routledge.com/The-Physics-of-Solar-Energy-Conversion/Bisquert/p/book/9781138584648
- https://www.google.co.in/books/edition/Renewable_Energy_Conversion_Transmission/lE1e4chSiSsC?hl=en&gbpv=1&printsec=frontcover

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Acquire fundamental knowledge of energy resources.	K1 & K2
CO – 2	Understand the solar thermal energy with its applications.	K3
CO – 3	Integrate the uses of photovoltaic solar cell.	K4
CO – 4	Expose the limitation, advantages, and applications of wind energy.	K1 & K3
CO – 5	Review the ideas of biomass energy using various methods.	K6

MAJOR PRACTICAL V

UPHR503

Semester : V **Credit : 3**
Category : Major Core Practical (DSC) – XVI **Hours/Week : 3**
Class & Major: III B.Sc Physics **Total Hours : 39**
Course Objectives:

CO No.	To enable the students
CO – 1	Know the concept of the Electronically equipments from experimental vision.
CO – 2	Tabulate the electronically experiments and its characteristics.
CO – 3	Compare the operational amplifier adder, subtractor, integrator and differentiator for day today life application.
CO – 4	Display the frequency characteristics by the RC coupled amplifier.
CO – 5	Experiment the uniqueness of the clipping and clamping circuits.

List of Experiments

1. Construct the V-I Characteristics of Zener Diode.
2. Verify the Characteristics of Transistor in CE Configuration.
3. Design Full Wave - Bridge Rectifier.
4. Construct the Voltage Stabilization of using Zener Diode.
5. Design the Operational Amplifier as Adder and Subtractor.
6. Design the Operational Amplifier as Integrator, Differentiator, and Voltage Follower.
7. Construct the NOR as Universal Gate.
8. Verify the Single stage Amplifier - Frequency Determination.
9. Demonstrate the Half Wave Bridge Rectifier.
10. Construct the Junction Diode – Characteristics.
11. Construct the NAND as a Universal Gate.
12. Construct the Half Adder and Full Adder.
13. Design the Clipping and Clamping Circuits.
14. Design the Operational Amplifier as Inverting and Non-Inverting Amplifier.
15. Demo on UV-Visible Spectrometer.
16. Demo on FT-IR Spectrometer.

Text Books

- Srinivasan, N. Balasubramanian, S and Ranganathan, R. (2006). *The Text Book of Practical Physics,* Sultan Chand & Sons.
- Andy Cooper. (2016). *Practical Electronics: A Complete Introduction. Teach Yourself*.
- S.L. Gupta and V.Kumar. (2017). *Practical Physics. Pragati Prakashan Meerut.*
- Dr Arunadevi Shantappa Birajdar. (2019). Text Book for UV-Visible Spectroscopy. Mahipublication.

Reference Books

- Ponnusamy, A. and Amalanathan, B. (2006). *Practical Physics.* Bright Publishers.
- Ian Sinclair. (2006). *Practical Electronics Handbook.* (6th Ed.). Elsevier.

- Ouseph, C.C. Rangarajan, G. (1996). *A The Text Book of Practical Physics*. Viswanathan Publishers.
- Sivasankar, B. (2012). *Instrumental Methods of Analysis*. Oxford University Press. New Delhi.
- Peter R. Griffiths. James A. De Haseth. James D. Winefordner. (2007). Fourier Transform Infrared Spectrometry. (2nd Ed.). Wiley-Interscience.

e-Resources

- https://www.niser.ac.in/sps/sites/default/files/basic_page/P242_BasicElectronics_Lab.pdf
- https://books.google.co.in/books/about/ELECTRONICS_LAB_MANUAL_VOLUME_2.html?id=Li57DwAAQBAJ&redir_esc=y

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Acquire the basics of Amplifier, Diode and Transistor.	K1 & K3
CO – 2	Demonstrate the Zener Diode, PN Junction and Rectifier.	K3
CO – 3	Apply the Significance of Electronical experiments in Practical Life.	K4
CO – 4	Integrate the idea of the Voltage stabilization and I-V characteristics.	K5
CO – 5	Manage the consequence of Junction Diode in day today life.	K3 & K6

PROJECT

UPHP501

Semester : V **Credit : 4**
Category : Major Core (DSC) – XVII **Hours/Weeks: 2 + 4**
Class &Major: III B.Sc Physics **Total Hours : 78**

Guidelines

- This course is offered as group project
- No. of students is limited from 3 to 4

PROJECT EVALUATION

S.No.	Criteria	Evaluation	
		CIA (Valuation by Faculty Guide)	ESE (Average of Internal &External marks)
1	Choice of the problem & Defining the problem	10	-
2	Review of literature, Research proposal	10	-
3	Collection of Data / Experimentation & Analysis of Data / Experimentation result, Preparation of report	10	-
4	Research Publication	30	-
5	Project report	-	30
6	Viva voce	-	10
	Total	**60**	**40**

INSTRUMENTATION TECHNIQUES

UPHP502

Semester : V **Credit : 5**
Category : Major Core (DSC) – XVII **Hours/Weeks : 5**
Class & Major : III B.Sc Physics **Total Hours : 65**

Objectives:
To enable the students

- Understand the Concepts of Electromagnetic Radiation.
- Apply the Knowledge in Different Techniques.

UNIT- I ELECTROMAGNETIC RADIATION 13 Hours

Electromagnetic Radiation–Different Regions, their Wavelengths, Frequencies and Energies–Interaction of EM Radiations with Matter – Atomic, Molecular, Electronic Interaction–Basic Principles of Spectroscopy –Emission and Absorption of Radiations–Radiation Sources – Dispersing and Resolving Techniques – Detectors – typical Atomic Emission and Absorption Spectrographs in the UV and Visible Region.

UNIT- II MOLECULAR SPECTRA 12 Hours

IR Absorption – Spectroscopy –RAMAN Spectroscopy – Instrumentation Techniques for Analyzing Solid, Liquid and Gaseous samples – sample handling Techniques.

UNIT- III DIFFRACTION TECHNIQUES 13 Hours

Microstructure Characterization Diffraction Techniques: Interpretation of Single Crystal and Powder Crystal X-RAY Diffraction Patterns, Identification & Quantitative Estimation of unknown samples by X-ray Powder Diffraction Technique and Fluorescent Analysis – Theory and Method of Particle Size Analysis.

UNIT-IV ELECTRON MICROSCOPY TECHNIQUES AND ELCTRONIC INSTRUMENTS 14 Hours

Electron Microscopy techniques related to Nanomaterials SEM, TEM & AFM (Instrumentation and Working only).

Digital Voltmeters and Multimeters–Electronic Counters–AC Millivoltmeter–Wave Analyzers and Spectrum Analyzers–Frequency Synthesizers –Lock in Amplifier–Frequency Response Analyzer Phase Meter.

UNIT- V ELECTRONIC RECORDERS AND DISPLAYS 13 Hours

Standard Lab Equipments–Signal Generator–Pulse Generator–CRO–VTVM–Wave Analysis Recorders–Analog Recorders–XY – Recorders–Stripe Chart Recorder–Oscilloscope Recorder–Digital Recorder– Digital Readout CRO.

Text Books

- Aruldas, G. (2007). *Molecular Structure and Spectroscopy*. Print *Book*. English. (2nd ed.) New Delhi.
- Sawnney, A.K. (2005). *A Course in Electrical & Electronic Measurements & Instrumentation.* Dhanpat Rai & Co.

Reference Books

- Skoog, D.A. West, D.M. (2000). *Principles of Instrumental Analysis*. (2nd ed.,). Holt-Saunders.
- Cottrell, Sir A. (2000). *An Introduction to Metallurgy*. University Press.
- Brophy, J.H. Rose R.M. Wulff, J. (2007). *The Structure & Properties of Materials* (Volume II). Wiley Eastern Ltd.

III AND IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component-III	Component-IV
V	Major Core (DSC) – XII	UPHM507	Quantum Mechanics and Relativity	Problem Solving	Seminar
	Major Core (DSC) – XIII	UPHM508	Basic Electronics	Seminar	Model Display
	Major Core (DSC) – XIV	UPHM509	Solid State Physics	Poster Presentation	Seminar
	Major Elective (Discipline Specific Elective) - XV	UPHO501	Medical Physics	Seminar	Poster Presentation
	Major Elective (Discipline Specific Elective) - XV	UPHO502	Energy Physics	Seminar	Model Display

PG & RESEARCH DEPARTMENT OF MATHEMATICS

PREAMBLE

UG : Course Profile, list of courses offered to the other departments & the syllabi of courses offered in the I, V VI semester (With effect from 2021-2024 batch onwards)

PROGRAMME PROFILE B.Sc. (MATHEMATICS)

PROGRAMME SPECIFIC OUTCOMES

PSO No. Upon completion of these Courses the Students would have

PSO-1 Become an individual academic excellence to face eligibility exams.

PSO-2 Acquired knowledge for higher studies.

PSO-3 Summarise the effective written communication of mathematical concepts.

PSO-4 Organize skills and knowledge that is translate information presented verbally into Mathematical form

PSO-5 Pursue a Higher Studies and become a software professional.

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

II	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
	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)_	UMAM308	Discrete Mathematics	UMAM206/ UMAM606	5	4
	III	Major Core VI/ DSC(VI)	UMAM309	Differential Equation	UMAM306/ UMAM302/ UMAM301	5	4
	III	Allied – III (GE)	UCSA304	Mathematical Programming using C	-	3	2
	III	Allied - III (GE) Practical	UCSR307	Mathematical Programming using C Practical	-	3	2
	IV	Online Course (NPTEL / SP)				3	1/2
	IV	Value Education (VE)				2	1
					TOTAL	**31**	**20/23**
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
	III	Major Core VIII / DSC (VIII)	UMAM408	Mechanics	UMAM406/ UMAM401	5	4
	III	Allied – IV (GE)	UPHA402	Electronics for Mathematics	-	3	2
	III	Allied – IV Practical	UPHR402	Electronics for Mathematics Practical	-	3	2
	IV	Soft Skill				2	1
	IV	Non Major Elective				3	2
	V	Extension Programme/ Physical Education				-	-/2
					TOTAL	**30**	**21/25**
V	III	Major Core IX / DSC(IX)	UMAM507	Modern Algebra	UMAM501	6	5
	III	Major Core X / DSC(X)	UMAM514	Real Analysis I	UMAM508/ UMAM512	6	5
	III	Major Core XI / DSC(XI)	UMAM515	Numerical Methods	UMAM510	6	5

V	III	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)	UMAM614	Linear Algebra	UMAM604/ UMAM610	6	5
		Major Core XIV/DSC (XIV)	UMAM615	Real Analysis II	UMAM607/ UMAM611	6	6
		Major Core XV/DSC(XV)	UMAM602	Complex Analysis	UMAM509	6	6
		Major Core XVI/ DSC(XVI)	UMAM613	Operations Research	UMAM603/ UMAM608	6	6
		Major Elective	UMAO607	Mathematical Modeling	UMAM404	5	4
			UMAO606	Mathematics for Construction Craft	--		
			UMAO607	Mathematics in SpaceScience	--		
		Comprehensive Viva	UMAM601			-	1
	IV	Soft Skill				2	1
	V	Extension Programme/ PhysicalEducation				-	-/2
					TOTAL	**31**	**29/31**
					GRAND TOTAL	**194**	**145/159**

COURSES OFFERED TO OTHER DEPARTMENTS-UG ALLIED

Class &Major	Semester	Category	Course Code	Course Title	Previous course code	Contact Hours/ week	Credit Min/ Max
I B Com & I BCom (CA)	I	Allied	UMAA112	Business Mathematics	-	6	4
I B.SC PHY			UMAA114	Allied Mathematics I	UMAA106	6	5
I BCA			UMAA110	Mathematical Methods I	-	6	4
I B.Sc (CS)			UMAA113	Statistical Methods	-	6	4
I B.Sc (CS)	II		UMAA218	Mathematics for computer Science	-	6	4
II BCA			UMAA216	Mathematical Methods II		6	4
I B.SC PHY			UMAA222	Allied Mathematics II	UMAA212	6	5
II B.Sc Chem	III	Allied	UMAA312	Allied Mathematics for Chemistry I	UMAA304	6	5
II B.Sc BIO			UMAA307	Bio-Statistics	UMAA305	6	4
II BBA/ II B.COM/ II B.COM CA			UMAA301	Business Statistics	UMAA211/ UMAA403/ UMAA107	6	4
II B.Sc Chem	IV		UMAA408	Allied Mathematics for Chemistry II	UMAA406	6	5
II BBA			UMAA410	Quantitative techniquesfor Business	UMAA505	6	4

NON-MAJOR ELECTIVE

Semester	Part	Category	Course Code	Course Title	Previous course code	Contact Hours/ week	Credit
II	IV	Non Major Elective	UMAR201	Statistics using Excel	-	3	2
			UMAE204	Basic Mathematics for Science	-	3	2
			UMAE202	Mathematics for Business and Decision Making	-	3	2
			UIDE302/ UMAE302	Numerical Methods using C++	-	3	2
			UMAE306	Operations Research for Managers	UMAE402	3	2
			UMAA501/ UMAE305	Statistical Data Analysis throughSPSS	-	3	2
			UMAE308	Mathematics for Competitive Exams	UMAE502	3	2
IV	IV	Non Major Elective	UMAE404	Mathematics for Career Development	-	3	2

EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Coursecode	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	UMAS601 UMAS602 UMAS603 UMAS604	Fourier Transforms Simulation Number Theory Project	2	-	2

MATHEMATICAL STATISTICS I
UMAA117

Semester : I **Credit : 4**
Category : Allied **Hours/Week : 6**
Class &Major : I B.Sc Mathematics **Total Hours : 78**

Course Objectives:

CO No.	To enable the students
CO 1	Understand the concept of probability, conditional probability and its axiom discrete and continuous random variable and its properties.
CO 2	Recognise the Identify the basic concepts of Mathematical Statistics
CO 3	Evaluate expectation and variance and its relevant theorems.
CO 4	Analyse binomial distribution Poisson distribution and their properties
CO 5	Create the solution of Correlation and regression.

UNIT - I PROBABILITY **15 Hours**

Concept of Sample Space - Events - Definition of Probability – Some theorems on Probability – Addition theorem of Probability - Conditional Probability - Multiplication theorem of Probability - Independence of Events.

UNIT- II RANDOM VARIABLE **16 Hours**

Introduction – Distribution Function - Random Variables - Discrete and Continuous Random Variable.

UNIT - III MATHEMATICAL EXPECTATION AND MOMENT GENERATING FUNCTION **15 Hours**

Expectation – Expected Value of Functions of a Random Variable – Properties of Expectation & Variance - Moment Generating Function - properties - Characteristic Function – Properties

UNIT - IV DISCRETE AND CONTINUOUS PROBABILITY FUNCTION **16 Hours**

Discrete Uniform Distributions – Bernoulli Distribution – Binomial Distribution - Poisson Distribution – Normal Distribution

UNIT - V CORRELATION AND REGRESSION **16 Hours**

Introduction of Correlation - Karl Pearson's Coefficient of Correlation - RankCorrelation - Linear Regression – Properties.

Text Book

- Gupta. S.C. & Kapoor. V.K. (2020), *Fundamentals of Mathematical Statistics.* Sultan & Sons. New Delhi.

Reference Books

- Hogg. R.V. & Craig. A.T. (2013). *Introduction to Mathematical Statistics*. Macmillan. New York.
- Mood. A.M. Graybill. F.A. & Boes. D.G. (2017). *Introduction to Theory of Statistics.* McGrawHill. New York.
- Gupta.S.P. (2021). *Statistical Methods.* Sultan Chand & Sons. New Delhi.
- Arora.S. Sumeet Arora (2010). *Comprehensive Statistical Methods*. S.Chand and CompanyLtd. New Delhi.

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Acquire a good knowledge of various Concepts of Probability.	K1
CO 2	Recognize discrete and continuous random variable	K2
CO 3	Compute expectation and variance and discuss relevant theorems.	K
CO 4	Explain normal distribution and its properties.	K4
CO 5	Evaluate Correlation and Regression	K5

MODERN ALGEBRA

UMAM507

Semester : V **Credits : 5**
Category : Core IX / DSC (IX) **Hours/Week : 6**
Class & Major : III B.Sc Mathematics **Total Hours : 78**

Course Objectives

CO No.	To enable the students
CO 1	Understand the Algebraic structures such as Groups, Rings and Ideals
CO 2	Recognise the concept of subgroups and its classifications.
CO 3	Apply the permutation groups.
CO 4	Analyse ring and its special classes, quotient groups, Isomorphism and homomorphism.
CO 5	Solve the problems based on the Polynomial rings.

UNIT-I GROUP THEORY **15 Hours**

Definition of a Group - Some Preliminary Lemmas- Subgroups.

UNIT-II NORMAL SUBGROUPS **15 Hours**

A Counting Principle - Normal Subgroups and Quotient Groups - Homomorphism

UNIT-III AUTOMORPHISMS **15 Hours**

Automorphism - Cayley`s theorem - Permutation Groups

UNIT-IV RING **18 Hours**

Definition and examples of Ring – Some special classes of Rings – Integral Domain - Homomorphism of Rings - Ideals and Quotient Rings - More Ideals and Quotient Rings.

UNIT-V IDEALS **15 Hours**

The field of an integral domain – Euclidean ring – Polynomial Rings.

Text Books

- Herstein.I.N. (2013). *Topics in Algebra*. John Wiley & Sons Publishers. (2^{nd} ed.,). Asia.

Reference Book

- Arumugam. S. Issac. A.T. (2015). *Modern Algebra*. Scitech Publications Pvt Ltd. India.
- John Fraleigh.B. (2013). *A first course in Abstract Algebra.* Addison Wesley publishing Co. (7^{th} ed.,).
- Rotman. J.J. (2005). *A First Course in Abstract Algebra.* (3^{rd} ed.,) Prentice.
- A. R. Vasishtha. (2015). *Modern Algebra.* Krishna Publication.

e- Resources

- http://matterhorn.dce.harvard.edu/engage/ui/index.html#/1999/01/82345

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Recognize groups and its classifications.	K1
CO 2	Classify the groups and normal subgroups	K2
CO 3	Use theorems to solve problems in Permutation groups.	K3
CO 4	Describe the concept of ideals, Maximal, prime ideals and homomorphism of rings	K4
CO 5	Write the abstract mathematical proofs in a clear and logical manner.	K5

REAL ANALYSIS I
UMAM514

Semester : V **Credits : 5**
Category : Core X / DSC (X) **Hours/Week :6**
Class & Major : III B.Sc Mathematics **Total Hours :78**

Course Objectives:

CO No.	To enable the students
CO 1	Gain the Knowledge of Sequences and Series of real numbers.
CO 2	Understand the concept of Sequences and Series.
CO 3	Analyze the series of Real numbers.
CO 4	Illustrate the Metric Spaces and differentiate the sets and functions defined on it.
CO 5	Create the Continuous functions at a point on the real line.

UNIT- I SETS AND FUNCTIONS **15 Hours**

Sets & Elements – Operations on Sets - Functions – Real valued functions – Equivalence – Countability and Real numbers – Least Upper Bound.

UNIT- II SEQUENCE OF REAL NUMBERS **15 Hours**

Definition – Subsequence – Limit of a Sequence – Convergent Sequence – Divergent Sequence – Bounded Sequence – Monotone Sequence - Operations on Convergent Sequence - Operations on Divergent Sequence

UNIT-III SERIES OF REAL NUMBERS **16 Hours**

Limit Superior and Limit Inferior – Cauchy Sequence- Summability of sequences- Limit Superior and Limit Inferior for sequences of sets.

Series: Convergence and Divergence – Series with Non - negative terms – Alternating Series – Conditional Convergence and Absolute Convergence.

UNIT-IV LIMITS AND METRIC SPACES **16 Hours**

Rearrangement of series – Tests for Absolute Convergence – Series whose terms form a non increasing sequence – Summation by parts.

Limit of a function of the real line – Metric space – Limits in metric spaces.

UNIT- V CONTINUOUS FUNCTIONS ON METRIC SPACES **16 Hours**

Functions continuous at a point on the real line – Reformulation - Functions Continuous on a Metric Spaces – Open Sets – Closed Sets- Discontinuous functions in R^1.

Text Books

- Goldberg. R. (2020). *Methods of Real Analysis.* Oxford & IBH Publishing co. New Delhi.

Reference Books

- Tom Apostol. M. (2004). *Mathematical Analysis*. Addison –Wesley New York (4^{th} ed.,).
- Malik.S.C. and Savita Arora. (2021). *Mathematical Analysis.* Wiley Eastern Limited NewDelhi.
- Sanjay Arora and BansiLal. (2012). *Introduction to Real Analysis*. Satya Prakashan. New Delhi.
- Walter Rudin. (2017). *Real and Complex Analysis*. (7^{th} ed.), McGraw Hill Education. New York.

e- Resources

- http://nptel.ac.in/courses/122104017/

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Recall real valued function, sequence.	K1
CO 2	Recognize Convergent sequence and Divergence sequence, Bounded sequence, Monotone sequence and Cauchy sequence.	K2
CO 3	Analyze the series of Real numbers.	K3
CO 4	Explain limits, metric space and continuous function on a real line.	K4
CO 5	Examine open sets and closed sets	K5

NUMERICAL METHODS

UMAM515

Semester :V **Credits : 5**
Category : Core XI / DSC (XI) **Hours/Week : 6**
Class & Major : III B.Sc Mathematics **Total Hours :78**

Course Objectives

CO No.	To enable the students
CO 1	Introduce the basic concepts of Algebraic and Transcendental Equations.
CO 2	Understand the concepts of interpolation for equal and unequal intervals.
CO 3	Analyse the numerical techniques of Differentiation and Integration.
CO 4	Apply the solution of linear system equations.
CO 5	Evaluate numerical solution to ordinary differential equations using direct Method.

UNIT- I SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS 15 Hours

Introduction – The Bisection Method – The Iteration Method –The method of False Position-Newton - Raphson Method.

UNIT- II INTERPOLATION 16 Hours

Introduction – Errors in Polynomial Interpolation - Finite Differences - Newton's formula

for interpolation - Central Difference Interpolation formulae – Practical Interpolation- Interpolation with unevenly spaced points.

UNIT- III NUMERICAL DIFFERENTIATION AND INTEGRATION 16 Hours

Introduction - Numerical Differentiation - Maximum and Minimum Values of a tabulated function - Numerical Integration.

UNIT- IV SOLUTION OF LINEAR SYSTEM EQUATIONS 15 Hours

Introduction – Basic Definitions - Solution of Linear Systems: Direct Methods and Iterative Methods.

UNIT-V NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS 16Hours

Introduction – Solution by Taylor's series- Picard's Method of successive approximations -Euler's method- Runge-Kutta method- Predictor Corrector Methods.

Text Books

- Sastry, S.S. (2012). *Introductory Methods of Numerical Analysis*. Prentice Hall of India. (5 th edition). New Delhi.

References

- Grewal, B.S. and Grewal, J.S. (2016). *Numerical methods in Engineering and Science.* Khanna Publishers. (10th ed.,). India.
- Kandasamy, P. Thilagavathy, K. and Gunavathy, K. (2013). *Numerical Methods.* S.Chand & Company limited(5th Ed). New Delhi.
- Brian Bradie, (2007). *Friendly Introduction to Numerical Analysis.* Pearson Education. (1st ed.,). Asia.

e-Resources:

- http://textofvideo.nptel.iitm.ac.in/video.php?courseId=111101003&p=3
- http://textofvideo.nptel.iitm.ac.in/video.php?courseId=111101003&p=1
- http://textofvideo.nptel.iitm.ac.in/video.php?courseId=111101003&p=1
- http://textofvideo.nptel.iitm.ac.in/video.php?courseId=111101003&p=4
- http://freevideolectures.com/Course/3277/Numerical-methods-of-Ordinary-and- Partial-Differential-Equations.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Understand numerical methods and how they are used to obtain approximate solutions.	K1
CO 2	Apply various interpolation methods.	K2
CO 3	Work out numerical differentiation and integration.	K3
CO 4	Analyse numerical methods to find out solution of algebraic equations using different methods	K4
CO 5	Solve Numerical Solutions and ordinary Differential Equations.	K5

GRAPH THEORY

UMAO501

Semester : V **Credit : 4**

Category : Major Elective **Hours/Week : 5**

Class & Major : III B.Sc Mathematics **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO 1	Introduce the notion of graph theory and its applications.
CO 2	Understand the connectedness and components.
CO 3	Connect the concepts of Hamiltonian graphs.
CO 4	Evaluate the concept of matching in bipartite graphs.
CO 5	Design the directed graph by colouring.

UNIT-I GRAPHS AND SUBGRAPHS **13 Hours**

Introduction – The Konigsberg Bridge Problem- Graphs and Subgraphs: Definition and Examples - Degrees – Subgraphs – Isomorphism – Ramsey Numbers – Independent sets and coverings-Intersection Graphs and Line Graphs- Matrices - Operations on Graphs.

UNIT- II CONNECTEDNESS **13 Hours**

Walks, Trails and Paths – Connectedness and Components – Blocks - Connectivity

UNIT - III EULERIAN , HAMILTONIAN GRAPHS AND TREES **13 Hours**

Eulerian Graphs- Hamiltonian Graphs - Characterization of Trees - Centre of a Tree.

UNIT - IV MATCHING AND PLANARITY **13 Hours**

Matchings- Matchings in Bipartite Graphs- Planarity: Introduction - Definition and Properties - Characterization of Planar Graphs-Thickness, Crossing and Outer Planarity.

UNIT - V COLOURABILITY AND DIRECTED GRAPHS **13 Hours**

Chromatic Number and Chromatic Index- The Five Colour Theorem- Four Colour Problems- Chromatic Polynomials Directed Graphs: Introduction - Definitions and Basic Properties – Path and Connections-Digraphs and Matrices – Tournaments

Text Books

- Arumugam. S. and Ramachandran. S. (2015). *Invitation to Graph Theory*. SciTech Publications (India) Pvt. Ltd. Chennai.

References

- Narsingh Deo. (2016). Graph *Theory with applications to Engineering and Computer Science.* Prentice Hall of India.

- Gary Chartrand and Ping Zhang. (2017). *Introduction to Graph Theory*. Tata McGraw-Hill Edition.

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Understand the concepts of graph theory as an application of mathematics in information technology	K1
CO 2	Recall and relate connectivity.	K2
CO 3	Recognize the characteristics of Eulerian Graphs	K3
CO 4	Analyse Characterization of Planar graphs	K4
CO 5	Create special directed graphs and its properties for research purpose.	K5

NUMBER THEORY

UMAO502

Semester : V **Credits : 4**
Category : Major Elective **Hours/Week: 5**
Class &Major: III B.Sc Mathematics **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO 1	Acquire basic knowledge in Number theory.
CO 2	Understand the properties of various functions of Number Theory.
CO 3	Apply the concepts of Dirichlet Multiplication.
CO 4	Analyse the basic concepts of Euler Fermat Theorem.
CO 5	Formulate the Reciprocity Law.

UNIT- I THE FUNDAMENTAL THEOREM OF ARITHMETIC 13 Hours

Introduction – Divisibility - Greatest common divisor - Prime numbers – The fundamental theorem of arithmetic- The series of reciprocals of the primes – The Euclidean algorithm - The greatest common divisor of more than two numbers.

UNIT- II ARITHMETICAL FUNCTIONS 13 Hours

Introduction – The mobius function μ(n) – The Euler totient function ϕ (n) – A relation connecting ϕ and μ – A product formula for ϕ (n) – The Dirichlet product of arithmetical functions – Dirichlet inverses and the mobius inversion formula – The Mangoldt Function $\Lambda(n)$ - Multiplicative functions.

UNIT-III DIRICHLET MULTIPLICATIONS **13 Hours**

Multiplicative functions and Dirichlet Multiplication -The inverse of a completely multiplicative function - Liovilleʺs function - The division function-Generalised convolutions - Formal power series - The bell series of an arithmetical functions - Bell series and Dirichlet multiplication. - Derivatives of arithmetical functions - The Selberg identity.

UNIT –IV CONGRUENCES **13 Hours**

Congruences - Definition and basic properties of Congruences – Linear congruence - Reduced residue systems and The Euler-Fermat theorem - Polynomial Congruences modulo p Lagrange theorem - Application of Lagrangeʺs theorem - Simultaneous linear congruences - The Chinese remainder theorem - Applications of the Chinese remainder theorem.

UNIT-V QUADRATIC RESIDUES AND QUADRATIC RECIPROCITY LAW 13 Hours

Quadratic residues – Legendre's symbols and its properties- Evaluation of (-1/p) and (2/p) - Gauss lemma - The quadratic reciprocity law – Applications of the Reciprocity law-The Jacobi Symbol

Text Books

- Tom Apostol. M. (2013). *Introduction to Analytic Number Theory*. Springer-Verlag. New York.

Reference Books

- Neal Koblitz. (1994). *A Course in Number Theory and Cryptography.* Springer-Verlag. New York.
- John Stillwell. (2010). *Elements of Number Theory*. Springer – Verlag. New York.
- Ivan Niven Herbert Zuckerman. S. and Hugh Montgomery.L. (2008). *An Introduction to the Theory of numbers*. Wiley. (5^{th} ed.,). India.

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Recall and relate number theory and its theorems.	K1
CO 2	Recognize the basic concepts of arithmetic functions.	K2
CO 3	Express the concept and results of Liovilleʺs function.	K3
CO 4	Apply numerical data to form Congruences about the integers	K4
CO 5	Construct Mathematical Proofs using Gauss Law	K5

LINEAR ALGEBRA

UMAM616

Semester : VI **Credits : 5**
Category : Core XII / DSC (XII) **Hours/Week : 6**
Class & Major : III B.Sc Mathematics **Total Hours : 78**

Course Objectives

CO No.	To enable the students
CO-1	Understand the concepts of Dual spaces.
CO-2	Describe the Concepts of Inner Product Spaces.
CO-3	Analyze Linear transformations.
CO-4	Compute Traces and Transpose.
CO-5	Formulate Normal Transformations.

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 student will be ableto	Bloom's Level
CO-1	Recall dual space and its properties	K1
CO-2	Recognize the concepts of inner product space.	K2
CO-3	Explain the concepts of linear transformation.	K3
CO-4	Evaluate and construct the matrix representing a linear transformation.	K4
CO-5	Construct the normal transformation.	K5 & K6

III & IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component –III	Component -IV
I	III	UMAA117	Mathematical Statistics - I	Problem solving	Assignment
V	III	UMAM513	ModernAlgebra	Seminar	Assignment
V	III	UMAM514	Real Analysis I	Assignment	Seminar
V	III	UMAM515	Numerical Methods	Problem solving	Seminar
V	III	UMAO501	Graph Theory	Seminar	Prototyping
V	III	UMAO502	Number Theory	Problem solving	Seminar
VI	III	UMAM616	Linear Algebra	Assignment	Seminar

PG & RESEARCH DEPARTMENT OF MATHEMATICS

PREAMBLE

PG: Programme Profile and the Syllabi of Courses offered in the I and II Semester along with Evaluation Components III & IV (With Effect From 2021- 2023 Batch Onwards)

PROGRAMME PROFILE M.Sc. (MATHEMATICS)

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No. Upon completion of these Courses the Students would have

PSO-1 Become an individual academic excellence in the discipline of Mathematics

PSO-2 Acquire knowledge for research program

PSO-3 Be an entrepreneur for training SET / NET examinations

PSO-4 Become a software Developer

PSO-5 Executing research projects for multidiscipline courses

Semester	Category	CourseCode	Course Title	Previous course code	Contact Hours/ Week	Credit
						Min/Max
I	Major Core I / DSC I	PMAM110	Abstract Algebra	PMAM107/ PMAM108/ PMAM109	6	4
	Major Core II/ DSC II	PMAM102	Real Analysis	-	6	4
	Major Core III / DSC III	PMAM103	Ordinary Differential Equations	-	6	4
	Major Core IV / DSC IV	PMAM105	Calculus Of Variations and Integral Equations	-	6	4
	Major Core V / DSC V	PMAM106/ PMAM407	Fuzzy Analysis	-	6	4
			TOTAL		**30**	**20**
II	Major Core VI/ DSCVI	PMAM211	Linear Algebra	PMAM209/ PMAM210	5	4
	Major Core VII / DSCVII	PMAM202	Measure and Integration	-	5	4
	Major Core VIII / DSCVIII	PMAM206	Partial DifferentialEquations	-	5	4
	Major Core IX / DSC IX	PMAM207	Classical Mechanics		5	4
	Major Core X / DSC X	PMAM208	Operations Research		5	4
	Non Major Elective				5	4
	Service Learning	PMAX201/ PMAX202	Mathematics for High School Students \ Elementary Mathematics for Higher Secondary Students		-	1
	Online Course	PONL201	NPTEL		-	1 /2
			TOTAL		**30**	**25 / 27**

III	Major Core XI / DSC XI	PMAM305	Complex Analysis	-	6	4
	Major Core XII / DSC XII	PMAM310	Fluid Dynamics	-	6	4
	Major Core XIII / DSC XIII	PMAM314	Topology	PMAM311	6	4
	Major Core XIV / DSC XIV	PRMC301	Research Methodology	-	5	4
	Major Core XV/ DSC XV	PMAI312	Number Theory and Cryptography	-	5	4
	Major Core XVI/ DSC XVI	PMAP401	Project	-	2	-
TOTAL					**30**	**20**
IV	Major Core XVII / DSC XVII	PMAM405	Functional Analysis	-	6	5
	Major Core XVIII / DSC XVIII	PMAM409	Numerical Analysis	-	7	5
	Major Core XIX / DSC XIX	PMAM410	Probability theory	-	6	5
	Major Core XX / DSC XX	PMAM411	Differential Geometry	-	6	5
	Major Core XXI / DSC XXI	PMAP401	Project	-	4	5
Library					1	-
TOTAL					**30**	**25**
GRAND TOTAL					**120**	**90/ 92**

PROGRAMMES OFFERED TO OTHER DEPARTMENTS – PG

Semester	Category	Course Code	Course Title	Contact Hours/ Week	Credit Min/ Max
II	Non MajorElective	PMAE201	LaTeX and MaTLab	3	4
	Practical		LaTeX and MaTLab	2	
	Non MajorElective	PMAE204	Operations Research	5	4
		PMAE202	NET/SET/Competitive Exam	5	5
		PMAE203	Discrete mathematics	5	4

EXTRA CREDIT EARNING PROVISION

Semester	Category	Course code	Course Title	Hours/ week	Credit Min /Max
III	Self-StudyPaper	PMAS301	Difference Equation	2	-/1
		PMAS302	Combinatorial Analysis	2	-/1

ABSTRACT ALGEBRA
PMAM110

Semester : I **Credits : 5**
Category : Core I / DSC (I) **Hours/Week : 6**
Class & Major: I M.Sc Mathematics **Total Hours : 78**

Course Objectives:

CO No.	To enable the students
CO-1	Understand the concept of Sylow`s theorem, direct products.
CO-2	Analyze Finite abelian groups and modules
CO-3	Apply the polynomial rings over the rational fields.
CO-4	Evaluate the roots of the polynomials.
CO-5	Investigate the Galois theory.

UNIT-I SYLOW'S THEOREM **16 Hours**

Another Counting principle- Sylow's theorem in 1st part of sylow's theorem 1st proof only, 2ndpart of sylow's and 3rdpart of sylow's theorem- Direct products.

UNIT-II FINITE ABELIAN GROUPS **16 Hours**

Finite abelian groups - Modules.

UNIT-III FIELDS **16 Hours**

Extension fields – Transcendence of e roots of polynomial.

UNIT-IV FIELDS (CONTINUATION) **15 Hours**

Roots of Polynomials – More about roots.

UNIT-V FINITE FIELDS **15 Hours**

Elements of Galois Theory – Solvability by radicals.

Text Book

- Herstein.N. (2013). *Topics in Algebra*. Wiley Eastern Limited. New Delhi.

Reference Books

- Bhattacharya P.B. Jain S.K. & Nagpaul S.R. (2012). *Basic Abstract Algebra.* Cambridge University press. New York.
- Jacobson.N & W.H. Freeman. (1980). *Basic Algebra. Vol. I & II.* Hindustan publishing Company. New Delhi.
- Malik D.S. Mordeson J.N. & Sen M.K. (2007). *Fundamental of Abstract Algebra*. Mc Graw Hill. New York.
- Artin.M. (2010). *Algebra*. Prentice Hall of India. New Delhi.

Course Outcomes:

CO No.	The student will be able to	Cognitive Level
CO 1	Understand the concept of Sylow`s theorem, direct products.	K2
CO 2	Describe the properties of finite abelian groups and modules	K3
CO 3	Differentiate the polynomial rings over the rational fields and polynomial rings over the commutate rings.	K4
CO 4	Explain the concepts of roots of the polynomials.	K4
CO 5	Construct the solvability by radicals.	K5

LINEAR ALGEBRA

PMAM211

Semester : II **Credits : 5**
Category : Core VI / DSC (VI) **Hours/Week : 6**
Class & Major : I M.Sc Mathematics **Total Hours : 78**

Course Objectives:

CO No.	To enable the students
CO-1	Understand the concepts of polynomials and Determinants.
CO-2	Describe the Elementary Canonical Forms.
CO-3	Use the Cyclic Decompositions.
CO-4	Analyse the Inner Product Spaces.
CO-5	Formulate Bilinear forms.

UNIT-I POLYNOMIALS AND DETERMINANTS **16 Hours**

Algebras – The Algebras of Polynomials – Commutative Rings – Determinant Functions – Additional Properties of Determinants

UNIT-II ELEMENTARY CANONICAL FORMS **16 Hours**

Characteristic Values – Annihilating Polynomials – Invariant Subspaces – Simultaneous Triangulation; Simultaneous Diagonalisation.

UNIT-III THE RATIONAL AND JORDAN FORMS **16 Hours**

Cyclic Subspaces and Annihilators – Cyclic Decompositions and the Rational Form – The JordanForm – Computations of Invariant Factors – Semi-Simple Operators.

UNIT-IV OPERATIONS ON INNER PRODUCT SPACE **15 Hours**

Form on Inner Product Spaces – Positive Forms – More on Forms – Spectral Theory – Further Properties of Normal Operations.

UNIT-V BILINEAR FORMS **15 Hours**

Bilinear Forms – Symmetric Bilinear Forms – Skew- Symmetric Bilinear Forms – Groups Preserving Bilinear Forms.

Reference Books

- Herstein.I.N.(2013). *Topics in Algebra.* John Wiley & Sons. (2^{nd} ed.,).
- Kumaresan.S.(2000). *Linear Algebra A geometric Approach*. PHI Learning Private LimitedNew Delhi. (10^{th} ed.,).
- 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.	The student will be able to	Cognitive Level
CO 1	Recall the concepts of polynomials and Determinants.	K1
CO 2	Discuss the Elementary Canonical Forms.	K2
CO 3	Solve Annihilators	K3
CO 4	Analyse the Inner Product Spaces.	K4
CO 5	Design Symmetric Bilinear Forms	K4

III and IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course code	Course Title	Component III	Component IV
I	Major Core I / DSC I	PMAM110	Abstract Algebra	Assignment	Term Paper
II	Major Core VI / DSC VI	PMAM210	Linear Algebra	Assignment	Seminar

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE

PREAMBLE

UG : Programme Profile – List of Courses offered to other Departments and Syllabi of Courses in the V 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 Upon Completion of these course the undergraduate would have

PSO 1: Understood the appropriate techniques to design, implement, and evaluate computer-based system process, & component to get results on desired needs.

PSO 2: Learnt to engage in development of current technical concepts and Broadest context of technological change.

PSO 3: Ability to have the required skills of IT industries as well as software developer, database administrator, programmer, system analyst, data scientist, web application developer, system programmer, software testing, expert system designer.

PSO 4: Inculcate effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PSO 5: Identified solutions for complex problems and design system components or processes that meet the specified needs for the societal and environmental Considerations.

PSO 6: Gained the ethical principles of legal, security, social issues and responsibilities.

PSO 7: Generate the impact of the professional techniques solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/ 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	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	Languages/ AECC-II Tamil-II/ Hindi-II/FrenchII (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	
		Internship	UCSI201	Internship/ Field work/ Field Project		-	-/1 (Extra Credit)
	V		Extension Programme/ Physical Education/ NCC			-	1/ 2
					Total	**36**	**25/29**

III	I	Language	UTAL307/ UTAL308	Languages/ AECC-II 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	Languages/ AECC-II 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	NME (SEC)				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	**33**	**23/29**

V	III	Major Core (DSC) - XII	UCSM506	Data mining	-	**5**	**5**
	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	4
		Major Core(DSC) - XXII	UCSR609	Cloud Computing- Practical	UCSR508	4	3
		MAJOR ELECTIVE (Discipline Specific Elective) – XXIII	UCSO609/ (UCSO610/ UCSM613) /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			30	-	0/2
					Total	**30**	**26/29**
					Grand Total	**195**	**148/165**

ALLIED COURSES OFFERED TO OTHER DEPARTMENTS

Class & Major	Semester	Category	Course Code	New Course Title	Previous Course Code	Contact Hrs/ Week	Credit Min/Max
B.Com with Computer Applications	I	Allied	UCSA105	Multimedia	UCSA303	3	3
	I	Allied Practical	UCSR111	Multimedia Lab	UCSR306	3	2
	II	Allied	UCSA205	C Programming	UCSA104	3	3
		Allied Practical	UCSR208	C Programming Lab	UCSR110	3	2
	III	Allied	UCSA307	Object Oriented Programming	UCSA204	3	3
		Allied Practical	UCSR311	Object Oriented Programming – Lab	UCSR207	3	2
	IV	Allied	UCSA408	Fundamentals of Blockchain Technology	UCSA305	3	3
		Allied Practical	UCSR414	Blockchain Technology Using Solidity – Lab	UCSR309	3	2
	V	Allied	UCSA510	Digital Marketing Analytics	UCSA406	**3**	**3**
		Allied Practical	UCSR513	Web Design using Microsoft Expression Web4 – Lab	UCSR412	**3**	**2**
BBA, B.Com and B.COM (IAT)	IV	Allied	UCSA409	Business Analytics and Intelligence.	UCSA509	3	3
	IV	Allied Practical	UCSR415	Business Analytics and Intelligence - Lab	UCSR512	3	2
Tamil	V	Allied	UCSA505	Tamil Kanini	-	3T + 2P	5
Maths	III	Allied	UCSA304	Mathematical Programming using C	-	3	3
	III	Allied Practical	UCSR307	Mathematical Programming using C – Lab	-	3	2
	V	Allied	UCSA507	Object Oriented Programming using Java	-	3	3
	V	Allied Practical	UCSR508	Object Oriented Programming using Java - Lab	-	3	2
Physics	III	Allied	UCSA306	Computational Physics with Python	-	3	3
	III	Allied Practical	UCSR310	Computational Physics with Python – Lab	-	3	3

NON-MAJOR ELECTIVE

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/week	Credit Min/Max
II	IV	Non Major Elective	UCSE206	Tableau Programming	UCSE202	2T+2P	2
			UCSE207	Python Programming	UCSE203	4P	2
			UCSE208	R Programming	UCSE204	4P	2
			UCSE209	Arduino Programming	UCSE205	4P	2
			UCSE210	Go Programming	-	4P	2
IV	IV	Non Major Elective	UCSE406	DIGITAL DESIGN	-	4P	2
			UCSE407	DATA VISUALIZATION	-	4P	2

EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Course Code	Course Title	Contact Hrs/week	Credit	
						Min	Max
V	III	Self Study Paper	UCSS501	Python Programming	2	1	1
V	III	Self Study Paper	UCSS502/ UCAS502	Android Applications	2	1	1
VI	III	Self Study Paper	UCSS601/ UCAS601	Angular JS	2	1	1
VI	III	Self Study Paper	UCSS602/ UCAS602	Green Computing	2	1	1

DATA MINING

UCSM506

Semester : V **Credit : 4**
Category : Core XIV **Hours/Week : 5**
Class &Major : III B.Sc Computer Science **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	State and Discuss the basic data mining & knowledge discovery concepts.
CO – 2	Understand the data mining preprocessing techniques in various applications like social, scientific and environmental context.
CO – 3	Apply association rule mining techniques for decision-making skills.
CO – 4	Evaluate the experience of doing independent study and research in classification and prediction.
CO – 5	Develop skills in clustering analysis, and understand the various mining techniques such as Web Mining, Spatial Mining and Temporal Mining.

UNIT– I INTRODUCTION **13 Hours**

Data Mining tasks–Data Mining versus Knowledge Discovery in Databases–Relational databases–Data warehouses–Transactional databases–Object-oriented databases–Spatial databases–Temporal databases–Text and Multimedia databases–Heterogeneous databases-Mining Issues.

UNIT-II 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–BERT Algorithm- Frequent Pattern- Multilevel Association Rules –Multidimensional Association Rules –Constraint Based AssociationMining

UNIT-IV CLASSIFICATION AND PREDICTION **13 Hours**

Classification and Prediction – Issues–Decision Tree induction– Bayesian Classification BackPropagation –Classification Methods–Prediction–Classifiers accuracy.

UNIT-V CLUSTERINGTECHNIQUES **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. (3rd ed.,) .

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
- https://onlinecourses.nptel.ac.in/noc21_cs06/preview
- https://www.javatpoint.com/classification-and-predication-in-data-mining#:~:text=Classification%20is%20the%20process%20of%20identifying%20which%20category%20a%20new,data%20for%20a%20new%20observation.
- https://towardsdatascience.com/17-clustering-algorithms-used-in-data-science-mining-49dbfa5bf69a

Course Outcomes:

CO.NO	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the various kinds of patterns that can be discovered by association rule mining.	K1,K2
CO-2	Apply to remove redundancy and incomplete data from the dataset using data preprocessing methods.	K3
CO-3	Prioritize the data warehousing architectures and uses of tools for systematically organizing large database and use their data to make strategic decisions	K4
CO-4	Discover interesting patterns from large amounts of data to analyze for predictions and classification	K5/K6
CO-5	Develop a data mining application for cluster analysis using various tools.	K6

DATABASE MANAGEMENT SYSTEM

UCSM512

Semester : V **Credits : 5**
Category : Core XIV **Hours/Week : 5**
Class &Major : III B.Sc Computer Science **Total Hours : 65**

Course Objectives

CONo.	To enable the students
CO – 1	Describe the fundamentals of database systems and data models and apply the E-R model for several practical examples.
CO – 2	Apply the relational data model.
CO – 3	Analyze the database design by normalization.
CO – 4	Demonstrate and design the various database software's (SQL/PL-SQL) in order to manage large complex database systems.
CO – 5	Develop multiple users using concurrency control and recovery system and the basic concepts of transaction processing.

UNIT- I INTRODUCTION AND ER- DIAGRAMS **13 Hours**

Purpose of database system – Data models – database languages – Transaction management – Storage management – DBA – Database users – System structure. Overview of design process – Entity relationship model – Mapping Cardinalities – ER Diagrams– Extended ER Features.

UNIT - II RELATIONAL DATA MODEL AND LANGUAGE **13 Hours**

Relational data model concepts-constraints and its types- relational algebra and relational calculus – Domain Relational Calculus.

UNIT - III NORMALIZATION **13 Hours**

Functional dependencies- normal forms- first- second- third normal forms- BCNF- inclusion dependence- loss less join decompositions- normalization using FD- MVD- and JDs- alternative approaches to database design.

UNIT - IV SQL AND ORACLE **13 Hours**

Basic Structure of SQL Queries – Set operations – Aggregate functions – Null values – nested sub queries – Complex Queries – Views – Modification of Databases – Joined Relations. Advanced SQL: Embedded SQL – Dynamic SQL – Oracle - Introduction – SQL (DDL, DML, DCL Commands) – Integrity Constraints – PL/SQL – PL/SQL Block – Procedure, Function – Cursor management – Triggers.

UNIT- V TRANSACTION MANAGEMENT AND CONCURRENCY CONTROL **13 Hours**

Transaction management: ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks), Time stamping methods, optimistic methods, database recovery management.

Case study: Oracle/DB2, GO programming.

Text Books:

- *Fundamentals of Database System* by Elmasari&Navathe, 7th Edition, 2018, Pearson Education.
- *Database System Concepts* - Seventh Edition by AviSilberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill Education.

Reference Books:

- Silberschatz, Korth & Sudarshan. (2019). *Database System Concepts,* 6th Edition, McGraw – Hill Eduction.
- RamaKrishna & Gehrke.(2018). *Database Management System*, 3rd Edition, McGrawHill Education.

e-Resources:

- https://online.visual-paradigm.com/diagrams/features/erd-tool/
- http://www.ict.griffith.edu.au/normalization_tools/normalization/index.html
- https://www.programiz.com/sql/online-compiler/
- https://rethinkdb.com/

Course Outcomes:

CO .No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Acquire Knowledge and Discuss relational database theory.	K1
CO – 2	Understand and design ER-models based on scenarios which represent in database application	K2
CO – 3	Demonstrate the normalization for the development of application software.	K3
CO – 4	Select the SQL queries based on the commercial database system.	K4/K5
CO – 5	Formulate the concurrency control and recovery techniques by designing the database system.	K6

DATA MINING –PRACTICAL

UCSR512

Semester : V **Credits : 3**
Category : Core XV **Hours/Week : 4**
Class &Major : III B.Sc Computer Science **Total Hours : 52**

Course Objectives:

CO.No.	After completion of the course, the student will be able to
CO - 1	Understand the concepts in Data mining.
CO - 2	Exposure to real life data sets for analysis and prediction.
CO - 3	Evaluate the programming skills in Weka tool/Python/R programming
CO - 4	Demonstrate the working of algorithms for data mining tasks such association rule mining, classification and clustering.
CO - 5	Develop the skill of designing Graphical user Interfaces in Weka tool/Python/R programming.

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
6. Customer Details
7. Recruitment Details

8. Patient Details
9. Weather Details
10. Social Networking Reviews Details

To implement the Dataset in WekaTool/ Python/R programming

1. Pre-Processing on Dataset
2. Normalize Table data using Knowledge Flow.
3. Association Rule Process on Dataset -A Priori Algorithm
4. Association Rule Process on Dataset –FP Growth Algorithm
5. Decision Tree process on Dataset -ID3 Algorithm
6. Decision Tree process on Dataset -Naïve Bayes Algorithm
7. Cross-validation process on Dataset - J 48 Algorithm
8. Classification process on Dataset - KNN
9. Clustering Rule process of Dataset - Simple K-Means Algorithm.
10. Data Visualization

Note: Also refer UCI Machine Learning Repository for data set.

e-Resources:

- https://dzone.com/refcardz/data-mining-discovering-and
- https://cs.pwr.edu.pl/lemiesz/info/DMlab2020.pdf
- https://nasirunnisabtech.files.wordpress.com/2013/10/dataminig_lab_manual__softcopy_.pdf

Course Outcomes :

CO .No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Understand the various kinds of tools	K2
CO – 2	Analyze the importance of preprocessing in the data mining process.	K3/K4
CO – 3	Classify the data mining techniques such as clustering, association mining, classification and prediction.	K3/K4
CO – 4	Apply data mining techniques for realistic data.	K5
CO – 5	Design and formulate skills will improve.	K6

CYBER SECURITY
UCSO501/ UCAO501

Semester	**: V**	**Credit**	**: 4**
Category	**: Core XVI**	**Hours/Week**	**: 5**
Class & Major	**: III B.Sc Computer Science / III B.C.A**	**Total Hours**	**: 65**

Course Objectives:

CO No.	To enable the students
CO – 1	State and Understand the system level security.
CO – 2	Identify the vulnerabilities in software and to provide awareness.
CO – 3	Illustrate the importance of cyber security safeguards
CO – 4	Evaluate the web server attacks and router attacks.
CO – 5	Develop the ability to handle intrusion and prevention of attacks, and to understand the cyber laws.

UNIT-I INTRODUCTION TO CYBER SECURITY 12 Hours

Introduction to Cyber Security –Implementing Hardware Based Security- Software Based Firewalls-Security Standards –Operating System Attacks- Application Attacks.

UNIT-II CYBER SECURITY VULNERABILITIES 13 Hours

Cyber Security Vulnerabilities-Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness.

UNIT–III CYBER SECURITY SAFEGUARDS 13 Hours

Cyber Security Safeguards-Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

UNIT – IV PRIVACY IN CYBERSPACE 13 Hours

Privacy Concepts- Privacy Principles and Policies-Authentication and Privacy-Data Mining- Privacy on the Web-Email Security-Privacy Impacts of Emerging Technologies-Where The Field Is Headed

UNIT-V INTRUSION DETECTION AND PREVENTION 14 Hours

Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems. **IT Act:** Salient Feature of IT Act 2000,

Legal Provisions under the Information Technology Act,Recent amendments by the IT (Amendment Act) 2008, ActSection66(A, B, C, D, E, F), ITActSection67(A,B,C).

Text Books

- JamesGraham, Richard Howard, Ryan Olson(2011), *Cyber Security Essentials*, CRCPress, Auerbach Publications.
- William Stallings,(2013), *Cryptography and Network Security*, Sixth edition Prentice Hall.

Reference Book

- Jatindra Pandey(2017),"Introduction to Cybersecurity", Uttarakhand Open University.

e-Resources

- http://ptgmedia.pearsoncmg.com/images/9780789748904/samplepages/0789748908.pdf
- https://www.ceps.eu/system/files/TFRCybersecurityFinance.pdf
- https://www.javatpoint.com/cyber-security-tools
- https://www.softwaretestinghelp.com/ddos-attack-tools/
- https://www.uou.ac.in/sites/default/files/slm/Introduction-cyber-security.pdf

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Interpret and forensically investigate security incidents.	K1/K2
CO – 2	Analyze and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training.	K3/K4
CO – 3	Examine and resolve security issues in networks and computer systems to secure an IT infrastructure.	K5
CO – 4	Evaluate the policies and procedures to manage enterprise security risks.	K5/K6
CO – 5	Create the ability to handle the intrusion and detection	K6

COMPUTER GRAPHICS

UCSO502

Semester	**: V**	**Credit**	**: 4**
Category	**: Core XVI**	**Hours/Week**	**: 5**
Class & Major	**: III B.Sc Computer Science**	**Total Hours**	**:65**

Course Objectives:

CO No.	To enable the students
CO1	Acquire knowledge on 2D Graphics system and Software used.
CO2	Categorize the 2D and 3D geometric, viewing with respective dimensional modelling transformations.
CO3	Demonstrate the graphics program with OpenGL in basic primitives.
CO4	Evaluate the algorithm to differentiate Visible surface detection methods in graphics.
CO5	Write the various operations of Computer animations and Color Models.

UNIT – I 2D PRIMITIVES **12 Hours**

Overview of Graphic systems – Output primitives – Line, Circle and Ellipse drawing algorithms – Attributes of output Primitives-Two Dimensional Geometric transformations-2D Viewing – Window-Viewport Transformation – Line, Polygon, Curve and Text clipping algorithms.

UNIT – II 3D CONCEPTS **12 Hours**

Parallel and Perspective Projections – Three dimensional object representation – Polygons Surface, Quadric Surfaces, B-Splines–Visualization of data sets – 3D Geometric transformations– 3DViewing

UNIT – III GRAPHICS IN OPENGL **10 Hours**

Drawing primitives in Open GL and Basic Open GL programming – Open GL basic Graphics primitives, 3D Transformations in Open GL.

UNIT – IV VISIBLE SURFACE DETECTION METHODS **10 Hours**

Visible surface detection methods: Classification, Back-face detection, Depth-buffer, scan-line, Depth sorting, BSP-tree methods, Area sub-division and Octree methods.

UNIT – V COMPUTER COLOR MODELS AND ANIMATION 8 Hours

Color Models – RGB, YIQ, CMY, HSV, HLS– Animations – General Computer Animation Function, Raster Animations, Computer Animation Languages, Key frame Systems, Morphing.

Text Books:

- Donald D. Hearn, M. Pauline Baker and Warren Carithers(2010), *Computer Graphics with OpenGL*, Fourth Edition, Pearson Education.
- Donald Hearn, PaulineBaker (2004), *Computer Graphics Version*, secondedition, Pearson Education.

Reference Books:

- F.S.Hill (2010), *Computer Graphics using OPENGL*, Second edition, Pearson Education.
- Foley, Van Dam, Feiner and Hughes(2009), *Computer Graphics Principles & practice*, second edition in C, Pearson Education.

e-Resources:

- https://onlinecourses.nptel.ac.in/noc20_cs90/preview
- http://vlabs.iitb.ac.in/vlabs-dev/labs/cglab/experimentlist.html
- https://cse18-iiith.vlabs.ac.in/List%20of%20experiments.html
- https://nptel.ac.in/courses/106106090

Course Outcomes:

CO No.	On Completion of the course the student will able to	Bloom's level
CO1	Define features of overall view graphics system process	K1,K2
CO2	Apply and Differentiate 2D,3D transformations	K3
CO3	Demonstrate with Illustrate animation software to determine program processing and to differentiate color models concepts	K4
CO4	Construct with Illustrate OpenGL graphics program to represent basics drawing primitives	K5/K6
CO5	Create Algorithm to Classify the Visible surface hidden methods	K6

REACT JS
UCSO503

Semester	**: V**	**Credit**	**: 4**
Category	**: Core XVI**	**Hours/Week**	**: 5**
Class & Major	**: III B.Sc Computer Science**	**Total Hours**	**: 65**

Course Objectives:

CO No.	To enable the students
CO-1	Define and describe the concept of React JS.
CO-2	Illustrate the containers and components in JSX and the Virtual DOM.
CO-3	Analyze the concept of React JS Environment Setup
CO-4	Evaluate the fundamental architecture of a React JS application
CO-5	Design the types of form components and animations.

UNIT I REACT JS INTRODUCTION **13 Hours**

React JS Introduction Advantages of React JS- Work flow of React JS- Scope of React JS - Using create react – app – Running the app – Debugging first react app

UNIT II OVERVIEW OF JSX **13 Hours**

Introduction of Virtual DOM - Difference between JS and JSX - React Components overview- Containers and components- Child Components - Namespaced components - JavaScript expressions available in JSX.

UNIT III REACT JS ENVIRONMENT SETUP **13 Hours**

Node setup- How to use NPM - Create package.json and purpose - ES6 Introduction and features.-Webpack Overview- Best IDE for React JS and optimized code in React JS - React JS browser plugins overview.

UNIT IV A REAL-TIME APPLICATION BY USING REACT JS **13 Hours**

Create a React component with JSX template - create Nested Components- React JS render - React Props overview- Introduction of Props validation with data types- Flow of States, Initialize states and update states.

UNIT V REACT JS FORMS AND UI **13 Hours**

Lists of Form components- Setup Controlled and Uncontrolled form components- Control Input elements - set default values on all formats of Input elements- React JS Form validations- write Styles- Animations overview.

Text Books:

- KirupaChinnathambi(2017), "*Learning React*".
- Daniel Green(2015), "*ReactJS Web App Development* – 2nd edition", Learn one of the most popular javascript libraries.

Reference Books:

- Swizec Teller(2015), "*React + d3.js Build data visualizations with React and d3.js*".
- Todd Abel(2016), "*ReactJS: Become a professional in web app development*".

e-Resources:

- https://reactjs.org/tutorial/tutorial.html
- https://www.w3schools.com/react/react_intro.asp

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the fundamentals of React JS	K1
CO-2	Illustrate the concept of JSX.	K2/K3
CO-3	Analyze the concept of ReactJS Environment Setup	K3/K4
CO-4	Examine the types of form components and animations.	K5
CO-5	Implement React components with JSX template.	K6

BLOCKCHAIN TECHNOLOGY
UCSO504

Semester : V **Credit : 4**
Category : Core XVI **Hours/Week : 5**
Class & Major : III B.Sc Computer Science **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	State and Define the fundamentals of cryptocurrency and Blockchain
CO – 2	Understand the concepts of Cryptocurrency markets and exchanges in Blockchain
CO – 3	Apply the knowledge for using bitcoin transactions, and decision-making skills in financial sectors.
CO – 4	Evaluate the experience of implementing the ethereum in blockchain.
CO – 5	Develop skills using recent solidity software for solving problems, and HyperLedger fabric.

UNIT-1 CRYPTOCURRENCY AND BLOCKCHAIN- INTRODUCTION 13 Hours

Blockchain- An Introduction, Distinction between databases and blockchain, Distributed ledger. Blockchain ecosystem - Consensus Algorithms & Types, Blockchain structure, Distributed networks- Distributed Applications (DApps) – Web 3.0 - DApps Ecosystems. Working - Permissioned and permission-less Blockchain – Cross Chain Technologies. – IOT & Blockchain. Digital Disruption in Industries – Banking, Insurance, Supply Chain, Governments, IP rights, Creation of trustless Ecosystems – Block chain as a Service – Open Source Block chains

UNIT-II CRYPTO CURRENCIES 13 Hours

Crypto Currencies - Anonymity and Pseudonymity in Cryptocurrencies - Digital Signatures - Cryptocurrency Hash Codes -Need for Crypto Currencies – Crypto Markets – Explore Crypto Currency Ecosystems - ICOs – Crypto Tokens - Atomic Swaps – Crypto Currency Exchanges – Centralised and Decentralized Crypto exchanges – Regulations on Crypto Currencies & exchanges – Downside of non-regulated currencies – crypto Scams – Exchange hacks.

UNIT – III BITCOIN 13 Hours

Bitcoin – history- Bitcoin- usage, storage, selling, transactions, working- Invalid Transactions- Parameters that invalidate the transactions- Scripting language in Bitcoin- Applications of Bitcoin script- Nodes and network of Bitcoin- Bitcoin ecosystem

UNIT-IV ETHEREUM 13 Hours

The Ethereum ecosystem, DApps and DAOs - Ethereum working- Solidity- Contract classes, functions, and conditionals- Inheritance & abstract contracts- Libraries- Types & optimization of Ether- Global variables- Debugging- Future of Ethereum- Smart Contracts on Ethereum- different stages of a contract deployment- Viewing Information about blocks in Blockchain- Developing smart contract on private Blockchain- Deploying contract from web and console

UNIT-V HYPERLEDGER 13 Hours

Hyperledger Architecture- Consensus- Consensus & its interaction with architectural layers- Application programming interface- Application model -Hyperledger frameworks- Hyperledger Fabric -Various ways to create Hyperledger Fabric Blockchain network- Creating and Deploying a business network on Hyperledger Composer Playground- Testing the business network definition- Transferring the commodity between the participants

Text Books:

- Andreas M Antonopoulos, (2018), Mastering Bitcoin: Unlocking Digital Cryptocurrencies.
- Henning Diedrich (2016), Ethereum: Block chains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations.

Reference Books:

- Narayanan, Bonneau, Felten, Miller and Goldfeder, "Bitcoin and Cryptocurrency Technologies – A Comprehensive Introduction", Princeton University Press.
- Josh Thompson(2017), 'Blockchain: The Blockchain for Beginnings, Guild to Blockchain Technology and Blockchain Programming', Create Space Independent Publishing Platform.
- Imran Bashir, "Mastering Blockchain: Distributed ledger technology, decentralization, and smart contracts explained", Packt Publishing.
- Merunas Grincalaitis, "Mastering Ethereum: Implement Advanced Blockchain Applications Using Ethereum-supported Tools, Services, and Protocols", Packt Publishing.

e-Resources:

- https://www.coursera.org/learn/ibm-blockchain-essentials-for-developers
- https://museblockchain.com/
- https://www.provenance.org/
- https://www.coursera.org/learn/blockchain-basics
- https://steemit.com/
- https://101blockchains.com

COURSE OUTCOMES

CO No.	On successful completion of the course, the students will be able to:	Bloom`s Level
CO – 1	Understand and discover the secure and efficient transactions with crypto-currencies and learnt Private Blockchain environment	K1
CO – 2	Identify the experiment with cryptocurrency trading and crypto exchanges	K2/K3
CO – 3	Demonstrate various issues of transaction processing in Bitcoin	K4
CO – 4	Develop a smart contract on Ethereum	K5/K6
CO – 5	Build the hyperledger architecture and the consensus mechanism applied in the hyperledger	K5/K6

DIGITAL MARKETING ANALYTICS

UCSA510

Semester : V **Credit : 3**
Category : Allied **Hours/Week : 3**
Class &Major : II B.Com(CA) **Total Hours : 39**

Course Objectives:

CONo.	To enable the students
CO-1	Enumerate to recall the digital marketing concepts.
CO-2	Apply the concept of SEO writing, Google AdWords, CRM concepts in advertising.
CO-3	Compare the various web analytics level and types of publications
CO-4	Evaluate concepts of content marketing to plan for wordpress websites.
CO-5	Develop an advertisement to promote digital marketing.

UNIT – I INTRODUCTION TO DIGITAL MARKETING **7 Hours**

Introduction to Digital Marketing (DM)-Meaning, Definition, Need of DM, Scope of DM, History of DM, Concept and approaches to DM, Examples of good practices in DM. Email Marketing-Need for Emails, Types of Emails, options in Email advertising, Mobile Marketing-Overview of the B2B and B2C Mobile Marketing.

UNIT – II SEARCH ANALYTICS **8 Hours**

SEO Optimization -Writing the SEO content - Google AdWords- creating accounts - Google AdWords- types. Introduction to CRM - CRM platform - CRM models. Web design: - Optimization of Web sites - MS Expression Web

UNIT – III WEB ANALYTICS **8 Hours**

Introduction to Web analytics - Web analytics – levels. Introduction of Social Media Marketing - Creating a Face book page - Visual identity of a Facebook page - Facebook Ads - Creating Face book Ads - Types of publications. Creating business accounts on YouTube - YouTube Advertising - YouTube Analytics. Business tools on LinkedIn - Creating campaigns on LinkedIn - Analyzing visitation on LinkedIn

UNIT – IV CONTENT MARKETING **8 Hours**

Business goals and planning for websites-Naming primary and lower level goals-CMS overview and concepts. Intro to Word Press -Word Press design, navigation and site structure - website design guidelines- Domain registration and hosting- Word Press website creation.

UNIT – V DIGITAL MARKETING IN ADVERTISING **8 Hours**

Levers of digital marketing- The digital advertising, a continuous disruption- The Personalization of Media- Data in Advertising- Predictive Models- Programmatic Advertising. Digital Marketing Budgeting- resource planning- cost estimating- cost budgeting- cost control.

Text Books

- Ryan, D. (2014), *Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation*, Kogan Page Limited.
- *The Beginner's Guide to Digital Marketing-Digital Marketer*, 2015
- Pulizzi,J. (2014), *Epic Content Marketing*, Mcgraw Hill Education.

Reference Books:

- Ryan Deiss & Russ Henneberry , Digital Marketing for Dummies, ISBN: 9788126567010
- Eric Enge, Jessie Stricchiola, Stephan Spencer(2015), The Art of SEO: Mastering Search Engine Optimization
- Jerry Ramonyai,Digital Marketing & SEO: Entrepreneur Power, Email, Data, Google Analytics, Search Engine Optimization, Website Content Writing, Online Business, Advertising Strategy & Growth Hacking.Kindle Edition Published January 27th 2022.

e-Resources

- https://www.pdfdrive.com/digital-marketing-how-internet-of-things-is-impacting-digitalmarket-e58837676.html
- https://www.webmarketingacademy.in/beginners-guide-to-digital-marketing-withresources/
- https://hsdm.in/digital-marketing

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the basics of digital marketing and its importance for marketing success.	K1,K2
CO-2	Apply the concepts SEO writing, Google AdWords, CRM concepts in advertising	K3
CO-3	Distinguish the different social media marketing.	K4
CO-4	Compare the Business using digital marketing in advertising using WordPress concept.	K4
CO-5	Develop the current tactics using Google analytics for advertising the content based on budget.	K5/K6

WEB DESIGN USING MICROSOFT EXPRESSION WEB 4 –LAB
UCSR513

Semester	**: V**	**Credit**	**: 3**
Category	**: Allied**	**Hours/Week**	**: 3**
Class &Major	**: II B.Com(CA)**	**Total Hours**	**: 39**

Course Objectives:

CO No.	To enable the students
CO-1	Understand the concepts of web page layout creation.
CO-2	Demonstrate the video encoding format to design a simple webpage.
CO-3	Apply the page element and HTML code for dynamic web pages.
CO-4	Examine the horizontal and vertical navigation using navigation controls.
CO-5	Develop the dynamic web template using MS Expression.

List of Exercises:

1. Create a Webpage Layout in Web Expression
2. Insert a Horizontal and Vertical Navigation in Web Expression
3. Develop a Dynamic Web Template in Web Expression
4. Develop Static Web Template in Web Expression
5. Create a Hyperlinks in Web Expression
6. Make use of Video, Audio in Web Expression
7. Evaluate Backup Website in Web Expression
8. Create the Add-Ins in Web Expression
9. Compose a Data Table in Web Expression
10. Build to Publish the website in Web Expression

e-Resources

- https://onlinelibrary.wiley.com/doi/book/10.1002/9783527659227
- https://www.kobo.com/us/en/ebook/practical-enzymology
- https://books.google.co.in/books/about/Practical_enzymology.html?id=dxZrAAAAMAAJ&redir_esc=yhamazon.in/Practical-Enzymology-Hans-Bisswanger-ebook/dp/B00DOX8ESA

Course Outcomes:

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Demonstrate the hyperlinks concepts.	K2
CO-2	Apply the backup website concepts to retrieve the data.	K3/K4
CO-3	Analyze to maintain the tables using data tables tools.	K4
CO-4	Design a simple webpage using MS expression web 4.	K6
CO-5	Develop a website using the navigation tools, page elements and video encoding format.	K5/K6

III & IV Evaluation Components of CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
V	Major Core (DSC) XIV	UCSM506	Data Mining	Assignment	Seminar
	Major Core (DSC) - XIV	UCSM512	Database Management System	Problem Solving	Seminar
	Major Core (DSC) - XV	UCSR512	Data Mining -Practical	DPA	VIVA -VOCE
	MAJOR ELECTIVE (Discipline Specific Elective)– XVI	UCSO501	Cyber Security	Case Study	Prototyping - Workshop
		UCSO502	Computer Graphics	Assignment	Seminar
		UCSO503	React Js	Problem Solving	Seminar
		UCSO504	Blockchain Technology	Assignments	Prototyping

Allied Evaluation Components of CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
V	Allied	UCSA510	Digital Marketing Analytics	Poster Design	Seminar
V	Allied Practical	UCSR513	Web Design Using Microsoft- Expression Web4- Lab	DPA	VIVA -VOCE

DEPARTMENT OF COMPUTER APPLICATION

PREAMBLE

UG: Programme profile, and syllabi of courses in the V 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 B.C.A Degree Programme, the students would have

PSO 1: Understood how the graduates for a collection of computer applications, computer organization, and techniques of Computer Networking, Software Engineering, Web development, Database management and Advance Java.

PSO 2: Learnt to appreciate the different computer applications using modern computing tools and techniques.

PSO 3: Learnt about how to design innovative methodologies for solving complex-real life problems for the betterment of the society.

PSO 4: Gained management and computing principles with computing knowledge to manage projects in multidisciplinary environments.

PSO 5: Work and create professional practices in an ethical way, keeping in the mind cyber regulations & laws, responsibilities and norms of professional computing practices.

PSO 6: Familiarity and practical competence to develop the ability to engage in continuous learning as a computing professional.

PSO 7: Ability to enhance programming skills of the young IT professionals, the program has introduced the concept of project development in each language/technology.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/ 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		**30**	**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
	IV	Soft skill				2	1
	V	Extension Programme / Physical Education/NCC				-	1 / 2
				Total		**30**	**28/32**

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	4
	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	4
	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**	**25/28**
				Grand Total		**180**	**148/160**

EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Course Code	Course Title	Contact/ Week	Credit	
						Min	Max
V	III	Self Study	UCAS503	IOT Projects	2	-	2
V	III	Self Study	UCSS502/ UCAS502	Android Applications	2	-	2

Inclusion of Experiential Learning

A.Skill Orientation Programme (Only for Interested students) – Extra Credit Earning Provision

Semester	Category	Course Code	Course Title	Collaborating Agency	Hours/ Days/Month	Mode of Evaluation	Credits (Min/Max)
V	Core	UCAT501	Excel Analytics with RLanguage	MSME	4 Days	Reflection	1

CLOUD COMPUTING
UCAM510

Semester : V **Credit : 4**
Category : Core -XVI **Hours/Week : 4**
Class & Major : III BCA **Total Hours : 52**

Course Objectives

CO No.	To enable the students
CO-1	Understand the concept of cloud and its types.
CO-2	Differentiate the types of cloud services and cloud architecture.
CO-3	Analyze the SOA web services and types of virtualization.
CO-4	Evaluate the security standards and applications
CO-5	Develop the emergence of cloud as the next generation computing paradigm.

UNIT – I INTRODUCTION **10 Hours**

Cloud-definition, benefits, usage scenarios, History of Cloud Computing – Cloud Architecture - Types of Clouds - Business models around Clouds – Major Players in Cloud Computing - issues in Clouds - Eucalyptus - Nimbus - Open Nebula, CloudSim.

UNIT – II CLOUD ARCHITECTURE AND SERVICES **10 Hours**

Layered Cloud Architecture Design – NIST Cloud Computing Reference Architecture. Types of Cloud services: Software as a Service - Platform as a Service – Infrastructure as a Service - Database as a Service - Monitoring as a Service – Communication as services. Service providers- Google, Amazon, Microsoft Azure, IBM, Salesforce.

UNIT - III CLOUD ENABLING TECHNOLOGIES **11 Hours**

Service Oriented Architecture – REST and Systems of Systems – Web Services – Publish- Subscribe Model – Basics of Virtualization – Types of Virtualization – Implementation Levels of Virtualization – Virtualization Structures – Tools and Mechanisms

UNIT – IV SECURITY, STANDARDS AND APPLICATIONS **11 Hours**

Security in Clouds: Cloud security challenges – Software as a Service Security, Common Standards: The Open Cloud Consortium – The Distributed management Task Force – Standards for application Developers – Standards for Messaging – Standards for Security, End user access to cloud computing, Mobile Internet devices and the cloud.

UNIT - V CLOUD TECHNOLOGIES AND ADVANCEMENTS **10 Hours**

Hadoop – Map Reduce – Virtual Box -- Google App Engine – Programming Environment for Google App Engine — Open Stack – Federation in the Cloud – Four Levels of Federation – Federated Services and Applications.

Text Books:

- Kai Hwang, Geoffrey C. Fox, Jack G(2018). Dongarra, *Distributed and Cloud Computing, From Parallel Processing to the Internet of Things,* Morgan Kaufmann Publishers.
- Ritting house, John W., and James F. Ransome(2019), *Cloud Computing: Implementation, Management and Security,* CRC Press.

Reference Books:

- RajkumarBuyya, Christian Vecchiola, S. ThamaraiSelvi (2018), *Mastering Cloud Computing,* Tata McGraw Hill.
- Toby Velte, Anthony Velte, Robert Elsenpeter (2019), *Cloud Computing - A Practical Approach,* Tata McGraw Hill.
- George Reese(2019), *Cloud Application Architectures: Building Applications and Infrastructure in the Cloud: Transactional Systems for EC2 and Beyond (Theory in Practice),* O'Reilly.
- David E.Y. Sarna,.(2011). *Implementing and Developing Cloud Application*.CRC press .
- Lee Badger, Tim Grance, Robert Patt-Corner, Jeff Voas, NIST, Draft,*.(2011). Cloud computing synopsis and recommendation.*
- Anthony T Velte, Toby J Velte, Robert Elsenpeter,.(2010). *Cloud Computing : A Practical Approach*. Tata McGraw-Hill .
- Michael Miller,.(2008). *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate.* Que Publishing.

e-Resources:

- https://onlinecourses.nptel.ac.in/noc22_cs20/preview
- https://aws.amazon.com/free/?all-free-tier.sort-by=item.additionalFields.SortRank&all-free-tier.sort-order=asc&awsf.Free%20Tier%20Types=*all&awsf.Free%20Tier%20Categories=*all

- https://www.tutorialspoint.com/cloud_computing/index.htm
- https://www.w3schools.in/cloud-computing/tutorials/

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Articulate the main concepts, key technologies in cloud computing.	K1,K2
CO-2	Relate the key and enable technologies that help in the development of the cloud.	K3
CO-3	Explain various tools, web services and the types of virtualization.	K4
CO-4	Value the security standards and applications	K5
CO-5	Develop and Implement the usage of current cloud technologies	K6

R PROGRAMMING
UCAM511

Semester : V **Credit : 4**
Category : Core -XVII **Hours/Week : 4**
Class & Major : III BCA **Total Hours : 52**

Course Objectives

CO No.	To enable the students
CO – 1	Learn the Fundamentals of R.
CO – 2	Operate the control structures and design of user-defined functions.
CO – 3	Examine the knowledge about Loading; installing and building packages are covered.
CO – 4	Evaluate statistical computing and data analysis.
CO – 5	Develop skills of using different functions in R, how to read data into R, accessing R packages, writing R functions, debugging, and organizing data using R functions.

UNIT- I INTRODUCTION **10 Hours**

Overview of R- R data types and objects - reading and writing data - sub setting R Objects - Essentials of the R Language - Installing R - Running R - Packages in R – Calculations - Complex numbers in R – Arithmetic - Modulo and integer quotients - Variable names and assignment - Operators - Integers - Logical operations.

UNIT - II CONTROL STRUCTURES AND VECTORS **11 Hours**

Control structures - functions, scoping rules - dates and times - Introduction to Functions - preview of Some Important R Data Structures – Vectors - Character Strings - Matrices - Classes Vectors: Generating sequences - Vectors and subscripts - Extracting elements of a vector using subscripts - Working with logical subscripts - Scalars – Vectors – Arrays - and Matrices - Adding and Deleting Vector Elements - Obtaining the Length of a Vector - Matrices and Arrays as Vectors - Vector Arithmetic and Logical Operations - Vector Indexing - Common Vector Operations.

UNIT-III LISTS AND FRAMES **10 Hours**

Lists: Creating Lists - General List Operations - List Indexing Adding and Deleting List Elements - Getting the Size of a List - Extended Example: Text Concordance Accessing List Components and Values Applying Functions to Lists - Data Frames, Creating Data Frames, Accessing Data Frames, Other Matrix-Like Operations

UNIT - IV FACTORS AND TABLES **11 Hours**

Factors and Levels, Common Functions Used with Factors, Working with Tables, Matrix/Array-Like Operations on Tables , Extracting a Sub table, Finding the Largest Cells in a Table, Math Functions, Calculating a Probability, Cumulative Sums and Products, Minima and Maxima, Calculus, Functions for Statistical Distributions

UNIT - V GRAPHICS AND VISUALIZATION **10 Hours**

Overview of R graphics - Standard graphics in R - ggplot2 - 3D Graphs in R- Data Visualization in R: Introduction – Types - Heat Map - Map visualization in R.

Text Books:

- Roger D. Peng(2012),” R Programming for Data Science”.
- Norman Matloff (2011),”The Art of R Programming- A Tour of Statistical Software Design”.

Reference Books:

- Garrett Grolemund, Hadley Wickham(2014), *Hands-On Programming with R: Write Your Own Functions and Simulations* , 1st Edition.
- Venables, W.N., and Ripley(2000), R programming, Springer, 2000.

e- Resources:

- https://www.geeksforgeeks.org/data-visualization-in-r/
- https://intellipaat.com/blog/tutorial/r-programming/data-visualization-in-r/

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Understand simple graphics and visualization in R.	K2
CO – 2	Choose to import a variety of lists and frames into R.	K3
CO – 3	Analyze to implement the Table, Math Functions into R	K4
CO – 4	Evaluate the simple problems by analyzing the logics of conditional statements and looping constructs.	K5
CO – 5	Develop programming language concepts such as data types, iteration, vectors functions, and boolean operators.	K6

R – PROGRAMMING – PRACTICAL

UCAR507

Semester : V **Credit : 2**
Category : Core -XX **Hours/Week : 3**
Class & Major : III BCA **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO – 1	Learn and understand various control structures in R.
CO – 2	Write the user-defined functions.
CO – 3	Analyze R loop functions and debugging tools.
CO – 4	Evaluate the String Manipulation functions in R
CO – 5	Create and design various graphs and charts in R.

LIST OF PROGRAMS:

1. Write a program to declare and understand the functioning of all the decision and loop constructs like If-Else, While, Break-Next and Repeat.
2. Implement basic mathematical operations in R programming.
3. Implement various control structures in R.
4. Write a program to implement time series in R.
5. Implement data frames in R.
6. Implement different String Manipulation functions in R.
7. Implement different data structures in R (Vectors, Lists)
8. Write a program to read and write a csv file and analyze the data in the file in R
9. Execute programs to use plot in R.
10. Write a program to use and display various graphs and charts in R.

Reference Books:

- Jared P. Lander (2018), *R for Everyone: Advanced Analytics and Graphics*, 2nd Edition, Pearson Education.
- S. R. Mani Sekhar and T. V. Suresh Kumar(2017), *Programming with R*, 1st Edition, CENGAGE.

e-Resources

- https://www.studypool.com/documents/10270729/r-programming-lab-manual
- https://ict.iitk.ac.in/courses/r-programming-a-practical-approach/
- https://www.tutorialspoint.com/execute_r_online.php
- https://r-dir.com/reference/datasets.html

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Demonstrate how to install and configure RStudio.	K1,K2
CO – 2	Apply various graphs and charts in R.	K3
CO – 3	Analyze data and generate reports based on the data.	K4
CO – 4	Evaluate to import a variety of data formats into R using RStudio.	K5
CO – 5	Create csv file and implement plot in R.	K6

CYBER SECURITY

UCAO501/UCSO501

Semester : V **Credit : 4**
Category : Core -XXI **Hours/Week : 5**
Class & Major : III BCA /III B.Sc Computer Science **Total Hours : 65**

Course Objectives:

CO No.	To enable the students
CO – 1	State and Understand the system level security.
CO – 2	Prepare for all stages of an investigation– Detection, initial response and management interaction.
CO – 3	Illustrate the importance of evidence handling and storage.
CO – 4	Evaluate the web server attacks and router attacks.
CO – 5	Develop the ability to handle intrusion and prevention of attacks.

UNIT-I INTRODUCTION TO CYBER SECURITY 12 Hours

Introduction to Cyber Security –Implementing Hardware Based Security- Software Based Firewalls-Security Standards –Operating System Attacks- Application Attacks.

UNIT-II CYBER SECURITY VULNERABILITIES **13 Hours**

Cyber Security Vulnerabilities-Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness.

UNIT–III CYBER SECURITY SAFEGUARDS **13 Hours**

Cyber Security Safeguards-Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

UNIT – IV PRIVACY IN CYBERSPACE **13 Hours**

Privacy Concepts- Privacy Principles and Policies-Authentication and Privacy-Data Mining- Privacy on the Web-Email Security-Privacy Impacts of Emerging Technologies-Where The Field Is Headed

UNIT-V INTRUSION DETECTION AND PREVENTION **14 Hours**

Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems.

IT Act: Salient Feature of IT Act 2000, Legal Provisions under the Information Technology Act,Recent amendments by the IT (Amendment Act) 2008, ActSection66(A, B, C, D, E, F), ITActSection67(A,B,C)

Text Books

- JamesGraham, Richard Howard, Ryan Olson(2011), *Cyber Security Essentials*, CRCPress, Auerbach Publications.
- William Stallings,(2013), *Cryptography and Network Security*, Sixth edition Prentice Hall.

Reference Book

- Jatindra Pandey(2017),"Introduction to Cybersecurity", Uttarakhand Open University.

e-Resources

- http://ptgmedia.pearsoncmg.com/images/9780789748904/samplepages/0789748908.pdf
- https://www.ceps.eu/system/files/TFRCybersecurityFinance.pdf
- https://www.javatpoint.com/cyber-security-tools
- https://www.softwaretestinghelp.com/ddos-attack-tools/
- https://www.uou.ac.in/sites/default/files/slm/Introduction-cyber-security.pdf

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Interpret and forensically investigate security incidents.	K1/K2
CO – 2	Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure.	K3/K4
CO – 3	Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training.	K5
CO – 4	Design, develop, test and evaluate secure software.	K5/K6
CO – 5	Develop policies and procedures to manage enterprise security risks.	K6

ARTIFICIAL INTELLIGENCE

UCAO502

Semester : V **Credit : 4**
Category : Core -XXI **Hours/Week : 5**
Class & Major : III BCA **Total Hours : 65**

Course Objectives

CO No.	To enable the students
CO-1	State the basic knowledge representation, and problem solving.
CO-2	Understand how to solve particular complex problems by informed search strategies.
CO-3	Analyze the syntax and semantics of knowledge representation
CO-4	Evaluate the Learning Techniques with several models.
CO-5	Develop a skill in NLP Communication and Robotics Software Architectures.

UNIT- I INTRODUCTION **13 Hours**

Artificial Intelligence: Definition-History of AI Applications. Intelligent Agent: Agent and Environments - Nature of Environments-Structure of Agent. Problem Solving: Problem Solving Agents – Example Problems: Toy Problems and Real-world Problems. Uninformed Search Strategies: BFS, DFS, DLS, IDS.

UNIT –II PROBLEM SOLVING **15 Hours**

Informed Search Strategies: Greedy best-first search-A*search-Heuristic functions.

Classical Search: Local search Algorithms and Optimization problems-Online Search Agent.

Adversarial Search: Optimal Decision in Games-Alpha-Beta Pruning. Constraint Satisfaction

Problems: Backtracking Search for CSP's– Local Search for Constraint Satisfaction Problems - Structure of Problems.

UNIT – III KNOWLEDGE REPRESENTATION **11 Hours**

First-Order Logic: Syntax and Semantics of First-Order Logic - Using First-Order-Logic-Knowledge Engineering in First-Order-Logic. Inference in First-Order Logic: Inference rules-Unification and Lifting-Forward Chaining-Backward Chaining-Resolution.

UNIT-IV LEARNING TECHNIQUES **13 Hours**

Learning from Examples: Forms of Learning - Learning Decision Trees – Regression and classification with Linear Models – Support Vector Machines – Ensemble Learning. Knowledge in Learning: Knowledge in Learning- Explanation Based Learning- Inductive Logic Programming. Reinforcement Learning: Introduction – Passive and Active Reinforcement Learning.

UNIT – V NATURAL LANGUAGE PROCESSING **13 Hours**

Natural Language Processing: Language Models-Text Classification-Information Retrieval and Extraction. Natural Language for Communication: Syntactic Analysis – Machine Translation- Speech Recognition. Robotics –Robotic Hardware - Robotic Perception- Robotic Software Architectures.

Textbooks:

- Stuart Russell, Peter Norvig(2016), *Artificial Intelligence – A Modern Approach*, 3rd Edition, Pearson Education /Prentice Hall of India.
- Nils. J.Nilsson(2017), *Artificial Intelligence: AnewSynthesis*, Harcourt Asia Pvt. Ltd.
- Qiangfu ZHAO and Tatsuo Higuchi(2017), Artificial Intelligence: from fundamentals to intelligent searches, Kyoritsu, ISBN:978-4-320-12419-6 (in Japanese)

Reference Books:

- Elaine Rich and Kevin Knight(2018), *Artificial Intelligence*, 2nd Edition, Tata McGraw-Hill.
- Patrick Henry Winston(2019), *Artificial Intelligence*, Pearson Education/PHI.
- Elaine Rich and Kevin Knight(2019), *Artificial Intelligence*, 2nd Edition, Tata McGraw-Hill.
- Patrick Henry Winston(2017), *Artificial Intelligence*, Pearson Education/PHI.

e-Resources

- https://onlinecourses.nptel.ac.in/noc19_me71/preview
- https://colab.research.google.com/
- https://data-flair.training/blogs/artificial-intelligence-project-ideas/
- https://www.edx.org/learn/artificial-intelligence
- https://www.upgrad.com/blog/types-of-artificial-intelligence-algorithms/

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understand the fundamentals of knowledge representation (logicbased, frame based, semantic nets) inference and theorem proving.	K1/K2
CO-2	Recognize working knowledge of reasoning in the presence of incomplete and/or uncertain information.	K2
CO-3	Apply and Examine the knowledge representation, and reasoning techniques to real world problems	K3/K4
CO-4	Evaluate the Learning techniques to implement basic AI algorithm.	K5
CO-5	Design and carry out an empirical evaluation of different algorithms and communication processes to develop Robotics Software Architectures.	K6

SOFTWARE TESTING

UCAO503

Semester : V **Credit : 4**
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 concept of testing.
CO – 2	Apply the various origins of defect classes for testing.
CO – 3	Analyze various testing techniques, strategies and metrics to evaluate the software.
CO – 4	Familiarize the test techniques in software testing.
CO – 5	Evaluate the software with Testing, Debugging Goals and Policies.

UNIT - I INTRODUCTION TO TESTING AND FUNDAMENTALS 13 Hours

Introduction: Evolving Profession of Software Engineering – Role of Process in Software Quality – Testing as a process – Testing Maturity Model. Fundamentals: Software Testing Principle's – Tester Role in Software Development Organization. Software Development Life Cycle Model: Phases of Software Project – Quality – Quality Assurance – Quality Control – Life Cycle Model.

UNIT- II DEFECTS, HYPOTHESES AND TEST **13 Hours**

Origin of Defects –Defect Classes: Requirement and Specification Defects Classes – Design Defect Classes –Coding Defect Classes – Defect Repository – Testing Defect – Tester Support for Developing a Defect Repository

UNIT - III SOFTWARE TESTING STRATEGIES AND TECHNIQUES **13 Hours**

Introduction to Testing Design Strategies – Test Case Specification –Test Case Design Techniques. Functional: Equivalence Partitioning – Boundary Value Analysis – Extreme Input Testing – State Transition Testing – Cause Effect Graphing. Test Case Design Techniques - Structural: Statement Testing – Branch/Decision Testing –Dynamic and Static Analysis.

UNIT - IV TEST TECHNIQUES: BLACK & WHITE BOX TESTING **13 Hours**

Introduction Of Black Box Testing – black box testing techniques – white box testing techniques - Unit Testing – Integration Test : Goals – Integration Strategies for Procedures and functions – Integration Strategies for Classes – Designing Integration Test – Integration Test Planning.

UNIT- V TESTING GOALS, POLICIES, PLANS AND DOCUMENTATION **13 Hours**

Introduction – Testing, Debugging Goals and Policies – Test Planning – Test Plan Components – Test plan Attachments –Locating Test Items – Reporting test Results – Role of three Critical Groups in Testing, Planning and Test Policy Development.

Text Books:

- IlleneBurnstein(2018), "*Practical Software Testing*", Springer International Edition, Chennai.
- Naresh Chauhan(2019), "Software Testing Principles and Practices", Oxford University Press, New Delhi.
- Dorothy Graham (2019), "*Foundations of software testing*", Annabel Ainscow,4th Edition, USA.

Reference Books:

- Ron Patton(2019), "*Software Testing*", Second Edition, Pearson Education.
- Adithya P. Mathur(2018), "*Foundations of Software Testing – Fundamentals algorithms and techniques"*, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
- Boris Beizer(2019), "*Software Testing Techniques*", Dream Tech Press.
- RenuRajani, Pradeep Oak(2019), "*Software Testing – Effective Methods, Tools and Techniques",* Tata McGraw Hill.
- Srinivasan Desikan and Gopalaswamy Ramesh(2020), "*Software Testing – Principles and Practices"*, Pearson Education.

e-Resources

- https://onlinecourses.nptel.ac.in/noc22_cs61/preview
- https://www.edx.org/learn/software-engineering
- https://geekflare.com/software-testing-tools/
- https://www.educba.com/white-box-testing/

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Understand the fundamentals of software testing.	K1/ K2
CO – 2	Discuss the various origins of defect classes for testing methods.	K2
CO – 3	Apply and Evaluate the system with various testing techniques and strategies.	K3,K5
CO – 4	Distinguish characteristics of structural testing methods	K4
CO – 5	Design the automated testing using test tools	K4 / K6

III & IV Evaluation Components of CIA

Semester	Part	Category	Course Code	Course Title		Component III	Component IV
V	III	Major Core (DSC) - XVI	UCAM510	Cloud Computing		Assignment	System Modeling
	III	Major Core (DSC) - XVII	UCAM511	R Programming		Assignment	Problem solving
	III	Major Core (DSC) - XX	UCAR507	R Programming - Practical		DPA	Viva-voce
	III	MAJOR ELECTIVE (Discipline Specific Elective) - XXI	UCAO501	Cyber Security		Case Study	Seminar
	III	MAJOR ELECTIVE (Discipline Specific Elective) - XXI	UCAO502	Artificial Intelligence		Working Model	Prototyping-Workshop
	III	MAJOR ELECTIVE (Discipline Specific Elective) - XXI	UCAO503	Software Testing		Case Study	Problem Solving

DEPARTMENT OF PSYCHOLOGY

PREAMBLE

UG: Programme Profile and the Syllabi of Courses Offered in the V 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 Psychological Processes, Human Behaviour and Develop the Critical Thinking Ability.
PSO-2	Execute the Major Concepts, Theoretical Perspectives, and Fields in Psychology.
PSO-3	Demonstrate the Essence of Human Values through Acts of Social Commitment, and Develop Professional Ethics and Responsibilities.
PSO-4	Distinguish Psychological Principles to Physical, Cognitive, and Psycho-Social Interventions.
PSO-5	Design the Knowledge of Theories and Practice Model in the Disciplinary Domain for Community Development, Interventions with Individuals, Community-Based Knowledge and to Pursue Higher Education and Enhance Competitive Spirits.

PROGRAMME PROFILE B.Sc. Psychology

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 Tamil / Hindi / French	UTAL207/ UTAL208/ UHIL202/ UFRL202	Basic Tamil II/ Advanced Tamil II/ Hindi II/ French II	UTAL205/ UTAL206/ UHIL 201/ UFRL 201	5	3/4

	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 / Field work / 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	¾
	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	½
		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	¾
	II	Communicative English / AECC - I	UENL409/ UENL410	English for Communication (Stream – I)/English for Communication (Stream – II)	UENL 406	5	¾
	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 X / 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	UPSM605	Positive Psychology	UPSM 503	6	6
		Major Elective / (DSE)	UPSO601	Psychological Testing & Case Conceptualization		5	4
			UPSO602	Rehabilitation Psychology			
		Comprehensive Viva Voce	UPSM606				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**
VIZ	UPSM504	Counseling Psychology	Component III	Counseling Psychology	2 Days	Reflection
VI	UPSM601	Clinical Psychology	Component IV	Clinical Psychology	2 Days	Reflection

ABNORMAL PSYCHOLOGY
UPSM501

Semester : V **Credit : 5**
Category : Major Core X **Hours / Week : 6**
Class & Major : III B.Sc. Psychology **Total Hours : 78**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Knowledge of Psychological Theories and models for the field of Abnormal Psychology.
CO-2	Understanding of Assessment, Etiology, Symptoms, and Treatments of the major Psychological Disorders.
CO-3	Examine the impact of biological factors on the development of psychological disorders.
CO-4	Familiarity with research methods and ethical considerations appropriate for the study of abnormal psychology.
CO-5	Ability to apply course materials to case studies of individuals.

UNIT- I INTRODUCTION TO ABNORMAL PSYCHOLOGY AND MOOD DISORDERS 15 Hours

Definition and Scope - Historical Conceptions - Mood Disorders – Depression - Depressive Disorders - Dysthymic Disorder - Bipolar Disorder - Bipolar I Disorder - Bipolar II Disorder - Cyclothymic Disorder – Suicide – Theories – Causes - Mental Illness and Prevention of Suicide.

UNIT- II ANXIETY DISORDERS AND SOMATOFORM DISORDERS 16 Hours

DSM V and ICD Classification - Anxiety Disorders - The experience of Anxiety - Generalized Anxiety Disorder - Panic Disorder – Phobias - Obsessive Compulsive Disorder - Post Traumatic Stress Disorder- Interpretation and Treatment.

Somatoform Disorders- Pain Disorders- Somatisation Disorders- Conversion Disorders – Hypochondriasis - Body Dysmorphic Disorders.

UNIT- III PSYCHOTIC DISORDERS / PERSONALITY DISORDERS 16 Hours

Symptoms – Factors – Vulnerability - Schizoaffective Disorders - Delusional Disorders - Shared Psychotic Disorder – Schizophrenia - other Personality Disorders - Causes and Treatment.

UNIT- IV SUBSTANCE –RELATED DISORDERS AND SEXUAL DYSFUNCTION 16 Hours

Substance Dependence - Substance Abuse – Alcoholism - Drug Abuse - Different Drugs - Causes and Treatment.

Sexual Disorders and Gender Identity Disorder - Sexual Dysfunctions - Causes and Treatment of Sexual Dysfunctions - Paraphilias - Causes and Treatment - Sexual Variants - Sexual and Gender Variants - Gender Identity Disorder - Treatment and Prevention.

UNIT- V PERVASIVE DEVELOPMENTAL DISORDERS 15 Hours

ADHD - Learning Disorders - Autism - Aspergers Syndrome - Intellectual disability - other disorders - Mental Retardation - Causes and Treatment - Eating Disorders: Anorexia Nervosa – Bulimia – Binge Eating Disorder - Causes and Treatment.

Text Books

- Barlow, D. H. & Durand, V. M. (2015). *Abnormal Psychology: An Integrative Approach* (7th Ed.,) Wadsworth. Thomson Learning. Canada.

Reference Books

- Sarason, I. G. & Sarason, B. R. (2002). *Abnormal Psychology: The Problem of Maladaptive Behaviour* (10th Ed.,) Pearson. New Delhi.
- Alloy, L. B, Riskind, J. H. & Manos, M.J. (2005) *Abnormal Psychology* (9th Ed.,). Tata McGraw Hill Publishing Company Ltd. Delhi.
- Carson and Butcher. (2010). *Abnormal Psychology* (13th Ed.,). Pearson Education. New Delhi.

e-Resource

- https://www.verywellmind.com/what-is-abnormal-psychology-2794775
- https://b-ok.cc/book/2918532/1c0aad
- https://b-ok.cc/book/2343192/43d9dd
- https://b-ok.cc/book/5010968/91cfd2?dsource=recommend
- https://www.apa.org/pubs/journals/abn
- https://www.apa.org/pubs/journals/abn/sample
- https://www.tandfonline.com/doi/abs/10.1080/13803611.2022.2061515?journalCode=nere20
- https://www.researchgate.net/topic/Abnormal-Psychology/publications
- https://www.psychologytoday.com/us/blog/think-act-be/202105/mental-illness-is-far-more-normal-we-think
- https://psychiatry.org/psychiatrists/practice/dsm

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Define the process of assessing such behaviour and the most commonly used system for classifying psychological disorders.	K1
CO-2	Explain several different theoretical perspectives on psychological disorders.	K2
CO-3	Identify the research methods used and research findings on various psychological disorders.	K3
CO-4	Analyse the causes and be able to identify the symptoms of various psychological disorders.	K4
CO-5	Determine effective treatment approaches to different psychological disorders.	K5

EDUCATIONAL PSYCHOLOGY
UPSM504

Semester : V **Credit : 5**
Category : Major Core X **Hours / Week : 6**
Class & Major : III B.Sc. Psychology **Total Hours : 78**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Understand the Meaning and Importance of Educational Psychology in Enhancing the Teaching-Learning Process.
CO-2	Examine how the Science of Psychology can Inform our Understanding of Teaching and Learn in the Indian Context
CO-3	Evaluate the Various Perspectives on Learning and Motivation and their Applications to the Educational Context.
CO-4	Illustrate Effective Teaching and Learning Strategies that are Geared toward Maximizing Student Learning
CO-5	Develop Insights into the Facilitators of Learning such as Intelligence, Needs, Goals, and Self-Perceptions.

UNIT- I INTRODUCTION TO EDUCATIONAL PSYCHOLOGY 15 Hours

Definition- Historical Background - Concepts and Principles of Educational Psychology - Role and Scope of Educational Psychology- Effective Teaching Methods.

UNIT- II MOTIVATION AND CLASSROOM MANAGEMENT 15 Hours

Meaning of Motivation - Intrinsic and Extrinsic Motivation - Approaches to Understand Classroom Motivation - Motivational Techniques in Classroom Teaching - The Goals of Classroom Management - Creating A Positive Learning Environment - Characteristics of an Effective Teacher - Teacher Expectation and Students' Performance

UNIT- III UNDERSTANDING LEARNING PROCESS 16 Hours

Understanding Learning Process – Behaviour Modification Techniques – Methods of Learning – Learning curves and Strategies – Theories of Learning – Classical Conditioning – Instrumental Learning – Hull Theory – Edward L. Thorndike Theory - Theories of Cognitive Development -Piaget, Bruner, And Vygotsky.

UNIT-IV CREATIVITY AND APTITUDE 16 Hours

Nature and Characteristics of Creativity - Theories of Creativity – Stages of Creativity - Fostering Creativity among Children - Nature and Characteristics of Aptitude - Types of Aptitude – Stages of Creativity - Measurement of Aptitude - Utility of Aptitude Tests – Interest Concept.

UNIT – V DEALING WITH ABILITY DIFFERENCES AND TESTING 16 Hours

Teaching Children with Mental Retardation - Learning Disability - Social Class Differences and Educational Difficulties - Attention Deficit Hyperactive Disorder.

Types of standardized tests – Intelligence Test – Personality Test - Achievement Test - Advantages, and Limitations of Standardized Test.

Text Book

- Woolfolk, A.E. (2004). *Educational Psychology* (9th Ed.,). Allyn & Bacon. London / Boston.
- Gage, N. L., & Berliner, D. C. (2009) *Educational psychology* (5th Ed.,). MA: Houghton Mifflin. Boston.

Reference Books

- Ormrod, J. E.(2000). *Educational Psychology: Developing Learners*. New Jersey
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). *Explorations of Human Nature and Strength: Practicals in Psychology*. DivyaPrakashani. Samantarapur. Bhubaneswar.

e-Resource

- https://b-ok.cc/book/830035/00a957
- http://elibrary.bsu.az/books_163/N_55.pdf
- https://b-ok.cc/book/3519689/557777
- **https://www.frontiersin.org/journals/psychology/sections/educational-psychology**
- **https://www.journals.elsevier.com/contemporary-educational-psychology/recent-articles**
- **https://hipatiapress.com/hpjournals/index.php/ijep/**
- **https://www.cehd.umn.edu/edpsych/research/student-dissertations/**
- **http://www.edpsycinteractive.org/edpsyindx.html**
- **https://www.allpsychologycareers.com/psychology/educational-psychology/**
- **https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00439/full**

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Explain the Historical Background, Knowledge, and Skills of Effective Teachers and the Research Methods in Educational Psychology.	K1
CO-2	Organize the Implications of Motivation, Teaching, and Learning.	K2
CO-3	Identify the Various Approaches to Learning.	K3
CO-4	Outline the Knowledge of the Strategies for Effective Classroom Management.	K4
CO-5	Classify the Different Exceptionalities of Learners.	K5

THEORIES OF PERSONALITY

UPSM506

Semester : V **Credit : 5**
Category : Major Core X **Hours / Week : 6**
Class & Major : III B.Sc. Psychology **Total Hours : 65**

COURSE OBJECTIVES

CO No.	To enable the students
CO-1	Describe the Historical and Cultural Context of each Personality Theory.
CO-2	Describe the Contributions of Heredity and Environment to Personality Development.
CO-3	Understand the Role of Personality Theory in Psychology and the ways in which Personality is Assessed.
CO-4	Compare and Contrast Personality Theories on the basis of Scientific Criteria.
CO-5	Apply Course Concepts to their Understanding and Interpretation of Real-Life Situations.

UNIT - I INTRODUCTION TO THEORIES OF PERSONALITY 13 Hours

Meaning of Personality – Define of Personality – Determinants of Personality – Influence of Heredity and Environment – Role of Endocrine Gland - Theory and Its Relatives - Research in Personality Theory.

UNIT - II PSYCHODYNAMIC THEORIES 13 Hours

Freud: Psychoanalysis- Adler: Individual Psychology - Jung: Analytical Psychology- Horny: Psychoanalytical Social Theory- Fromm: Humanistic Psychoanalysis.

UNIT - III HUMANISTIC & EXISTENTIAL THEORIES **13 Hours**

Maslow: Holistic Dynamic Theory - Maslow's view of Motivation - Self-Actualization - Rogers: Person-Centered Theories - May: Existential Psychology.

UNIT- IV TRAIT & FACTOR THEORIES **13 Hours**

Allport- Eysenck- Cattle-McCrae & Costa's theories

UNIT - V LEARNING THEORIES **13 Hours**

Behavioural Analysis- Skinner - Social Cognitive Theory – Bandura - Rotter &Kelly

Text Books

- Jess Feist Gregory J. Feist. (2008). *Theories of Personality* (7th Ed.,) McGraw-Hill Education. Europe.

Reference Books

- Duane P. Schultz, Sydney Ellen Schultz.(2008). *Theories of Personality*. (9th Ed**.)**. Cengage Learning. Wadsworth.
- Calvin S. Hall Gardner, Lindzey John B. (2008). *Theories of Personality* (4th Ed.,). Campbell Wiley India Private Limited.
- Richard, M. Ryckman.(2013). *Theories of Personality*. (10th Ed.,) Cengage Learning Inc.

e-Resource

- **https://www.researchgate.net/publication/27827942_Personality_theories_and_models_An_overview**
- **https://journals.sagepub.com/doi/abs/10.1177/0098628311411785**
- **https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1188320/**
- **https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/572470**
- **https://www.sciencedirect.com/science/article/abs/pii/S0191886919304933**
- **https://www.hzu.edu.in/uploads/2020/9/Theories%20of%20Personality.pdf**
- **https://kupdf.net/download/advanced-theories-of-personality_59b02b6cdc0d60d354568edb_pdf**
- **https://pdfroom.com/books/advanced-personality/kZdowb1ydM8**
- **https://babel.hathitrust.org/cgi/pt?id=uc1.$b397395&view=1up&seq=8**
- **https://www.pearsonhighered.com/assets/preface/0/1/3/4/0134583957.pdf**

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Understand and Apply Classic and Contemporary Theories of Personality to Real World Situations.	K1
CO-2	Critically Examine the Major Theories and Findings of the Field of Personality Psychology.	K2
CO-3	Understand Approaches to Psychological Assessment and Psychotherapy that Relate to the Personality Theories.	K3
CO-4	Recognize the Interaction of Situational and Individual Characteristics on the Development of Personality.	K4
CO-5	Explain Personality-Related Processes that Underlie Individual Differences in Behaviour.	K5

CONSUMER BEHAVIOR
UPSO501

Semester : V **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	Understand the Factors Influencing Consumer Buying Behaviour.
CO-2	Explain the Consumer Personality and its Cognitive Factors.
CO-3	Understand the Theoretical Perspectives Associated with Consumer Decision-Making, Including Recognizing Cognitive Biases and Heuristics.
CO-4	Differentiate Consumers, Consumer Behaviour in the Market Place and their Impact on Marketing Strategy.
CO-5	List the Applications of Consumer Behaviour.

UNIT -I: INTRODUCTION TO STUDY CONSUMER BEHAVIOUR 14 Hours

Defining Consumer Behaviour - Consumer Roles - Scope of Allocation of Consumer Behaviour - Why Study Consumer Behaviour - History of Consumer Behaviour and the Marketing Concept - Contributing Disciplines and Application of Consumer Behaviour – Market Segmentation

UNIT- II: THE CONSUMER DECISION MAKING PROCESS 14 Hours

What is Consumer Decision - Consumer Decision Making Process - Levels of Consumer Decision Making - Models of Consumers: Four Views of Consumer Decision Making - Types of Decision Process

UNIT- III: MODELS OF CONSUMER BEHAVIOUR 13 Hours

The Economic Model - Learning Model - Psychoanalytic Model - The Sociological Model - The Howard Sheth Model of Buying Behaviour - The Nicosia Model - The Engel-Kollat-Blackwell Mode - Engel, Blackwell and Miniard (Ebm) Model.

UNIT- IV: PSYCHOLOGICAL INFLUENCE ON CONSUMER BEHAVIOUR 11 Hours

Personality and Self-Concept - Motivation - Consumer Learning - Consumer Perception -Consumer Attitude - Consumer Communication – Consumer Advertisement - Ethical Issues

UNIT- V: CONSUMERS IN THEIR SOCIAL AND CULTURAL SETTINGS 13 Hours

Reference Group: Nature, Types and Influences on Consumers - Family Life Cycle Stages - Nature of Household Purchases - Family Decision Making - Resolving Conflict - Social Class: Nature of Social Class - Symbols of Status - Concept of Money and Social Class - Social Class Categories - Consumer Behaviour

Text Books:

- Kumar, A and Singh, K. (2013). *Consumer Behaviour and Marketing Communication: An Indian Perspective.* (1st Ed.,). Dreamtech Press, New Delhi.
- Gordon R. Foxall (2014). *Consumer Behaviour a Practical Guide.* (1st Ed.,) Routledge. London.
- Ramesh Kumar S (2017). *Consumer Behaviour: The Indian Context.* (2nd Ed.,) Pearson Education, Bengaluru.

REFERENCES

- Schiffman LG and Kanuk LL. (2007). *Consumer Behaviour*. (9th Ed.,). Prentice-Hall of India Pvt Ltd. New Delhi. India.
- Batra Satish K and S.H.H. Kazmi. (2007). *Consumer Behaviour – Text and Cases, Excel Books*. Naraina Phase I. New Delhi. India.

e-Resource

- https://www.verywellmind.com/what-is-consumer-psychology-2794899
- https://www.britannica.com/science/consumer-psychology
- https://www.emotiv.com/glossary/consumer-psychology/
- https://en.wikipedia.org/wiki/Consumer_behaviour
- https://www.researchgate.net/publication/256412209_Journal_of_Consumer_Behaviour
- https://www.researchgate.net/publication/342876391_Review_Paper_on_Factors_Influencing_Consumer_Behavior

- https://onlinelibrary.wiley.com/journal/14791838
- https://www.jois.eu/files/Vol_6_1_Makarewicz.pdf
- https://core.ac.uk/download/pdf/79125229.pdf

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Define the Consumer Motivation and Identify its Measurements	K1
CO-2	Understand the Principal Factors that Influence Consumers as Individuals and Decision Makers with an Application to the Buying Decision Process.	K2
CO-3	Apply and Demonstrate Theories to Real-World Marketing Situations by Profiling and Identifying Marketing Segments	K3
CO-4	Appraise Models of Consumer Behaviour and Determine their Relevance to Particular Marketing Situations	K4
CO-5	Identify the Dynamics of Human Behaviour and the Basic Factors that Influence the Consumer's Decision Process	K5

HUMAN RESOURCE DEVELOPMENT
UPSO502

Semester : V **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	Build a Perspective of Human Resource Development as Discipline Appreciating Learning.
CO-2	Learn the Skills of Developing a detailed plan for need and Implementation of HRD Program in the Organization
CO-3	Explain Human Resources Development and its theories, the difference between Education, Training, Learning and the concept of the Transfer of Learning;
CO-4	Understand Contemporary Realities of HRD and its Interface with Technology
CO-5	Evaluate the HRD Role dealing with Contemporary Challenges.

UNIT- I HRM: INTRODUCTION **11 Hours**

Human Resource Management – Definition –Objectives – Scope – Functions of HRM. Job Analysis – Process of Job Analysis, Team Analysis – Employee Empowerment.

UNIT- II- HR PLANNING AND SELECTION **13 Hours**

Human Resource Planning – Objectives – Process of HRP– Recruitment – Sources of Recruitment. Selection Procedure - Test and Interview - Types – Reference Check – Final Selection -Placement – Induction (Orientation).

UNIT -III HRD AND CAREER PLANNING HRD **13 Hours**

Need – Functions – Training – Methods – Executive Development – Differences between Training and Development. Career Planning – Process – Succession Planning - Concept of Quality of Work Life (QWL).

UNIT- IV PERFORMANCE APPRAISAL AND JOB EVALUATION **14 Hours**

Performance Appraisal – Process – Techniques – Difference between Performance Appraisal and Job Evaluation. Job Evaluation – Process – Potential Appraisal.

UNIT -V PROMOTION AND ABSENTEEISM **14 Hours**

Promotion – Criteria – Benefits of Effective Promotion Policy, Transfer – Purpose of Transfer. Absenteeism – Causes – Measures - Labour Turnover – Separation – VRS - Retirement – Dismissal

Text Book

- S.S. Khanka. (2008) *Human Resource Management*. (1st Ed.,) Sulthan Chand & Sons. New Delhi.

Reference Book

- Dessler, G. (2009). A *framework for human resource management*, 7th ed. Pearson/Prentice Hall Publishing. New York.
- J. Jayasankar. (2018). *Human Resource management*, Margham Pub. Chennai.

e-Resource

- https://b-ok.cc/book/2651962/448783
- https://b-ok.cc/book/3427742/74fd28?dsource=recommend
- https://b-ok.cc/book/3423809/d32c71?dsource=recommend
- **https://ejop.psychopen.eu/index.php/ejop/article/view/438/438.html**
- **https://www.sacap.edu.za/blog/management-leadership/psychology-and-human-resource-management/**
- **https://www.slideshare.net/Shiromakh/role-of-psychology-in-hr**
- **https://www.slideshare.net/mahboob804/the-role-of-psychology-in-human-resources-management-by-drmahboob-khan-phd**
- **https://slideplayer.com/slide/4901845/**
- **https://www.whatishumanresource.com/human-resource-management**
- **https://onlinecounselingprograms.com/online-counseling-degrees/online-masters-in-human-resources/hr-functions/**

COURSE OUTCOMES

CO No.	On completion of the course, the student will be able to	Bloom's Level
CO-1	Evaluate the perspective of Human Resource Development as discipline appreciating learning.	K1
CO-2	Developing skills of a detailed plan needed and demonstrate the implementation of HRD program in the organization.	K2
CO-3	Explain the role of learning in action as an individual, group and an organization in order to develop creative strategies to organizational problems.	K3
CO-4	Analyse the perspective of HRD beyond organizational realities including national HRD.	K4
CO-5	Explain the contemporary realities of HRD and its interface with technology.	K5

III AND IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
V	Major Core XI / DSC	UPSM501	Abnormal Psychology	Assignment	Seminar
	Major Core X / DSC	UPSM504	Educational Psychology	Assignment	Seminar
	Major Core X / DSC	UPSM506	Theories of Personality	Assignment	Seminar
	Major Elective / (DSE)	UPSO501	Consumer Behaviour	Case Study	Seminar
	Major Elective / (DSE)	UPSO502	Human Resource Development	Case Study	Seminar

DEPARTMENT OF JOURNALISM AND MASS COMMUNICATION

PREAMBLE

UG: Program Profile and the Syllabi of Courses offered in the I and II 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	Acquire a functional knowledge of the underlying principles and recent emerging trends of the media industry.
PSO-2	Uderstand the role and responsibilities of a journalist.
PSO-3	Analyze conceptual and theoretical knowledge of Journalism and Mass Communication and critically think issues of the society.
PSO-4	Embrace convergent media by shooting video, making photographs, writing and posting them to web.
PSO-5	Demonstrate the gained knowledge of television and film production.

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-Practical	-	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**	**25/29**
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	5
	III	Allied – III (GE)	UJMA301	Socio-economic and Political issues in India	-	4	3
	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					-
					TOTAL	**30**	**23/27**

V	III	Major Core IX/DSC	UJMM501	Media Laws and Ethics		6	5
	III	Major Core /DSC X	UJMM502	Introduction to Advertising		6	5
	III	Major Core /DSC XI Practical	UJMR501	Television Production		6	5
	III	Major Elective /DSC I	UJMO501	Writing for Mobile Application		5	5
			UJMO502	Writing for Social Media			
	III	Major Core /DSC XII	UJMP501	Project		5	4
	IV	Value Education (VE)				2	1
					TOTAL	**30**	**25**
VI	III	Major Core / DSC XIII	UJMM601	Media Culture and Society		6	6
	III	Major Core / DSC XIV	UJMM602	Introduction to Film Studies		6	6
	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		6	6
	III	Comprehensive Viva				-	1
	IV	Soft Skill				2	1
	V	Extension programme/ Physical Education				-	-/2
					TOTAL	**30**	**29/31**
					GRAND TOTAL	**192**	**148/164**

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

INTRODUCTION TO MASS COMMUNICATION

UJMM101

Semester : I **Credit : 4**

Category : Major Core I **Hours/Week : 6**

Class & Major: I B.A Journalism and Mass Communication **Total Hours : 78**

Course Objectives

CO. No.	To enable the students
CO – 1	Introduce Students to Mass Communication and various Media Industries
CO – 2	Obtain Knowledge of using different Media such as Newspapers, Magazine etc.
CO – 3	Define Mass Communication and its Function in Society.
CO – 4	Criticize current Trends in Media Industries
CO – 5	Develop Research in Journalism and Mass Communication.

UNIT – I INTRODUCTION TO COMMUNICATION 16 Hours

Introduction to Communication: Definition of Communication - Types of Communication: Interpersonal, Group, Mass Communication - Means of Communication - Processes of Communication - Functions of Communication - Elements and Components of Communication - Scope of Communication - Seven C's of Communication.

UNIT –II MASS COMMUNICATION – A BRIEF INTRODUCTION 15 Hours

Definition of Mass Communication - Characteristics of Mass Communication - Functions of Mass Communication: Information, Education and Entertainment – Dysfunctions of Mass Communication; Communication and Public Opinion: Nature - Meaning and Process - Mass Communication Types: Print-Electronic and Digital

UNIT –III TRAITS OF MASS MEDIA 15 Hours

Characteristics of different Mass Media- Audience - Reach and Access - Folk and Traditional Media: Meaning of Folk and Traditional Media - Nature and Scope of Folk and Traditional Media - Role of Folk Media in Rural Communication - Problem Faced by Folk and Traditional Media.

UNIT –IV ROLE OF MASS COMMUNICATION IN SOCIETY 16 Hours

Role of Mass Communication in Society - Mass Communication through Traditional and Modern Media; Effects of Mass Media on Culture and Society- Media and Cultural Imperialism- Information Society- Mass Communication in Digital era.

UNIT –V JOURNALISM AS MASS COMMUNICATION 16 Hours

Definition of Journalism- - Journalism as Profession - Definition of News - Brief History of Journalism - Mainstream Journalism - Tabloid Journalism - Penny Press - Yellow Journalism - Principles of Journalism - Truth and Accuracy - Fairness and Impartiality - Humanness and Accountability.

Text Books

- Dennis, McQuail, (2010). *Mass Communication Theory* (sixth Edition). Sage South Asia. London.

Reference Books

- Joseph,R. Dominick, (2008). *Dynamics of Mass Communication- Media in the Digital Age* Tenth Edition. McGraw Hill. New York.
- Hasan, Seema, (2010). *Mass Communication: Principles and Concepts*. CBS Publisher. New Delhi.

Course Outcomes

CO.No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Develop Students' Knowledge and Understanding of the Mass Communication Process and the Mass Media Industries.	K1
CO – 2	Understand the Relationships among Communication, Mass Communication &Culture.	K2
CO – 3	Recognize Trends in Mass Media, Especially Concentration of Ownership and Conglomeration, Globalization, Audience Fragmentation &Public Relations.	K3
CO – 4	Apply Students Understanding of Mass Communication Theory toward Improving their own Media Literacy Skills.	K4, K5
CO – 5	Demonstrate Students' Understanding of Freedom, Regulatory, and Ethical Issues as applied to both Mass Media Industries and Individual use of the Mass Media.	K6

PHOTOGRAPHY

UJMR101

Semester : I **Credit : 4**
Category : Major Core II/Practical **Hours/Week : 6**
Class & Major : I B.A Journalism and Mass Communication **Total Hours :78**

Course Objectives

CO. No.	To enable the students
CO – 1	Understand the History & Evolution of Photography.
CO – 2	Learn the Skills to Handle Camera.
CO – 3	Define Composition – Rule of thirds, Golden Ratio, Framing, Angles, etc.,
CO – 4	Develop the skills of Photography& Photojournalism.
CO – 5	Impart Skills in Digital Image processing.

UNIT –I ORIGIN OF PHOTOGRAPHY **16 Hours**

Introduction to Photography – History & Evolution of Photography – Comparing & Understanding of Human Eye and Camera - Understanding Light properties - Types of Camera – SLR - TLR - DSLR – Mirror less - How Camera works and Parts of Camera - Camera Technology – Film to Digital Photography.

UNIT –II TYPES OF CAMERAS AND LENSES **15 Hours**

Exposure Triangle **–** Aperture, Shutter Speed & ISO. Types of Cameras Lenses – Normal, Wide, Telephoto - Focal length -Depth of Field - Camera Handling & Operation – Interface-Modes - Colour Temperature – White Balance - Metering Modes - Light Meter.

UNIT -III CAMERA HANDLING TECHNIQUES **15 Hours**

Composition – Rule of thirds- Golden Ratio- Framing-Angles- Perspective- Line- Shape-Form- Texture- Pattern Foreground- Mid Ground & Background - Lighting Techniques – Three Point lighting - Camera Flash- Studio Flash light- Continuous Light- Light Shapers – Diffuser-Reflector- Cutter- Umbrella etc., Filters- UV filter –Polarizer - Colour filters.

UNIT –IV TYPES OF PHOTOGRAPHY **16 Hours**

Types of Photography – Landscape- People-Sports –Fashion- Wildlife- Product- Night Photography etc., - Documentary Photography & Photojournalism - Indoor Shoot & Outdoor Shoot- Practice and Shoot 10 Photographs from a Different Category.

UNIT – V PHOTO EDITING AND PRINTING **16 Hours**

Digital Image Processing – Photo Editing &Post-processing using Software -Adobe Photoshop & Adobe Light room- Understanding Interface and Workflow. Types of File format– Printing.

Practical Submission

Submit a Photography Project Album.

Text Book

- Chris, Gatcum. (2016). *The Beginners Photography*. DK Publishing. New Delhi.

Reference Books

- Langford ,Michael. (2010). *Langford's Basic Photography: The Guide for Serious Photographers,* 9th Edition .Focal press. Massachusetts.
- Freeman, Michael. (2017). *The Photographer's Eye Remastered 10th Anniversary: Composition and Design for Better Digital Photographs*. Ilex Press. United Kingdom.
- Grey, Christopher. (2014). *Master Lighting Guide for Portrait Photographers*. Amherst Media. USA.
- Judge, A.L. (2013). *Mastering Aperture, Shutter Speed, ISO & Exposure*. Createspace.USA.
- Evening ,Martin. (2018). *Adobe Photoshop CC for Photographers*, Routledge Publishing. United Kingdom.
- Evans, John& Straub, Kathrine. (2021). *Adobe Photoshop Light room Classic CC Classroom in a Book.* Adobe Press.USA.

Course Outcomes

CO.No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Describe the Fundamental Concept of the Medium of Photography, Combine the Science and Art on Photography	K1
CO – 2	Relate the History of Medium, Design Storytelling through the Visual Medium.	K2
CO – 3	Apply Journalistic Ethics to Photojournalism, especially in a World of Digital Photography.	K3
CO – 4	Develop Projects that Address both the Art of Medium as well as the Commercial Application	K4, K5
CO – 5	Illustrate how Photographs are used to Communicate in Different Media including Newspapers, Magazines, Books and Online Websites.	K6

HISTORY OF JOURNALISM IN INDIA

UJMA101

Semester : I **Credit : 4**
Category : Allied – I **Hours/Week : 6**
Class & Major : I B.A Journalism and Mass Communication **Total Hours : 78**

Course Objectives

CO. No.	To enable the students
CO – 1	Develop knowledge and skills required for Indian Journalism.
CO – 2	Understand the knowledge about Indian Press.
CO – 3	Apply basic techniques of Print Media.
CO – 4	Analyze the essential for Normative Theories of Press
CO – 5	Evaluate the Popular Radio and T.V Programmes, Different Genres of Radio and T.V Programming, etc.,

UNIT – I ORIGIN OF PRINTING PRESS **16 Hours**

Invention of Printing Press-Arrival of Printing Press in India- Role of Press in Reform Movement and Social Awakening- Press before Independence –Pioneers of Indian Journalism-Development of Vernacular Press and English Language Press.

UNIT – II GROWTH OF PRINT MEDIA **15 Hours**

Origin and Growth of Print Media- Types of Print Media – Newspaper- Magazine- Journals and their History- Newspaper of Nationalistic Leaders- History of News Agencies and Press Organization in India.

UNIT –III ROLE OF PRESS IN FREEDOM MOVEMENT **15 Hours**

Freedom Movement and the Indian Press- Struggle against Repressive Measure- Language Press and National Development-Growth of Press after Independence.

UNIT –IV TAMIL JOURNALISM **16 Hours**

History of Tamil Journalism- Origin of Tamil News Paper- Pioneers-Subramanya Siva- Subramania Bharathi- V O Chidambaram Pillai- Ayothidasan- Dhinamalar Ramasubu Iyar - Role of Tamil Press in Freedom Movement - Tamil Magazines - Trends in Tamil Magazines - Pioneers of South Indian Journalism- Telugu -Malayalam and Kanada.

UNIT –V BROADCAST JOURNALISM IN INDIA **16 Hours**

Origin and Growth of Radio- Development of Broadcasting in India- Role of Radio in World War-Popular Radio Programmes-Different Genres of Radio Programming-FM Booming-Broadcasting Policy-Origin and Growth of Television- Television Broadcasting in India-Different Genres of TV Programmes-SITE-Educational Radio and Television- Cable TV- DTH-OTT- other Streaming Platforms.

Text Book

- Rangaswami, Parthasarathy.(2009). *History of Indian Journalism*. Sterling Publication. New Delhi.

Reference Books

- Jeffrey, Robin (2000),*From India's Newspaper Revolution: Capitalism, Politics and the Indian Language Press*, Oxford University Press.London.
- Allan, Stuart (2012),*The Routledge Companion to News and Journalism*, Routledge. United Kingdom.
- Fred, Siebert,Theodore Peterson & Schramm, Wilbur (1984),*Four Theories of press*, University of Illinois Press.USA.
- Chatterjee ,P C. (1987). *Broadcasting in 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 relation between History and Present of various Media Genres.	K1
CO – 2	Aware about Ethical Codes of Journalism and Mass Media.	K2
CO – 3	Analyse the Media System in Global and Social Context.	K3
CO – 4	Develop Critical Thinking on Indian Journalism in Pluralistic Society	K4, K5
CO – 5	Enumerate the Historical Moments of Print in India	K6

BASICS OF JOURNALISM

UJMM201

Semester : II **Credit : 4**
Category : Major Core III **Hours/Week : 6**
Class & Major : I B.A Journalism and Mass Communication **Total Hours : 78**

Course Objectives

CO. No.	To enable the students
CO – 1	Understand News Writing and Different Structures of News Writing
CO – 2	Analyse the Role of the News Reporter, Duties and Responsibilities.
CO – 3	Appreciate and Analyse the essential elements of Writing Headlines and Intros.
CO – 4	Apply the Theory, Methods, and Practice of Gathering Information and Writing News in Profession.
CO – 5	Create Hard and Soft stories for Newspapers.

UNIT – I INTRODUCTION TO NEWS **16 Hours**

Definition of News- News Values- Elements- Characteristics &Structure- News Stories - The Basics of Reporting - Finding News- Choosing News- Recognizing and Evaluating News Story – Roles- Functions and Qualities of a Reporter - Trends in Journalism - Data Journalism.

UNIT – II PROCESS OF PRINTING **16 Hours**

Newspaper Organization: Structure – Functions of Editorial Department- Reporting Section: Copy Desk Functions, Path of a Copy- Morgue. Chief Reporter- Correspondents and

Reporters- Gathering News- Finding and Using News Sources – Evaluating News Sources – Verification and Cross-Verification – Using the Internet as a Reporting Tool- Writing News Report – Elements of News- Structure of News Story – Inverted Pyramid Style

UNIT –III REPORTING STRATEGIES **16 Hours**

Reporting Strategies – Reporting a Meeting- Speech- Special Event and Press Conference -. Reporting Legislature: Proceedings- Powers and Privileges of the House- Responsibilities of the Press- Reporting Judiciary- Powers and Privileges of the Court – Precautions in Reporting- Crime Reporting- Covering Public Meetings and Speeches- Do‘s and Don‘ts- Sports Reporting- Science Reporting- Financial Reporting- Reporting – Women and Children.

UNIT – IV PRINCIPLES OF EDITING **15 Hours**

Principles of Editing- Copy Fitting, Checking Facts –Continuity- Paragraphing- Grammar-Punctuation-Style- Spelling etc; Rewriting – Headlines –Importance -Functions of Headlines –Typography –Language - Readability and Legibility - Picture Editing - Importance of Pictures -Selection of News Pictures - Cut Lines -Cropping Methods - Style Sheet - Code of Ethics.

UNIT –V FEATURE WRITING **15 Hours**

Features - Types – Characteristics – Styles - Subjects and Scope - Writing the Feature Story – Sources of Ideas - Feature Techniques - Feature Leads -Feature Development - Feature Endings –News Features – Human Interest Features – Personal Profiles – Narratives – Long Form Journalism – Slow Journalism - Writing Reviews: Book- Film: Procedure and Style.

Text Book

- Kamath, M. V. (2007). *The Journalist’s Handbook*, Vikas Publishing House. India.

Reference Books

- Krishnaswamy, K.V. (2015). *Writing and Editing News*, Orient Black Swan Private Limited.India.
- Sunil Saxena (2006). *Headline Writing*, Sage Publisher. United States.
- Lorenz, Alfred Lawrence & Vivian, John. (2006). *News Reporting and Writing*. Pearson Education.London.
- M. V. Kamath (2007),*The Journalist’s Handbook*,Vikas Publishing House. India.
- William and; White (1999), *The Elements of Style: Strunk*, E.B. Longman Publications. London.
- Carole Fleming, et al. (2006), *An Introduction to Journalism*, Vistaar Publication. New Delhi.

Course Outcomes

CO.No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Understand Basics of News Writing.	K1
CO – 2	To Inculcate the Knowledge of and Background of News	K2
CO – 3	Apply different Writing Techniques in News.	K3
CO – 4	Develop the Knowledge of Web Writing.	K4, K5
CO – 5	Demonstrate the skills of Editing ,Proof Reading and Feature Writing	K6

PRINT & PUBLISHING DESIGN

UJMR201

Semester : II **Credit : 4**
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
CO – 1	Comprehend the foundations of Layout and Design Principles to Integrate Digital Media essential for effective Print and Web based Publications.
CO – 2	Recognize the importance of Web Concepts.
CO – 3	Differentiate between the Categories of Printed Applications used in Business Communication.
CO – 4	Apply Ethical Guidelines, such as Privacy and Copyright, to Desktop Published Documents.
CO – 5	Evaluate Design Elements and Design Principles for Layout Effectiveness, Organization, and Attractiveness in Print-based Publications

UNIT –I PRINCIPLES OF EDITING AND DESIGN 13 Hours

Principles and Theories of Editing and Design - Elements of Newspaper Design. Introduction to Adobe InDesign – Familiarity with Interface and Workflow – Learning to Design Newspaper Pages.

UNIT – II STYLES AND FORMAT OF DESIGN **12 Hours**

Issues and Challenges in Page Layout - House Style - Style Books - Design Style - Two Levels of Design - Design Objectives - Layout Terms – Typography - Font and Typeface - Type Anatomy – Columns – Hyphenation – Focus – Contrast – Balance - Picture Editing - Picture Selection – Formats –Resolution - Color Mode etc.

UNIT –III THEORIES OF DESIGN **13 Hours**

Principles of Design, Colour Theory- Introduction to Adobe Illustrator – Familiarity with Interface and Orkflow, Vector Drawing -Layout Designing – Layers-tools- et al - Practically Design a Brochure - Poster using Adobe Illustrator

UNIT – IV FEATURES OF ADOBE PHOTOSHOP **13 Hours**

Introduction to Adobe Photoshop – Familiarity with interface and workflow - Basic Photo Editing – Layers -Transparency – Tools - special Effect - Practically Design a Business Card - Letter Pad - Leaflet &Poster - Practical Exercise: the Course Teacher can decide the number of exercise to be done.

UNIT – V PRACTICAL **14 Hours**

Practical Submission- News Tabloid – 4 pages- Group Submission.

Text Book

- Lee, Allan & Treadwell, Gregory. (2009) *Newspaper Editing and; Design*: *A Guide to Production Journalism.* Printice Hall. US

Reference Books

- Gibson, M. L. (1991). *Editing in the Electronic Era*. Iowa. Iowa State University Press. USA
- Harrower, T. (2008). *The newspaper designer's handbook* (6th ed.). McGraw-Hill. New York:

Course Outcomes

CO.No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Understand Layout and Design Principles.	K1
CO – 2	Analyze the Importance of Web Designing	K2
CO – 3	Apply different theories of Web Designing.	K3
CO – 4	Combine Photography, Creative Writing and Editing Skills to Produce Demand basic Design	K4, K5
CO – 5	Produce Effective and Attractive Print-based Publications.	K6

THEORIES OF COMMUNICATION

UJMA201

Semester : II **Credit : 4**
Category : Allied-II **Hours/Week : 6**
Class & Major : I B.A Journalism and Mass Communication **Total Hours : 78**

Course Objectives

CO. No.	To enable the students
CO – 1	Understand the Major Theories and Research Processes of Communication.
CO – 2	Relate Understanding of a Specific Communication Theory.
CO – 3	Ability to Critically Analyze Communication Issues
CO – 4	Trace the Historical Development, Conceptual Framework, and Current Status of Several Key Communication Theories in Multiple Contexts.
CO – 5	Examine and appreciate the various models of theories.

UNIT –I MODELS OF COMMUNICATION **16 Hours**

Definition of theory- Definition of Model- Communication Models – SMCR - Shannon and Weaver - Harold Lasswell - Osgood and Schramm Models of Communication.

UNIT –II MEDIA AND SOCIETY **16 Hours**

Media and Society - Media and Society Theories - Denis Mcquail's Mass Communication Theory - Critical Political Economy Theory – Functionalism - Communication Determinism - Information Society.

UNIT –III MEDIA AND DEMOCRACY **16 Hours**

Media and Democracy: Press as The Fourth Estate - Theories of the Press – Authoritarian - Libertarian, Social Responsibility - Soviet Media Theory - Development Communication and Democratisation theory - Theories of News Flow- Gate keeping - Agenda Setting Theory.

UNIT-IV AUDIENCE AND THEORY **15 Hours**

Media Audience - Characteristics and Psychology of Audiences - Uses and Gratification Theory - Uses and Effects Theory - Media Dependency Theory - Expectancy Value Theory.

UNIT –V THEORIES OF COMMUNICATION **15 Hours**

Theories of Media Effects- Cultivation Theory - Social Learning Theory - Violence and Media Effect Theories - Theories of Public Opinion- Spiral of Silence - Elaboration Likelihood Model.

Text Book:

- McQuail, Dennis. (2000). *Mass Communication Theory*. Sixth Edition. Sage Publication. USA.

Reference Books

- Beger, Arthur. (2000). *Essentials of Mass Communication*. Sage Publication.USA
- Baran J, Stanely & Davis K Dennis. (2002). *Mass Communication Theory Foundation, Ferment and Future*. Thomson and Wadsworth. US.
- Kumar, Keval J. (2003). *Mass Communication in India*. Jaico Publication. Mumbai.
- Narendra, Tripati. (2006). Mass Communication: *Concepts and Process.* Reference Press. India.

Course Outcomes

CO.No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Discuss the Importance of Communication Theory from Multiple Philosophical Perspectives.	K1, K2
CO – 2	Trace the Historical Development, Conceptual Framework, and Current Status of Several Key Communication Theories in Multiple Contexts and apply it.	K3
CO – 3	Relate Theory and Research Methods, Including Standards for Evaluation and Analysis of Theories through Discussion.	K4
CO – 4	Utilize the Vocabulary and Ethics in the Study of Communication.	K4/K5
CO – 5	Examine and apply the various models of theories.	K5/K6

BLOG WRITING

UJME201

Semester : II **Credit : 2**
Category : NME **Hours/Week : 3**
Class & Major : I UG **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO – 1	Understand the concepts of Blog Writing.
CO – 2	Identify Blogs of different Types, Purposes and Levels of Credibility.
CO – 3	Classify different features and articles in Blog writing.
CO – 4	Practice Blog Writing.
CO – 5	Create own blogs by using the theories and techniques.

UNIT –I INTRODUCTION **8 Hours**

Definition of Blog Writing- Types Of Blog Posts - Personal Experience- Opinion-Reviews- Advice-News/Updates – Focusing Individual Blog – Concept – Audience – Uniqueness -Posts - Company Blogs.

UNIT –II TYPES OF BLOG **9 Hours**

Types of structure - inverted pyramid- feature article- list- story- other options - Creating effective openings- Planning a post – Defining and Achieving Voice – Exploring Various Voices – Stylistic Tips – Rhythm – Interesting Words – Senses – Emphasis – Smartness and Sarcasm.

UNIT III TECHNIQUES OF BLOG WRITING **6 Hours**

Visual- Graphics and Site Design – Commitment- Planning and sticking to it – Audience – Spreading the Word and Interacting with Audience.

UNIT –IV PRINCIPLES OF BLOG WRITING **8 Hours**

The Difference between Subjective and Objective Obligations – Reliability - Accuracy-provability,-specificity - Using revision to achieve Professionalism – Money-Ways to make Money with the Blog - Transparency about Payments.

UNIT-V SCOPE OF BLOG WRITING **8 Hours**

What's currently happening in the Blogosphere -Individual Goals and Plans for Blog - Platforms available for Blogs - Business Plan for Blog -What makes a Good Blog Post - The hands-on Elements of Writing an SEO friendly Post (Linking- Images- and Enhancements)

Text Book

- Muldoon, Kevin, 2012. *The Traits & Habits of Successful Bloggers: What Separates the Best from the Rest.* First Edition.www.kevinmuldoon.com.

Reference Books

- Scribendi. (2013). *How to write a Blog*. Createspace Independen. USA.
- Sackstein, Starr. (2015). *Blogging for Educators: Writing for Professional Learning.* Corwin Publisher. US.
- Collado, Joy. (2003). *Make a living with Blog Writing*. Kindle Publishing. US.

Course Outcomes

CO .No.	On completion of the course the student will be able to	Bloom's Level
CO – 1	Recognize various techniques in writing Blogs.	K1, K2
CO – 2	Identify the individual Forms and Styles of Blog Writing.	K3
CO – 3	Implement the Concept of "Blogging Ethics."	K4
CO – 4	Apply Business tricks in Writing Blogs.	K5
CO – 5	Develop individual Blogs and Practice Appropriate Commenting.	K6

III AND IV EVALUATION OF COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
I	Major Core I / DSC	UJMM101	Introduction to Mass Communication	Assignment	Seminar
	Major Core II / DSC Practical	UJMR101	Photography	Poster Presentation	Album Making
	Allied – I (GE)	UJMA101	History of Journalism in India	Assignment	Seminar
II	Major Core III / DSC	UJMM201	Basics of Journalism	Assignment	Surprise test
	Major Core IV / DSC Practical	UJMR201	Print & Publishing Design	Article Submission	Tabloid (2 pages)
	Allied – II(GE)	UJMA201	Theories of Communication	Assignment	Paper Presentation
	SEC/NME	UJNE201	Blog Writing	Assignment	Review Writing

DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS

PREAMBLE

UG: Programme profile & the syllabi of courses offered in the semester I and II along with III & IV evaluation components (with effect from 2022 - 2025 batch onwards).

PROGRAMME PROFILE 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	Identify the fundamentals of nutrition, dietetics and food microbiology to promote health and administer healthy eating principles throughout the community and the nation
PSO-2	Deal with understanding of food groups, nutrients, nutrition & health, metabolism & acid base balance of body, energy.
PSO-3	Detailed study of Macro and micro nutrients, dietary modification for inborn errors of metabolism.
PSO-4	Evaluate, adopt and apply the best practices relating to health, safety, quality and client satisfaction in the field of Nutrition and Dietetics.
PSO-5	Apply the principles and theoretical knowledge in nutrition, dietetics, biochemistry and physiology through practical courses and internships in hospitals.
PSO-6	Enable pursuit of higher education, research and career in Nutrition, Food Service Management and Dietetics and health education causing meaningful societal impact.

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 / French I	UTAL105/ UTAL106/ UHIL101/ UFRL101	5	3/4
	II	Communicative English I / AECC-I (2 Levels)	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 /			--	2	1

		SEC					
				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	Basics of 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**

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
II	IV	Non Major Elective	UCDE301	Basics of Food and Nutrition	--	3	2
			UCDE302	Baking	--		
			UCDE303	Flower Arrangement	--		

EXTRA CREDIT EARNING PROVISION (Only for Interested Students)

Semester	Part	Category	Course Code	Course Title	Credit
II	III	Internship	UCDI201	Hospital Internship	1
IV	III	Internship	UCDI401	Food Quality Control Internship	1
VI	III	Self Study paper	UCDS601	Case Study	2

EXPERIENTIAL LEARNING OFFERED IN SEMESTER V & VI

Semester	Course Code	Course Title	Assessment
V	UCNM501	Clinical Nutrition	Component III
VI	UFSA201	Food Service Management	Component IV

FOOD SCIENCE
UCDM101

Semester : 1 **Credits 4**
Category : Core I/ DSC-I **Hours /Week : 4**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours 52**

Course Objectives

CO No.	To enable the students to
CO -1	Understand the principles underlying food preparation.
CO -2	Obtain knowledge of different food groups, nutritive value and their role in day to day diet.
CO -3	Develop the skills and techniques in food preparation with conservation of nutrientsand Palatability using cooking methods generally employed.
CO -4	Learn the usage and importance of whole grains, pulses and vegetables in daily Basis.
CO -5	Design own diet plan based on the requirement.

UNIT –I INTRODUCTION TO FOODS **10 Hours**

Concept of food, Nutrients, Basic food groups, Nutritional Classification of foods & Uses – Energy yielding, Body Building and Protective foods. Cooking Methods: Moist and Dry heat methods of cooking, merits and demerits, Functions of foods.

UNIT II - CEREALS AND PULSES **10 Hours**

Cereal and Cereal products – structure, composition, nutritive value, effect of cooking on the nutritive value of cereals, gelatinization, retrogradation, dextrinization, crystallization, caramelization, gluten formation. Gels – meaning, types, properties, factors influencing gel formation.

Pulses and legumes - structure, composition, nutritive value of grams, dhals, effect of cooking on pulses, biological value, effect of heat on protein- denaturation, coagulation and Maillard reaction, foam formation, fermentation, germination.

UNIT – III VEGETABLES AND FRUITS **10 Hours**

Classification, nutritional composition; pigments – water soluble, fat soluble, properties and functions; enzymes, tannins, pectin, acids and flavones; selection; cooking methods. Factors affecting – changes on cooking; enzymatic browning: causes, prevention; conservation of nutrients.

UNIT IV - MILK AND MILK PRODUCTS, NUTS, OILSEEDS, FATS AND OILS **12 Hours**

Milk and Milk products – composition, constituents and nutritive value, principles of milk cookery, coagulation, effect of cooking and processing on milk.

Nuts and Oil seeds – types, structure, composition and nutritive value.

Fats and Oils - types, saturated and unsaturated fats, hydrogenation, invisible fats, use of fat in cooking, factors affecting absorption of fats, smoking point, peroxidation, rancidity. Food emulsions-meaning, emulsifying agents, natural and synthetic emulsifiers.

UNIT – V MEAT & MEAT PRODUCTS, EGGS AND BEVERAGES 10 Hours

Meat: Classification, nutritional composition, selection, postmortem changes, storage, cooking methods, effects, factors affecting, uses.

Poultry and fish: Classification, nutritional composition, selection, storage, cooking methods and uses.

Eggs - structure, composition, nutritive value, selection, principles and methods of egg cookery, use of eggs in cooking. Foam – properties, factors influencing foam formation & factors affecting foam stability.

Beverages - Classification and benefits.

Text Books

- Srilakshmi, B. (2016), *Food Science*, (5th Ed), New Age Publishers India, New Delhi.
- Many, S and Shadaksharaswami, M. *Food: Facts and Principles*, New Age Publishers.

Reference Books

- Swaminathan, M., (2012) *Food science, Chemistry and Experimental foods*, Bangalore Printing and Publishing Company.
- Potter M,N. and Hotchkiss, J.H. *Food Science*, CBS Publications and Distributors, Daryaganji, New Delhi.
- Philip, T., *Modern Cookery for teaching and trade*, volume I and II, Orient Longmans Ltd.
- Vickie A. Vaclavik and Elizabeth W.Christian, *Essentials of Food Science*, Springer.

e-Resources [MOOC, SWAYAM, NPTEL, Websites etc.]

- www.nal.vsda.gov/fnic/foodcomp
- www.fda.gov-vegetables
- http://www.eatforhealth.gov.au-fleshfoods,egg&milk
- https://www.business.qld.gov.av-sensoryanalysis of food products
- https://youtu.be/oE8YV2zlO8M

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Define food groups and its function, food pyramid and understanding cooking methods.	K1
CO-2	Describe the nutritive value; the cookery concepts involved in cereals and pulses.	K2
CO-3	Illustrate with nutritional classification, changesin pigments of fruits, vegetables and apply the knowledge on preparation of beverages.	K3
CO-4	Explain the composition, nutritive value and developing skills in the preparation of milk and egg product and determine the smoking point of any cooking oil.	K4
CO-5	Explain the nutritive value, selection and methods of cooking fleshy foods and evaluate the usesand abuses of spices and condiments.	K4

HUMAN NUTRITION - I
UCDM102

Semester : 1 **Credits 4**
Category : Core II/ DSC-II **Hours/Week: 4**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours : 52**

Course Objectives

CO No.	To enable the students to
CO -1	Identify the nutrients needed by humans and explain their major functions in the body.
CO -2	Understand the interrelationship between nutrition and human health.
CO -3	Understand the meaning of energy balance and methods to calculate energy needs.
CO -4	Learn the nutritional importance of carbohydrates, lipids and proteins.
CO -5	Gain the knowledge on role of macromolecules in human health.

UNIT-I INTRODUCTION TO NUTRITION **12 Hours**

Introduction to nutrition – Definition of nutrition and nutrients, adequate, optimum and good nutrition, malnutrition. Inter relationship between nutrition and health, visible symptoms of good health.

UNIT – II FOOD AND ENERGY **10 Hours**

Energy: Definition - Calories, Joule, Calorimetry, direct and indirect calorimetry, respiratory quotient, Energy value of foods, physiological fuel values. Energy needs of the body – BMR, SDA, factors influencing BMR, the energy cost of physical activities, calculation of total caloric requirements, factorial method for determining total energy needs.

UNIT – III CARBOHYDRATES **10 Hours**

Definition, Classification, Sources, Functions, Deficiency, Toxicity and Requirements.

UNIT - IV PROTEINS **10 Hours**

Definition, Classification, Sources, Functions, Deficiency, Toxicity and Requirements.

Proteins– structure and properties of Amino Acids, Essential and Non-essential Amino Acids.

UNIT – V LIPIDS **10 Hours**

Definition, Classification, Sources, Functions, Deficiency, Toxicity and Requirements.

Text Books

- M.Swaminathan (2015), *Advanced Text book of Food and Nutrition*: Bappco Press. Bappco.
- Sathyanarayana. (2017), *Biochemistry,* Elsevier.
- Srilakshmi.B. (2019) *Dietetics* – (Multi Colour Edition Ed), New age International Publisher.

References

- Andreas M. Papas. *Antioxidant Status, Diet, Nutrition, and Health,*CRC Press.
- Margaret Mc Williams (2012). *Food Fundamentals* (10th Ed) Prentice Hall.
- Tom Brody. *Nutritional Biochemistry,* Academic Press, USA.
- Krause's (2013). Food, Nutrition & diet therapy (11th Ed.,) W.B Saunders.

e-Resources

- https://www.amazon.in/Nutritional-Biochemistry-Tom-Brody-ebook/dp/B0087GZCUW
- amazon.in/Nutritional-Biochemistry-D-C-Sharma-ebook/dp/B08FR1MHD8
- https://www.elsevier.com/books/nutritional-biochemistry/brody/978-0-12-134836-6

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 food and nutrition.	K1
CO-2	Tabulate the daily requirements of macro and micro nutrients.	K1
CO-3	Explain the nutritional significance of macromolecules.	K2
CO-4	Explain the meaning of energy balance, and methods to calculate energy needs.	K4
CO-5	Recommend others about holistic Nutrition, life style ,wellness and healthy Living.	K5

FOOD SCIENCE PRACTICAL
UCDR101

Semester : 1 **Credits : 2**
Category : Core Practical I **Hours/Week : 3**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours : 39**

Course Objectives

CO No.	To enable the students to
CO -1	Understand the basic food laboratory techniques.
CO -2	Practice the measuring techniques of various food items.
CO -3	Identify the ways to prevent nutrient losses during cookery.
CO -4	Gain experience in planning, preparing and serving food.
CO -5	Demonstrate the different methods of cooking.

EXPERIMENTS

1. BASIC FOOD LABORATORY TECHNIQUES

a. Methods of Measurement of ingredients.

b. Methods of measuring different types of foods – grains, flours and liquids.

c. Determination of edible portion percentage.

d. Cooking methods Moist heat methods – boiling, simmering, steaming and pressure cooking, dry heat methods – baking.

2. CEREALS AND CEREAL COOKERY

a. Preparation of a few cereal products using Rice, Wheat, Ragi.

b. Experimental cookery on cereals.

c. Types of Gel.

3. PULSES

a. Preparation of a few dishes using pulses.

b. Experimental cookery.

4. VEGETABLES AND FRUITS

a. Effect of cooking on vegetables.

b. Darkening of vegetables and fruits.

c. Preparation of a few vegetable curries, and fruits salad.

5. MILK COOKERY

Preparation of a few ice creams and milk based products.

6. EGG

Preparation of

a. Scrambled egg, Poached egg and Omelette, foam formation.

b. Experimental cookery.

7. FATS AND OILS

a. Determination of fats on selected food items.

8. BEVERAGE

a. Preparation of Coffees, Tea, Cocoa drinks and various milk based fruit juice beverages.

9. **DEVELOPING VALUE ADDED FOODS** (cereals, millets, pulses and vegetable based) - any Four

Text Books

- Lowe B, (2015), *Experimental cookery from chemical and physical stand point*, Forgotten books, UK.
- Srilakshmi B, (2015), *Food Science*, Sixth Edition, New Age International Ltd Publishers, New Delhi.

Reference Books

- ICMR., *Laboratory techniques in Nutrition*. Hyderabad, NIN.

e-Resources

- https://www.youtube.com/watch?v=lWq_4XBnwNM
- https://food.ndtv.com › Ingredients
- ttps://www.youtube.com/watch?v=8mGeJFpCptw
- https://www.youtube.com/watch?v=3sOccQyYQxo
- ttps://www.youtube.com/watch?v=Y7YYa1yhzro
- https://www.youtube.com/watch?v=gk_rPkglyao

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Describe the scientific principles in food preparation.	K1
CO-2	Demonstrate the different methods of food measurement and cooking	K4
CO-3	Explain the effect of desirable and undesirable changes during cooking of foods	K2
CO-4	Explain the basic methods and principles involved in cooking	K4
CO-5	Evaluate the change of pigments during cooking	K5

BIOCHEMISTRY
UBCA101

Semester : 1 **Credits 3**
Category : Allied I **Hours/Week 3**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours 39**

Course Objectives

CO No.	To enable the students to
CO -1	Understand relationship between the structure and functional properties of food.
CO -2	Learn the nutritional, safety and organoleptic aspects of food.
CO -3	Understand the principles of nutrition through the study of Biochemistry.
CO -4	Define the Carbohydrates, Proteins, Amino Acids, Lipids and Nucleic Acids.
CO -5	List the types of macromolecules, structure, properties and functions.

UNIT – I INTRODUCTION TO BOCHEMISTRY **7 Hours**

Definition and relation to nutrition, Enzyme classification, Nomenclature, Factors affecting enzymatic activity, Mechanism of action. Co- enzyme and prosthetic group role of B vitamins.

UNIT – III CARBOHYDRATES **8 Hours**

Carbohydrates, Structure and properties of Monosaccharides – glucose, fructose, galactose; Disaccharides – maltose, lactose, sucrose; Polysaccharides – Dextrin, Starch, Glycogen; Carbohydrates- glycolysis, gluconeogenesis, glycogenesis, glycogenolysis, blood sugar regulation.

UNIT - V PROTEINS **8 Hours**

Definition, Classification, Structure (primary, secondary & tertiary), properties and functions of proteins. Structure and properties of Amino Acids, Essential and Non-essential Amino Acids, general reactions of amino acid, amino acid metabolism-tyrosine, histidine, phenylalanine, glutamic acid and alanine, urea cycle

UNIT – IV LIPIDS **8 Hours**

Lipids, types and properties of Fatty acids, composition and properties of fats, significance of Acid Value, Iodine Value and Saponification Value Classification and structure of phospholipids, structure of glycolipids, types and structure of sterols, Lipids – oxidation and bio synthesis of fatty acids. Synthesis and utilization of ketone bodies, ketosis, fatty livers Lipoproteins – types, composition, role and significance in diseases.

UNIT – V NUCLEIC ACIDS **8 Hours**

Nucleic acids, bases, nucleotides, purines and pyrimidines structure and function. Inter relationship between carbohydrate, fat and protein metabolism – Hormonal regulation of metabolism. Inborn errors of metabolism with reference to carbohydrate – Fructosuria and galactosemia. Protein – Phenyl ketonuria, Alcaptonuria, amino aciduria.

Text Books

- Vasudevan DM, Sreekumari S, (2007). *Textbook of Biochemistry,* 5th edition, Jaypee Publishers, New Delhi.
- J.L.Jain. (2000). *Fundamentals of Biochemistry*, Paperback edition.
- Ambika Shanmugam, (2016). *Fundamentals of Biochemistry.* (8th Ed.) Published by Author.

Reference Books

- Harper's, (2018), *Illustrated Biochemistry* Thirty-First Edition (A & L Lange Series) Paperback
- Conn E E and Stump P.K. (1981) – *Outlines of Biochemistry* – Wiley Eastern (P) Ltd. New Delhi.
- Cox MM and Nelson DL Lehninger, (2008). *Principles of biochemistry* 5th edition, EH Freman &Company, New York.

e-Resources

- https://epgp.inflibnet.ac.in/Biochemistry-book-U-Satyanarayana ebook/dp/B07F9QHV6Z?asin=B07F9QHV6Z&revisionId=&format=2&depth=1
- https://www.amazon.com/dp/B0725LHWPB?tag=uuid10-20&asin=B0725LHWPB&revisionId=f5f49437&format=1&depth=1

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Describe the biochemical pathways relavent in nutrient metabolism.	K2
CO-2	Explain the nutritional significance of macromolecules.	K2
CO-3	Illustrate the nutrition-related conditions and assessment of nutritional status.	K3
CO-4	Explain the metabolic inter-relationship between macronutrients.	K4
CO-5	Classify the different types of macromolecules and its significance.	K4

BIOCHEMISTRY PRACTICAL

UBCR101

Semester : 1 **Credits : 3**
Category : Allied Practical I **Hours/Week : 3**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours 39**

Course Objectives

CO No.	To enable the students to
CO -1	Understand relationship between the structure and functional properties of food
CO -2	Explore the laboratory skills to measure, control and modify the chemical and physical properties of food
CO -3	Understand the principles of nutrition through the study of Biochemistry.
CO -4	Aware on various biochemical test used for biomolecule analysis.
CO -5	Develop and distinguish how individual food components contribute to the overall quality of foods.

EXPERIMENTS:

1. Qualitative tests for sugars – Glucose, Fructose, Lactose, Maltose and Starch.
2. Quantitative estimation of reducing sugar.
3. Qualitative analysis of amino acids
    a. Reactions of individual amino acids (Tyrosine, Tryptophan, Arginine, Histidine, Cystine)
4. Qualitative tests for proteins
5. Quantitative tests for lipids
    a. Lipid extraction
    b. Determination of Iodine value

Reference Books

- Pattabiraman. T.N. (2015), *Laboratory Manual in Biochemistry*, 4th edition, New Delhi, All IndiaPublishers and distributors.
- Mazur A and Harrow.B, *Biochemistry – A Laboratory Manual*, John Wiley Sons Inc, New York.

- Varley, *Practical clinical biochemistry*, William Heinemann Medical books, London, Ltd. Inter Science Books Inc, New York.

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Analyze the constituents of food present in biological fluid.	K4
CO-2	Record the readings of biochemical molecules using calorimetric method.	K5
CO-3	Acquire skills on preparation of solutions.	K2
CO-4	Interpret the serum levels of components of nutritional significance.	K5
CO-5	Plan the major nutrients to be taken.	K6

HUMAN NURITION - II

UCDM201

Semester : 1 **Credits : 4**
Category : Core III/ DSC-III **Hours/Week : 4**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours : 52**

Course Objectives

CO No.	To enable the students to
CO -1	Understand the importance of fat and water soluble vitamins in day to day life
CO -2	Study the role of micronutrients in human health.
CO -3	Gain knowledge on functions, distribution of water and regulation of water balance and acid base and electrolyte balance and
CO -4	Comprehend the components of functional foods.
CO -5	Apply this knowledge of nutrition in daily life.

UNIT –I FAT SOLUBLE VITAMINS **10 Hours**

Fat-soluble vitamins: Food sources, Daily requirement, structure and functions of A,D,E & K, Excess and deficiency disorders of fat – soluble vitamins.

UNIT –II WATER SOLUBLE VITAMINS **10 Hours**

Water soluble vitamins: Food sources, Daily requirement, Structure and functions, Excess and deficiency disorders of Thiamin, Riboflavin, Niacin, B12, Folic acid, Biotin and Vitamin C.

UNIT –III MINERALS **10 Hours**

Macrominerals: Calcium, Phosphorus and magnesium - functions, absorption, DR, food sources and deficiencies.

Microminerals: Iron, Zinc, Fluorine and Iodine - function, absorption, DR, food sources and deficiency.

UNIT- IV WATER AND ELECTROLYTES **12 Hours**

Water: Sources, Requirements, Functions, Mechanism of water balance Electrolyte and acid base balance: Electrolyte: Sodium, Chloride, Potassium sources and RDA, function

UNIT- V INTERRELATIONSHIPS OF NUTRIENTS **10 Hours**

Photochemical, antioxidants and Flavonoid present in foods and their role in human health and disease.

Interrelationships of nutrients: Protein: Energy, Protein: Fats: Carbohydrates, Vitamin D: Calcium, VitaminE: PUFA, Vitamin C: Iron, Niacin: Tryptophan: Vitamin B6 Folic acid: Vitamin B12, Sodium: Potassium**.**

Text Books

- Srilakshmi, B. (2017) *Nutrition Science*, New Age International (P) Ltd., New Delhi.
- Swaminathan, M. (2012) Advanced *Textbook on Food and Nutrition*, Vol. 1, Second Edition, Bangalore Printing and Publishing Co. Ltd., Bangalore.

Reference Books

- Dietary Guidelines for Indians, ICMR (2013) National Institute of Nutrition, Hyderabad.
- Gordon M. Wardlaw, Paul M.Insel. (2015) *Perspectives in nutrition*, 3rd Edition, Mosby year Book, Inc.St.Louis, Missouri.
- Krause, M.V. and Hunesher, M.A. (2013) *Food, Nutrition and Diet Therapy*, 14th Edition, W.B.Saunders Company, Philadelphia, London.
- Gibson GR and Williams CM (2000). *Functional Foods* - Concept to Product.
- Jim Mann &A.Stewart Trusell (2012). *Essential of Human Nutrition* (4th Edition). Published by Oxford University Press.

e-Resources [MOOC, SWAYAM, NPTEL, Websites etc.]

- study.com/.../basic-principles-of-nutrition.html
- ocw.jhsph.edu/index.cfm/go/viewCourse/course/.
- www.britannica.com/science/human-nutrition

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Explain the importance of micronutrients.	K2
CO-2	Describe the role of food and nutrients in health and disease Prevention.	K1
CO-3	Evaluation nutrition information based on scientific reasoning for clinical and community application.	K5
CO-4	Analyze conceptualize, implement and evaluate the functions, metabolism, requirements and effects of deficiency of nutrients.	K4
CO-5	Analyze the interrelationships of nutrients.	K4

HUMAN PHYSIOLOGY
UCDM202

Semester : 1 **Credits : 3**
Category : Core III/ DSC-IV **Hours/Week : 4**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours :52**

Course Objectives

CO No.	To enable the students to
CO -1	Understand the physical structure and functioning of human body.
CO -2	Recognize the importance of human organs (Heart, Lungs & Kidneys).
CO -3	Define the body fluids and its importance.
CO -4	Name the different parts of nervous and muscular system.
CO -5	Illustrate the blood coagulation and blood grouping.

UNIT-I CELL, TISSUES AND BLOOD **11 Hours**

Cell - Structure and functions, Tissues - Structure and functions
Blood - Composition, functions, RBC – Structure, functions, erthropoiesis, Haemoglobin, WBC- Structure, functions, Classification. Blood Platelets: Structure, functions, Reticulo endothelia system, Blood groups – Rh factor. Blood coagulation, Spleen –Structure and functions, Lymp– Lymphatic system.

UNIT-II PHYSIOLOGY OF NERVE & MUSCLE, NERVOUS SYSTEM & SENSE ORGANS **11 Hours**

Spinal cord – Structure and functions. Ascending and descending tracts, reflex action. Brain – Structure and functions of cerebrum, optic thalamus, midbrain, pons medulla oblongata, Hypo thalamus, cerebellum. Autonomic nervous system, sympathetic and parasympathetic. Sensory organs - Structure and function of eye, ear and skin.

UNIT III CIRCULATORY SYSTEM **10 Hours**

Circulatory system – Structure and functions of heart - cardiac cycle. Blood vessels – Structure of artery, vein, capillaries, Cardiac output, Arterial Blood pressure, clinical measurement of blood pressure, properties of cardiate muscle, origin and conduction of heart beat,Regulation of Heart's action.

UNIT-IV RESPIRATORY SYSTEM AND DIGESTIVE SYSTEM **10 Hours**

Respiratory system - Basic anatomy of the respiratory system, process of respiration, transport and exchange of oxygen and carbon di-oxide in the body.
Digestive system – Organization and functions of digestive system, Process of the digestion, absorption and utilization of food.

UNIT- V EXCRETORY SYSTEM, ENDOCRINE AND REPRODUCTIVE SYSTEM **10 Hours**

Excretory system - Excretory organs - structure of kidney and functions, formation of urine, composition of urine. Muscles – types of muscles, physiology of muscular action. Central nervous system - Physiology of the nerve cell, parts of the central nervous system and function. Endocrine glands - Structure and function of pituitary, thyroid, islets of Langerhans and adrenal gland. Reproductive system – Basics of the male and female reproductive organs. Menstrual cycle.

Text Books

- Chatterjee C.C (2016), *Human Physiology*, 11th Edition, Medical Allied Agency, Kolkata.
- Sembulingam, K. (2012) *Essentials of Medical Physiology*, 6th Edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.

Reference Books

- Best and Taylor, (2011) 13th Edition *The Physiological Basis of Medical Practice*, Saunders Company.
- Chaudhri, K. (2016) *Concise Medical Physiology*, 7th Edition, New Central Book Agency (Parentral) Ltd., Calcutta Fox.
- Guyton & Hall (2010), *Textbook of Medical Physiology, (12th Ed.).*, Reed Elsevier India Private Limited, New Delhi.
- Murray et al, (2012), *Harper's Physiological Biochemistry, (29th Ed.).*, Tata McGraw Hill Publication. Co. Limited, New Delhi.

e-Resources [MOOC, SWAYAM, NPTEL, Websites etc.]

- www.microbenotes.com/category/human-physiology
- www.longdom.org/scholarly/human-physiology...
- https://youtu.be/IYQsinv938g

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Explain the components of blood, blood grouping & cardio vascular system.	K1
CO-2	Illustrate the mechanism of digestion, absorption of macromolecules and explain urine formation.	K2
CO-3	Describe the process of gaseous exchange in tissues and lungs, respiratory adaption to high altitude.	K2
CO-4	Measure and give results for identifying the physiological functions.	K5
CO-5	Determine the mechanism of contraction and relaxation of muscles.	K5

NUTRIENT ANALYSIS AND PHYSIOLOGY PRACTICAL
UCDM202

Semester	**: 2**	**Credits**	**: 2**
Category	**: Core Practical II**	**Hours/Week**	**: 3**
Class & Major:	**I B.Sc Clinical Nutrition and Dietetics**	**Total Hours**	**39**

Course Objectives

CO No.	To enable the students to
CO -1	Study the estimation methods through quantitative analysis.
CO -2	Learrn to measure blood pressure, WBC and RBC cell count .
CO -3	Know the principle behind the nutrient analysis and physiological analysis using blood.
CO -4	Learn the human organs, structure and positioning.
CO -5	Gain knowledge on different tissues, muscles and organs of the body

EXPERIMENTS

NUTRIENT ANALYSIS

1. Quantitative estimation of calcium and vitamin C.
2. Quantitative estimation of phosphorus
3. Estimation of Iron

PHYSIOLOGY

4. Determination of pulse rate in Resting condition and after exercise (30 beats/10 beats method)
5. Determination of blood pressure by Sphygmomanometer (Auscultatory method).
6. Measurement of Peak Expiratory flow rate.
7. Determination of Bleeding Time (BT) and Clotting Time (CT).
8. Detection of Blood group (Slide method).
9. Measurement of Haemoglobin level (Sahli`s or Drabkinmethod).
10. Identification of WBC (different groups),estimation of WBC and RBC.

References

- Gerals Litwak, *A Laboratory Manual*, John Wiley sons Inc, New York.
- Sri Lakshmi. B. *Dietetics*, New Delhi, New Age International Pub. L
- Vander, A.J, Sherman, J.H. and Luciano, D.S. *Human Physiology - the Mechanisms of Body Functions*, TMH Publishing Co., Ltd.,
- Best, CH and NB Taylor, *The living body*, latest edition, Asia publishing house, Bombay.

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Understands the methodology of estimation of certain nutritionally significant markers	K2
CO-2	Interpret the serum levels of components of nutritional significance	K5
CO-3	Attain knowledge about the principles of nutrition through the study of physiology.	K2
CO-4	Identify the blood grouping of the individuals	K5
CO-5	Evaluate the physiological functions relevant to nutrition care	K5

FOOD SERVICE MANAGEMENT
UFSA201

Semester : 1I **Credits : 3**
Category : Allied II / GE II **Hours/Week : 3**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours : 39**

Course Objectives

CO No.	To enable the students to
CO -1	Gain knowledge about different types of food services and also various types of catering.
CO -2	Understand the basic principles of food services management and learn about the effective use of available recourses.
CO -3	Possess leadership, supervisory and human relation skills within the restaurant and food service Industry.
CO -4	Perform communication skills relevant to the restaurant, food industry etc.
CO -5	Demonstrate professional behaviors expected within the food service industry.

UNIT I - HISTORY OF DEVELOPMENT AND TYPES OF CATERING **8 Hours**

History of food service unit. Types - Hotel, Motel, Restaurant, Cafeteria and Chain hotels. Types of catering - Air, Rail, Sea and Space. Styles of services – conventional, commissary, read prepared and assembly service system.

UNIT II - ORGANIZATION AND RESOURCE MANAGEMENT **8 Hours**

Organization chart, Role of food service manager. Classification, characteristics, factors affecting the use and effective conservation of resources - time, energy, fuel, finance and staff.

UNIT III - EQUIPMENTS AND FURNITURE MANAGEMENT **8 Hours**

a. Classification of equipment, factors involved in selection of equipments; purchase of equipment, operational knowledge, care and maintenance of equipments; dining roomfurnishings.

b. Furniture management - Materials Used - base materials used in the manufacture of equipments, materials used for finishes, materials used in the manufacture of dining room furnishings.

UNIT IV - INTERIOR DESIGN - LIGHTING AND TABLE SETTING, FLOWER ARRANGEMENTS AND COLOUR SCHEMES **8 Hours**

Place of art in everyday life - importance of good taste - objectives of interior design. Design elements - types and principles of design - harmony, proportion, balance rhythm and emphasis. Table setting and service-appraising and drawing silver cutlery and crockery, folding of napkins – laying of table cloth, table mats – Arrangement of cover and table – Appointment according to the menu – serving food at the table clearing of the table.

Principles of flower arrangements, styles of flower arrangements, flowers & foliage, containers stem holders & other accessories General guidelines for colour schemes of food service units.

UNIT V - QUANTITY FOOD PREPARATION **8 Hours**

Menu planning - Indian and Western - standardization and portion control, effective use of left over.

Standardization - any three selected quantity recipes and their preparation. Yield of cost per serving – size of serving.

Text Books

- John B. Knight and Lendal H. Kotschevar (2000). *Quantity Food Production, Planning, and Management*, 3rd Edition.
- Lea R. Dopson, David K. Hayes (2015), - *Food and Beverage Cost Control*, 6th Edition by John Wiley & Sons, Inc., or related companies.
- Pechkam, G.C (2010) - *Foundations of food preparation*, the Macmillan Publishing Co., New York.
- J. Payne-Palacio, M. Theis, *Introduction to Foodservice*, 11th Ed. - BBS

Reference Books

- Mohini Selti and Surjeet Malhan, 2015 – *Catering Management* – an integrated approach, Wiley Eastern Limited, New Delhi.
- West, B.B.Wood.L.Harger, V.F. and Shugart, G., *Food Service in Institutions*, John Wiley and Sons, New York.

Journals

- Food service systems Management Education council (FSMEC),
- Journal of food service management and education

Websites Reference

- www.uscg.mil/petaluma/TPF/FS_SMS/Support_Folder/486_A.pdf
- www.quizlet.com/2665900/fcs-food-production-management-and-services-reference-book-flashcards/

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	List of human resources within a food services organization or Department.	K1
CO-2	Communicate appropriately with clients, staff and management.	K5
CO-3	Apply food services technology and operate industry equipment.	K4
CO-4	Develop nutritional menus for food service production.	K6
CO-5	Manage food service production.	K5

QUANTITY COOKERY PRACTICAL

UFSR201

Semester : 1I **Credits : 2**
Category : Allied II Practical **Hours/Week : 3**
Class & Major: I B.Sc Clinical Nutrition and Dietetics **Total Hours : 39**

Course Objectives

CO No.	To enable the students to
CO -1	Understand basic principles of quantity meal planning and proper utilization of the resources
CO -2	Develop knowledge and skills necessary to prepare, cook and present meals in large quantity and with appropriate safety and quality control.
CO -3	Promote nutritive benefit as the focal point in planning meals and preparing food in large quantities;
CO -4	Develop an appreciation of the uniqueness of traditional / multi cuisine
CO -5	Critically assess the value of new technologies, the cost effectiveness and long term value.

Experiments

1. Concept and techniques of food standardization.
2. Standardization of recipes – Minimum of 4 portions (Step up or Step down).
3. Visit to well-organized food services units – Hostel, Commercial, Industrial, Hospital, Transport.
4. Quantity Cookery - preparation of south indian, north indian, eastern, western and continental Menu for 25 members.
5. Portion control in preparation and serving food in large quantity - determine portion size for 25 members
6. Organizing, preparing and serving one special sale for 50 members

References

- Judy.L.Halpenny (2012) *Flavours For a crowd – Practical large quantity recipes*, First Edition, Balboa Press,

- Ceserani, V, Kinton, R. and Foskett, D. *Practical cookery*, London, ELBS.

Web References

- healthyeatingatschool.ca/uploads/Tips_LoRes_Jul309.pdf
- www.dshs.wa.gov/altsa/senior-nutrition-program standards/administration/standardization-recipesand-portion-control.

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Describe the principles and techniques involved in preparing large proportions and standardization of food.	K1
CO-2	Explain the methods of preparation of multi cuisine recipes.	K2
CO-3	Choose the ingredients for quantity cookery according to portion size and cost	K3
CO-4	Analyze the new technology and its potential in relation to food preparation and cookery.	K4
CO-5	Organize sale and fix profit margin for food products.	K6

HOSPITAL INTERNSHIP

AIM:

To provide training wherein a graduate is expected to conduct actual practice of diet management and health care and acquire skills under supervision of a experienced dietician so that a student may become capable of functioning independently.

Course Objectives

CO No.	To enable the students to
CO -1	Manage diet prescription independently for clinically common disease conditions encountered to higher level.
CO -2	Develop the knowledge, attitude and skills needed to become an entry-level Dietitian.
CO -3	Have in-depth knowledge of the relationships between nutrition data and pathologic processes, and how nutrition data relate to health and disease.
CO -4	Have the talent to design, evaluate and implement new methods or protocols in different cases.
CO -5	Work independently and as a team member to perform critical thinking and problem solving skills in different domains.

PERIOD OF INTERNSHIP:

- One month internship in a multispecialty hospital with dietary department.

Course Outcomes

CO No.	On completion of the course the student will be able to	Bloom's Level
CO-1	Express the skills and planning therapeutic diets	K2
CO-2	Ability to be a health professional	K3

CO-3	Apply the knowledge for diet counseling	K3
CO-4	Competent to manage catering outlet	K1
CO-5	Possess a sound knowledge of food and nutrition, quantitative food production, biological sciences, pathophysiology of disease, and be able to act in a variety of capacities in clinical, administrative, and community settings.	K2 & K3

CASE STUDIES:

- Five to ten case studies of different disease conditions have to be taken up during the internship.
- Report to be submitted in the hospital and institution.

INTERNSHIP REPORT: EVALUATION PATTERN

Report on internship will be evaluated as stated below.

External marks – 60

Marks awarded by the training institution - 20 marks
Report presentation - 20 marks
Viva voce - 20 marks

Internal marks - 40

Marks awarded by the guide - 20 marks
Report preparation - 20 marks

Total marks - 100

EXPERIENTIAL LEARNING

1. Visit to Blood bank.
2. Observation on giving transfusion.

III & IV EVALUATION COMPONENTS OF CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
I	Core I / DSC - I	UCDM101	Food Science	Nutrient Chart Preparation	Demo on any one nutrient
	Core II / DSC - II	UCDM102	Human Nutrition - I	Assignment	Model preparation
	Allied I / GE I Allied Practical	UBCA101	Biochemistry	Seminar	Assignment
II	Core III / DSC - III	UCDM201	Human Nutrition - II	Assignment	Model preparation
	Core III / DSC - IV	UCDM202	Human Physiology	Model preparation	Seminar
	Allied II/ GE -II	UCNA201	Food Safety Management - I	Exhibition cum sale	Seminar

DEPARTMENT OF COSTUME DESIGN AND FASHION

PREAMBLE

UG: Programme Profile and the Syllabi of Courses offered in the I and II Semester along with Evaluation Components III & IV (With Effect From 2022- 2025 Batch Onwards)

PROGRAMME PROFILE B.Sc., Costume Design and Fashion

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	Upon Completion of the Programme, 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	To 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	-	4	3
		Allied - I \ GE - I	UCDA101	Indian Costumes and Textiles	-	6	4
		Major Core Practical -I	UCDR101	Fashion Illustration Practical	-	4	3
		Major Core Practical-II	UCDR102	Basics of apparel Construction Practical	-	4	3
		PE	UPEM101	Professional English I	-	6	4
	IV	Value Education (VE)				2	1
					TOTAL	**36**	**24/26**

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	Fibre and yarn Manufacturing	-	2	1
		Major Core –III \ DSC-III	UCDM202	Pattern Making	-	2	1
		Major Core Practical -III	UCDR201	Advance Fashion Illustration	-	3	3
		Major Core Practical -IV	UCDR202	Kids Apparel		3	2
		Allied - II \ GE - II	UCDA201	Apparel Marketing	-	4	3
		Allied Practical -I	UCDR203	Surface Embellishment		3	3
		PE	UPEM201	Professional English II	-	6	4
	IV	Non Major Elective				3	2
	V	Extension Programme/ Physical Education				-	1/2
					TOTAL	**36**	**26/29**
III	III	Major Core – IV / DSC - IV	UCDM301	Fabric Manufacturing	-	6	5
		Major core Practical-V	UCDR301	Fabric Structure and Design	-	7	6
		Major core Practical-VI	UCDR302	Computer Aided Designing	-	6	5
		Allied Paper-III	UCDA301	Visual Merchandising	-	6	5
	IV	Online Course NPTEL			-	3	2
		Value Education (VE)				2	1
					TOTAL	**30**	**24**
IV	III	Major Core Paper-V	UCDM401	Fashion clothing and Psychology	-	6	5
	III	Major core Practical-VII	UCDR401	Women's Apparel		6	5
	II	Allied Paper-IV	UCDA401	Entrepreneurial Management	-	6	5
	III	Allied – Practical-II	UCDR402	Ornamentation	-	7	6
	IV	Soft Skill			-	2	1
	IV	Non Major Elective			-	3	2
	V	Extension programme/ Physical Education			-	-	-/2
					TOTAL	**30**	**24/26**
V	III	Major Core Paper-VI	UCDM501	Textile Web Processing	-	5	4
	III	Major Core Practical - VIII	UCDR501	Textile Web Processing	-	6	4
	III	Major Core Practical - IX	UCDR502	Men's Apparel	-	6	4
	III	Major Core Practical -X	UCDR503	Apparel Draping	-	6	4
	III	Major Elective	UCDO501	Boutique Management		5	4
			UCDO502	Home Textiles			
	III	Major Core XI	UCDP501	Project Work	-	5	5
	IV	Value Education (VE)				2	1
					TOTAL	**30**	**26**

VI	III	Major Core -VIII	UCDM601	Textile Testing and Quality Control	-	4	3
		Major Core-IX	UCDM602	Textile Finishing & Fabric Care	-	4	3
		Major Core Practical - XI	UCDR601	Textile Testing and Quality Control Practical	-	6	5
		Major Core Practical - XII	UCDR602	Fashion Photography and Videography	-	5	4
		Major Core Practical - XII	UCDR603	Computer Aided Design - II	-	4	3
		Major Elective	UCDO601	Fashion Portfolio Practical		5	4
			UCDO602	Home Textile Practical			
		Comprehensive Viva	UCDM601		-	-	1
	IV	Soft Skill			-	2	1
	V	Extension programme/ Physical Education				-	-/2
TOTAL						**30**	**24/26**
GRAND TOTAL						**192**	**148/157**

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

FUNDAMENTALS OF FASHION DESIGN

UCDM101

Semester : I **Credit : 3**
Category : Major Core **Hours/Week : 4**
Class &Major: I B.Sc Costume Design and Fashion **Total Hours : 52**
Course Objectives

CO No.	To enable the students
CO 1	Understand the several dimensions of fashion.
CO 2	Identify the roles and responsibilities of the fashion designer
CO 3	Learn the Design principles and understand their application in Fashion Design.
CO 4	Broaden the cultural repertoire and develop creative skills.
CO 5	Develop abilities for information gathering.

UNIT-I: INTRODUCTION OF FASHION DESIGN **11 hrs**

Design - Definition, Types- Structural and Decorative Design, Requirement, Application in dress design. Introduction to fashion design- Fashion and Style, Design Process, Collection range-Haute couture, Avant garde, Pret- a-Porter.

UNIT-II: ELEMENTS AND PRINCIPLES OF DESIGN **10 hrs**

Elements of design - Line, Shape or Forms, Color, Size, and Texture. Principle of Design- Balance, Rhythm, Proportion, Harmony and Emphasis. Application of elements and principles in garment.

UNIT-III: COLOR THEORY **10 hrs**

Colors – Importance of color. Dimensions of Color– Hue, Value, Intensity. Warm and Cool Color Theories-Prang Color System, Munsell Color System. Color Harmony- Related, Contrasting, Neutral.

UNIT- IV: FIGURE IRREGULARITIES **11 hrs**

Garment Designing for Irregular figure types – Tall and Thin Figure, Tall and Stout Figure, Short and Stout Figure, Short and Thin Figure, Shoulder - Narrow , Round, Broad. Face – Round, Oval, Square, Diamond.

UNIT-V: FASHION CENTERS AND DESIGNERS **10 hrs**

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 Books

- Khurana and Sethi. (2007). *Introduction to Fashion Technology.* Fire Well Publication. New Delhi.

- Gupta et al. (2005). *Text Book of Clothing and Textiles and Laundry*. Kalyani Publishers. New Delhi.
- Pundir. N. (2007). *Fashion Technology Today and Tomorrow*. Mittal Publication. New Delhi.
- Narang. *Hand Book of Fashion Technology.* Asia Pacific Business Press Inc. New Delhi.

Reference Books

- BetsyHosegood. (2006). *The Complete Book of Sewing*. Dorling Kindersley Limited. London.
- Frings. (2008). *Fashion from Concept to Consumer.* (7th ed.,). Dorling Kindersley Publishing Inc. India.
- Susheela Dantyagi, (2006). *Fundamental of Textiles and Their Care. (*5thed.,) Orient Longman Limited. New Delhi.
- Dickerson Gitty .G. (20040. *Inside the Fashion Business.* Pearson Education. India.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Knowledge to perform visual research for application of elements in context of fashion.	K1
CO 2	Classify the fashion trends.	K2
CO 3	Create compositions using various color schemes.	K3
CO 4	Explain to plan wardrobe design dress for different occasions and events.	K4
CO 5	Accredit with skills of drawing and usage of various art mediums.	K5
CO 6	Develop a good design through application of elements of design.	K6

INDIAN COSTUMES AND TEXTILES

UCDA101

Semester : I **Credit : 4**
Category : Allied - I **Hours/Week : 6**
Class &Major : I B.Sc Costume Design and Fashion **Total Hours : 78**

Course Objectives

CO No.	To enable the students
CO 1	Record the evolution costume in Indus valley civilizations and Vedic period.
CO 2	Recognize the Indian historical costumes with reference to fabrics, motifs and accessories.
CO 3	Differentiate the ancient costumes of Kushan, Gupta and Mughal Period.
CO 4	Comply knowledge about regional costumes of Indian states
CO 5	Interpret special features of traditional textiles with reference to various periods.

UNIT-I: INTRODUCTION TO INDIAN COSTUMES **16 Hrs**

Indian costume – Introduction, Origin Of Costumes, Beginning of Costumes – Indo Aryans - Vedic Ages, Mauryan and Sunga period, Satavahana period, Kushan period , Mughal period.

UNIT- II: TRADITIONAL COSTUMES OF INDIA **16 Hrs**

Introduction to traditional Indian costumes - North Zone Costumes - Costumes of Punjab, Himachal Pradesh, Uttar Pradesh , Rajasthan, Jammu and Kashmir. East Zone Costumes - Assam, West Bengal, Bihar.West Zone Costumes – Madhya Pradesh, Gujarat, Maharashtra.South Zone Costumes- Kerala, Karnataka.TamilNadu . Contemporary knowledge using traditional design.

UNIT-III: EMBROIDERIES OF INDIA **16 Hrs**

Kasida of Kashmir, Kanthas of Bengal, Chambarummal of Himachal Pradesh, Chickenkari of Uttar Pradesh , odisa Pulkhari of Punjab, Kasuthi of Karnataka, Kutch or Sindhi of Gujarat, Shamilami of Manipuri Embroidery, Toda embroidery of Tamil Nadu.

UNIT-IV: TRADITIONAL WOVEN TEXTILES **15 Hrs**

Introduction to woven textiles of India – Uttar Pradesh- Banaras, Tanchoi, Gujarat- Patola, Bengal- Baluchari and Jamdani , Maharashtra- PaithaniPithambar, MathyaPreadesh- Chanderi and MaheswariSaree, Tamilnadu- Kanchipuram,Chinnalapatti, Madurai Sungudi, Andhrapradesh- Pochampali. Kashmir-Shawl.

UNIT-V: TRADITIONAL PRINTED AND DYED TEXTILES **15 Hrs**

Printed textiles – Kalamkari, Block printing, Roghanprinting .Painted textiles - Mata-mi-Pachedi, Pabuji-ka-Pad.Dyed textiles – Ikat, Patola, Bandhani, Laharia, Mashru .

Text Books

- Dr.Parul Bhatnagar (2004). *Traditional Indian costumes and Textiles*. (1st ed.,) Abhishak Publications. Chandigarh, India.
- Manmeet Sodhia. (2007). History of Fashion, Kalyani Publishers. New Delhi.
- Manmeet Sodhia. (2009). History of Fashion, Kalyani Publishers. New Delhi.

References Books

- Govind Sadashiv Ghurye. (1966). *Indian Costume.* Popular Prakashan Publication.
- Ritu Kumar. (2006). *Costumes and Textiles of Royal India Antique Collectors.* Club.
- ArabindaBiswas. (1985). *Indian Costumes.* Ministry of Information and Broadcasting Publication Division.
- ZamilaBrijBhushan. (1990). *Indian Embroidery.* Ministry of Information and Broadcasting Publications Division. Government of India.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Know the woven and dyed textile.	K1
CO 2	Understand the traditional embroidery of India.	K2
CO 3	Learn the traditional costumes and Embroidery in India	K3
CO 4	Identify a specific embroidery style of India on the basis of colours, motifs, layouts.	K4
CO 5	Identify the influencing factors for development and evolution of a specific embroidered textile.	K5
CO 6	Gain knowledge about traditional prints and dyes	K6

FASHION ILLUSTRATION PRACTICAL

UCDR101

Semester : I **Credit : 3**
Category : Major Core Practical -I **Hours/Week : 4**
Class &Major : I B.Sc Costume Design and Fashion **Total Hours : 52**

Course Objectives

CO No.	To enable the students
CO 1	Understand Figure Form And Skill To Draw Fashion Figures And Drape Garments.
CO 2	Appreciate The Unique Considerations And Focuses Of Fashion Illustration
CO 3	Sketch The Human Body In Proportions Relevant To Fashion Illustration
CO 4	Conduct Quick Sketches Of Clothing Items On The Human Body
CO 5	Widen The Students Understanding About Fashion Art.

Illustrate the Particulars

1. Practicing by using different types of medium - Pencils, Ink, Charcoal, Brushes, Crayons, Water colours and Poster colours
2. Practicing various dots, lines and shapes.
3. Practicing light and dark shadows.
4. Learning the Fundamental Strokes and Shading techniques.
5. Sketching the Elements of Design for Backdrop- Line, Shape/Form, Colour - Prangs Colour chart, Size and Texture.

6. Sketching the Principles of Design for Backdrop- Balance, Harmony, Emphasis, Proportionand Rhythm.
7. Design- Introduction and types of design, Enlarging and reducing the design or motifs.
8. Sketching different textures- denim, chiffon, velvet, knitted, wool, felt, fur, quilting and lace.
9. Understanding human anatomy and practicing 8 head, 10 head, 12 head theories
10. Practicing face, eye and eyebrow, nose, mouth, ear, lips, hands, arms, feet, legs, hairstyles
11. Practicing stick figures and postures.

Text Books

- Raviraj. (2007*). Pencil Shading, Basic Techniques.* New Century Book House Pvt Ltd. Chennai..
- Pooja Khurana & Monika Sethi . (2007). *Introduction to Fashion Technology*. Firewall Media Pvt.Ltd NewDelhi.
- RanjanaSinghal and KannakiBharali. (2010*). Fashion Rendering*. Om books Internationals. Noida.

Reference Books

- PundalikVaze. (2002). *Draw and Paint. I Edition.* Jyotsnaprakashan. Pune.
- Gopal Nandurkar. (2004). *Colur pencil.* Rahul Deshpande. I Edition. JyotsnaPrakashan. Pune.
- BinaAbling, (2005). *Fashion Sketch Book. 4th Edition.* Om Books International. New Delhi.
- Steven Stipelman. (2005*). Illustrating Fashion Concept to Creation*. 2ndedition. Fairchild publication. Newyork.
- Kathryn Hagen. (2005*). Fashion Illustration for Designer*. Upper saddle river Pearson education. Inc., publication. New Jersey.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Select the apparel using color harmony and types of charts.	K1
CO 2	Illustrate the apparel design for elements of designs.	K2
CO 3	Draw fashion figures by understanding body proportions.	K3
CO 4	Drape the desired idea of their design onto the fashion figure.	K4
CO 5	Classify the sketches of clothing items on the human body.	K5
CO 6	Develop an approach towards ideation.	K6

BASICS OF APPAREL CONSTRUCTION PRACTICAL

UCDR102

Semester : I **Credit : 3**
Category : Major Core Practical - II **Hours/Week : 4**
Class &Major : I B.Sc Costume Design and Fashion **Total Hours : 52**

Course Objectives

CO No.	To enable the students
CO 1	Knowledge about importance of packaging.
CO 2	Explain about the parts and functions of sewing machines and tools used for garment construction.
CO 3	Learn about hems and Fullness.
CO 4	Work atmosphere of fashion and apparel industry
CO 5	Gain Knowledge in Seams and seam Finishes.

1. Introduction of Sewing Operations - Operation of sewing machines, safety measures while using sewing machine, Preparation of fabric for sewing, handling of fabrics-cotton, synthetic, satin, crepe, denim, velvet, stitch length and needle size suitable for different fabrics
2. Prepare samples for Seams - Plain, Single Top Stitch, Double Top Stitch, Welt, Lapped, Slot, Flat Fell, French, Mantua Maker's, Piped Seam.
3. Prepare samples for seam finishes - Edge stitch, Double Stitch, Herringbone. Hems- Seam binding, Rolled or Whipped finish, Shell Edged.
4. Prepare samples for Fullness - Darts - Single Pointed, Double pointed. Tucks - Pin, Piped or Corded, Shell or Scalloped, Cross tucking, Pleats - Knife, Box, Inverted, Kick, Pinch, Cartridge Godets, Flares, Gathering - Hand, Machine, Using elastic, with cord piping. Shirring, ruffle – Single, Double, Circular Ruffle.
5. Prepare samples for Neck finishes - Bias facing, Single Bias binding, French binding.
6. Prepare samples for Plackets - Continuous bound, Two-piece, Zipper, Bound neck, Centre front / back placket.
7. Prepare samples for Yokes - Plain yoke, Yoke with fullness within the yoke,Yoke supporting / releasing fullness.
8. Prepare samples for Fasteners - Button and button holes, Snap fasteners, Hooks and Eyes, Zip.
9. Prepare samples for Sleeves - Various styles of Set – in – Sleeves- Plain, Puff at top / Bottom, Circular and Tulip. Modified armhole Sleeve and Bodice combined - Raglan.

10. Prepare samples for Collars - Peter Pan collar, Full shirt, Chinese, Shawl collar.
11. Prepare samples for Pockets - Patch pocket, Pocket set into a seam and set in pocket.

Text Books

- Gayatri Verma and Kapil Dev. (2006). *Cutting and Tailoring Course*. Asian Publishers. New Delhi.
- K R Zarapker. (2005*). Zarapker System of Cutting.* Navneet Publications Ltd. New Delhi.
- Sumathi .G. (2005). *Elements of Fashion and Apparel Design II Edition.* New Age International Private Ltd Publications.

Reference Books

- Thangam Subramaniam. (2006*). Dress Making- Bombay Tailoring and Embroidery College*. Chennai.
- Ruth Sleigh Johnson. (2011). *Practical sewing techniques*. London A& C Black publishers.
- Natalie Bray. (2005). *Dress Fitting.* Om Books International Publication.
- Charlotte Gerlings. (2015). *Anyone can Sew.* Arcturus Publishing.
- Natalie Bray. (2004). *More Dress Pattern Designing.* Om Books International Publication.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Define the garment finishing	K1
CO 2	Classify the plackets.	K2
CO 3	Explain about the various components of garment construction and its application	K3
CO 4	Identify the sleeves and collars	K4
CO 5	Construct various forms of Plackets and Pockets	K5
CO 6	Demonstrate the elements for Garment Decoration such as Fullness	K6

FIBRE AND YARN MANUFACTURING

UCDM201

Semester : II **Credit : 1**
Category : Major Core - II **Hours/Week : 2**
Class &Major : I B.Sc Constume Design and Fashion **Total Hours : 26**

Course Objectives

CO No.	To enable the students
CO 1	Knowledge about different fiber, yarns and fabrics along with their properties.
CO 2	Understand fabric structures and their analysis.
CO 3	Learn the properties and manufacturing of different fibers.
CO 4	Evaluate the methods of yarn manufacturing
CO 5	Gain the basic knowledge of textiles

UNIT I TEXTILE FIBRES **5 Hrs**

Introduction to Textile Fibres – Classification of Textile Fibres: Natural fibres – Cotton – Jute – Wool – Silk Fibres – Manufacturing Process – Physical and Chemical Properties of Fibres – Uses of the above fibres.

UNIT II REGENERATED FIBRES **6 Hrs**

Regenerated Cellulose fibre – Viscose, Acetate Rayon – Manufacturing Process – and Chemical Properties of fibres – Uses of the above fibres. Regenerated Protein Fibres – Caesin – Vidral - Ardril. Manufacturing Process – and Chemical Properties of fibres – Uses of the above fibres.

UNIT III SYNTHETIC FIBRES **5 Hrs**

Man-Made fibre – Type of Polymerization Reaction – Wet, Dry, Melt Spinning – Nylon fibre – Polyester fibre – Acrylic fibre – Manufacturing Process – Properties of fibres – Uses of the above fibres – Bicomponent fibres, Miscellaneous fibres. Texturizing – It's Uses

UNIT IV SPINNING PREPARATORY **5 Hrs**

Ginning – Objectives – Types and Working Principle – Mixing and Blending – Blow Room – Objectives of Blow Room — Carding – Objectives – Passage of Material – Drawing – Objectives - Passage – Drafting – Combing- Preparatory for combing– Passage – Combing Machine.

UNIT V SPINNING **5 Hrs**

Roving – Passage of Material through Simplex Machine – Spinning – Passage – Drafting – Rotor Spinning Machine –Assembly winder Doubling – Wet and Dry- TFO – Fancy Yarns – Sewing threads – Manufacturing process– Yarn Faults – Causes and Remedies.
Industrial Visit /Internship Mandatory.

Text Books

- Bernard P. Corbman. (2009) *Textiles Fibre to Fabric.* Mc. Graw Hill International Editions, New York.
- S.P.Mishra.(2005). *A Text Book of Fibre Science and Technology*. New Age International (P) Ltd, New Delhi.

Reference Books

- Susheela Dantyagi. (2021). *Fundamentals of Textiles and their Care.* 5th edition. Orient Longman Ltd. New Delhi.
- Miles Collins. (2002) *Woolen and Worsted Spinning.* Abhishek Publication. Chandigarh.
- Parul Bhatnagar. (2002) *Elementary Textile*. Abhishek Publication. Chandigarh.
- D. Chakravarthy. P.N.Pandy. (2005). *Silk Worm Crops.* Kurl BhushanNangia. APH Publishing Corporation.
- K.B.Sagadevan. K.S.ShyamBabu. *Fibre Science and Technology, A Complete and Comprehensive and a Perfect Finest Blend of Text Book and Guide,* The Director of Technical Education, Tamil Nadu.
- William & Murphy. (2003). *Elements of fibre science.1st edition*. Abishek publications. Chandigarh.
- R.Jeffries. *(*2004*). Bicomponent fibres,* 1st edition. Wood head publishing limited.
- NIIR Board. The complete Technology book on Textile processing with effluents treatment. Asia pacific of industrial research, National institute of industrial research. New Delhi.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Understand fibers and their use in different sectors.	K1
CO 2	Understand about yarns and their creative use	K2
CO 3	Identify different kinds of fabrics – composition, weave etc.	K3
CO 4	Learn the properties and manufacturing of different fibers.	K4
CO 5	Evaluate the methods of yarn manufacturing	K5
CO 6	Create garments or other related products.	K6

PATTERN MAKING

UCDM202

Semester : II **Credit : 1**
Category : Major Core- III **Hours/Week : 2**
Class &Major : I B.Sc Constume Design and Fashion **Total Hours : 26**

Course Objectives

CO No.	To enable the students
CO 1	Introduce pattern making technique as it is a vital tool in creating garments
CO 2	Understand regarding garment pattern blocks and how they relate to human body.
CO 3	Understand the terms and symbols used for development of any pattern.
CO 4	Explain and acquire knowledge on creation of styles, fitting techniques and pattern alteration
CO 5	Gain knowledge in drafting, draping and flat pattern alteration.

UNIT I BODY MEASUREMENTS **5 Hrs**

Importance, Preparation for measuring, Girls and Ladies measurements, Boy's and Men's measurements. Standardizing body measurements, Importance, Techniques used. Relative length and girth measurements.Preparation of standardized measurement chart.

UNIT II DRAFTING **6 Hrs**

Pattern making terminology, Methods of pattern making, Types of paper patterns, Pattern making tools, Steps in drafting Bodice front, Bodice back, Sleeve, Skirt front and back, Collar-one piece peter pan and shirt collar. Dart Manipulation, Technique-Slash and Spread method and Pivotal method. Study of commercial pattern, Merits & Demerits.Preparation of commercial pattern for kids. Fitting – Standards of a good fit, Steps in preparing a blouse for fitting, checking the fit of a blouse.

UNIT III DRAPING **5 Hrs**

Draping -Definition and Meaning, Need for draping, Importance of Draping Technique, Advantages and Disadvantages, Tools and Equipment used for Draping, Preparation of dress form. Importance of grain, preparation of Muslin Material, straightening, tearing and pressing.

UNIT IV GRADING AND PREPARATION OF FABRIC FOR CUTTING **5 Hrs**

Grading, Introduction and importance of grading, Manual Grading of basic bodice – front and back, Sleeve, skirt and Collar, Computerized Grading. Basic terms: Grain, Selvedge, On grain, Off Grain, Off Grain Print, With the Grain, Against the Grain, Importance of Grain in Fabric. Cutting -Preparing the Fabric for Cutting, Methods of straightening fabric ends, Methods of straightening fabric grain, shrinking fabrics.

UNIT V PATTERN ALTERATION AND LAYOUT **5 Hrs**

Importance of altering patterns, Principles for pattern alteration, common pattern alteration in blouse. Pattern layout - Definition, Purpose, Rules in layout, Types of layout and Special layouts. Piecing, transferring pattern markings, *Stay and Ease stitching.

Text Books

- Mary Mathews, (1990). *Practical Clothing Construction- Part I and II*, - Cosmic Press. Chennai.
- Helen Joseph Armstrong. (2014). *Pattern Making for Fashion Design.* 5th edition. India. Dorling Kindersley.
- GayatriVerma, (2006). *Cutting and Tailoring Course*. Asian publishers. New Delhi.
- GayathriVerma, (2015). *Cutting and Sewing Theory for cutting and sewing dress making (combination Edition for semester I & II).* Asian Publishers. New Delhi.

Reference Books

- Helen Joseph-Armstrong. (2006). *Pattern Making for Fashion Design.* Pearson Education Inc.
- Connie Amaden Crawford. (2005). *The Art of Fashion Draping III Edition.* OM Books International.
- Rahul Jewel. (2005). *Encyclopedia of Dress Making.* New Delhi: AP.H Publishing Corporation.
- Hillary Campbell. (2000). *Designing Patterns: A fresh Approach to Pattern Cutting*. Hillary Campbell. Stanley Thornes Publishers Ltd.
- Lori A. Knowles, (2005).The Practical *Guide to Pattern Making for Fashion Designers*. Fair Child, Publications, Inc. New York.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Introduce the methods of pattern making and its alternation.	K1
CO 2	Illustrate different designs and styles for Women's wear.	K2
CO 3	Construct and rephrase basic into modify patterns.	K3
CO 4	Examine suitable fabrics, colors and designs for all patterns.	K4
CO 5	Construct the garment as per the pattern and drafting procedure.	K5
CO 6	Gain knowledge in drafting, draping and flat pattern alteration.	K6

ADVANCED FASHION ILLUSTRATION
UCDR201

Semester : II **Credit : 3**
Category : Major Core – III Practical **Hours/Week : 3**
Class &Major : I B.Sc Constume Design and Fashion **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO 1	Know the drawing methods of fashion figures.
CO 2	Draw the sketching methods of different garments and ornaments
CO 3	Learn the basic techniques of sketching.
CO 4	Select the apparel using color harmony and types of charts.
CO 5	Find the human body in proportions relevant to fashion illustration

Illustrate the Particulars

1. Practicing different types of brush pens, strokes, colour and medium
2. Practicing different accessories for men and women - footwear, hats, bags, goggle and jewellery.
3. Practicing with geometric shapes for human figure drawing and postures.
4. Structuring the human figure using geometric shapes
5. Rendering different textiles including ornamentation - print, embroidery, sequins, lace, trims
6. Sketching different garment components –Necklines, Collars, Sleeves, Skirt and Pants
7. Practicing fashion figures with proportions and dynamic poses
8. Practicing flat sketches for different clothing - gender wise/age group wise
9. Drawing Stick, flesh and Free hand croquis for Boy / Girl, Men / Women.
10. Practicing fullness with any three kid/female/male garments
11. Garment designing with croquis templates for male and female with formal wear and casual wear

Text Books

- Debra Kauffman Yaun. William Powell. Ken Goldman. Walter Foster. (2012). *Art of Drawing People: Discover simple techniques for drawing a variety of figures and portraits.* Reprint. Walter Foster Pub. USA.
- Liron Yanconsky. (2014). *How to sketch: A Beginner's Guide to Sketching Techniques, Including Step by Step Exercises, Tips and Tricks*. (1st ed.,). Create Space Independent Publishing Platform. US.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Select the apparel using color harmony and types of charts.	K1
CO 2	Illustrate the apparel design for elements of designs	K2
CO 3	Classify the sketches of clothing items on the human body	K3
CO 4	Find the human body in proportions relevant to fashion illustration.	K4
CO 5	Select the apparel using color harmony and types of charts	K5
CO 6	Sketch the basic shadings and fashion figures.	K6

KIDS APPAREL

UCDR201

Semester : II **Credit : 2**
Category : Major Core Practical **Hours/Week : 3**
Class &Major : I B.Sc Constume Design and Fashion **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO 1	Understand the patterns for all kind of designs for kidswear
CO 2	Learn the drafting procedure for children’s wear.
CO 3	Suggest suitable fabrics, colors and designs for all patterns.
CO 4	Construct basic and modify pattern techniques.
CO 5	Create different types of patterns for children.

1. Designing, drafting and constructing the following garments with the given features.
2. Construction of the garments based on any theme with specification sheet
3. Material requirements
4. Required measurements – Direct measurement method
5. Cost Calculation of the garment.

CONSTRUCT THE FOLLOWING GARMENTS:

1. **JUST BORN SET- JABLA, PANTY AND BIB** – with /without sleeve, with opening
2. **HEAD CAP, GLOVES, and BOOTIES** – with elastic /card.
3. **SHRUG -** any type of sleeve, Neckline Variations with or without collar / **PONCHO** with decorative hemline.
4. **ROMPER** - knickers or panty attached, with center front/ back opening, neckline – French binding.
5. **YOKE FROCK** - yoke at chest line, with opening, any type of sleeve, and skirt with fullness, Neckline Variations- shaped and decorative facing with collar.
6. **T-SHIRT** – with / without placket, collar, sleeve- kimono /circular
7. **KNICKER** - elastic waist, side pocket / bound pocket
8. **MIDI** - gathered, layered or pleated skirt
9. **MIDI TOPS** – Variation in neckline, collar - rippled / turtle neck, and sleeve

Text Books

- Alison Smith, (2009). *The Sewing Book*.Britain: Darling Kindersley Ltd.
- K R Zarapker,(2005). *Zarapkar System of Cutting,* Navneet publications. New Delhi.
- Raul Jewel, (2005).*Encyclopedia of Dress Making*. A.P.H. Publishing Corporation. New Delhi.

Reference Books

- GayatriVerma & Kapil Dev. (2005).*Cutting and Tailoring Course* New Delhi :Asian Publishers.
- Bety Hose good. (2003). New Edition, *The Complete Book of Sewing*. London: Dorling Kindersley Limited.
- Pleasant Ville. (2004). *Reader's Digest Sewing Guide Complete Guide for Sewing, 13th Edition*. The Reader's Digest Association Inc.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Understand the patterns for all kind of designs for kidswear	K1
CO 2	Illustrate different designs and styles for children's.	K2
CO 3	Construct basic and modified patterns.	K3
CO 4	Examine suitable fabrics, colors and patterns for designs	K4
CO 5	Construct the garment as per the pattern and drafting procedure.	K5
CO 6	Summarize the cost calculation for the garment	K6

APPAREL MARKETING

UCDA201

Semester : II **Credit : 3**
Category : Allied - II **Hours/Week : 4**
Class &Major : I B.Sc Constume Design and Fashion **Total Hours : 52**

Course Objectives

CO No.	To enable the students
CO 1	Understand the concepts of marketing
CO 2	Understand the national brands and private labels.
CO 3	Learn about environmental trends
CO 4	Expose export marketing and documentation.
CO 5	Gain knowledge about marketing, merchandising, presentation and export marketing.

UNIT-I: MARKETING **13 Hrs**

Marketing concepts -definition, apparel and fashion. Marketing - planning, apparel market, environment - micro and macro marketing, environment trends. Apparel market and segments.

UNIT-II: CONSUMER BEHAVIOUR IN APPAREL AND FASHION MARKET 13 Hrs

Consumer behavior in apparel and fashion market-fashion buyer-decision making-Psychological and sociological aspects- Product planning and development of new product. Apparel and fashion market practices and procedures.

UNIT-III: DIGITAL MARKETING **13 Hrs**

Digital-Introduction, Digital marketing-Definition and Function, Classifications of digital marketing.

E-Marketing definition, Types of E- marketing- E-mail marketing, Social media marketing, Video marketing, Article marketing, Affiliate marketing, Advantages of E-marketing, Efficiency of E- marketing.

UNIT-IV: EXPORT MARKETING **13 Hrs**

Export marketing- Introduction, Features, Distinguish between Domestic & International marketing, Buyer's online portals- Introduction ,Online portals used for Indian exports business, Export terms, Export pricing, Export costing. Advantages of exports in Indian economy(Textile industry) .

UNIT-IV: EXPORT DOCUMENTATION **13 Hrs**

Regional trade documents, Foreign Trade Documents, Regulatory Documents, Commercial Documents # Letter of Credit Contract Terms and Export Documents,Nature of Foreign Exchange market,Cost differences,Trade and Tariffs.

Text Books

- Jeevanandam.C. (2005). *Foreign Trade.(* 1st Ed.,) Sultan Chand and Sons. New Delhi.
- Joshi.P. (2006). *Apparel and Textile Exports.* CBS Publishers. New Delhi.
- Philip Kotler & Armstrong. (2015). *Marketing Management.* Pearson Prentice Hall.
- Alan Charlesworth**.** (1996). *Digital Marketing A Practical Approach*. (3rd ed.,)UK.
- BalagopalTAS. (2005). *Export Marketing.* Himalayan Publishing House.

Reference Books

- Francis Cherunilam.*(2007). International Trade and Export Management*. HPH, Govt.of India's Foreign Trade Policy.
- George.E.Belch. Michael.B.Belch. (1995). *Introduction To Advertising And Promotion-An Intergrated Marketing Communication Prespective.* Richard. Irwin. inc. 1995.
- Aron Levin. (2020). *Influencer marketing for Brands What Youtube and Instagram can teach you about the future of Digital marketing.* Sweden.

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Understand the apparel market and environment.	K1
CO 2	Describe the apparel market and environment.	K2
CO 3	Formulate the promotional strategies.	K3
CO 4	Collect export marketing and documentation.	K4
CO 5	Analyze the target market and manage the marketing mix.	K5
CO 6	Create the new directions for marketing.	K6

SURFACE EMBELLISHMENT

UCDR203

Semester : II **Credit : 3**
Category : Allied Practical – I **Hours/Week : 3**
Class &Major : I B.Sc Costume Design and Fashion **Total Hours : 39**

Course Objectives

CO No.	To enable the students
CO 1	Introduce various techniques of fabric manufacturing.
CO 2	Understand the different types of embroidery stitches.
CO 3	Manipulate the basic techniques in order to enhance the fabric surface.
CO 4	Trace a design and convert to fabric.
CO 5	Develop Creative Samples to work as a Surface Designer in Fashion Industry

Illustrate the Particulars

1. Introduction and origin of embroidery - general rules for hand embroidery.
2. Selection of needle, threads and fabrics for embroidery.
3. Development on basic temporary and permanent hand stitches used for various garments.
4. Practice of hand embroidery stitches- running, couching, button hole, satin, long & short, wheat, chain, stem, herringbone, cross stitch, knotted stitches, fish bone etc.
5. Practice Indian traditional embroideries – Phulkari, Kasuti, Kashmiri embroidery, kutch work, chikkankari, kantha, tribal embroideries- stitches, designs, colors and materials used.
6. Development of design/motif/ to the garments through fabric painting
7. Developments of motif and logo using hand embroideries/paintings
8. Design and development of theme based pillow /cushion /bolster cover using hand embroidery.
9. Create a product using cut work/ drawn thread work.
10. Develop tassel, pompom in the saree.

Text Books

- Carne Griffiths. (2019). *The Organic Painter: Learn to paint with tea, coffee, embroidery, flame, and more: Explore Unusual Materials and Playful Techniques to Expand your Creative Practice*. Quarry Books.
- Joan Nicholson. (2011). *Contemporary Embroidery Design.*

Course Outcomes

CO No.	The student will be able to	Cognitive Level
CO 1	Understand the different types of embroidery stitches.	K1
CO 2	Understand the stitches create by hand	K2
CO 3	Understand how to trace a design and convert to fabric.	K3
CO 4	Acquire practical knowledge in advance and surface embroidery.	K4
CO 5	Make creative designs in embroidery and prepare dresses by using those embroidery stitche	K5
CO 6	Elaborate the techniques of create the different stitch with hand.	K6

III & IV Evaluation Components of CIA

Semester	Category	Course Code	Course Title	Component III	Component IV
I	Major Core I	UCDM101	Fundamentals of Fashion Design	Assignment	Seminar
	Allied - I	UCDA101	Indian Costumes and Textiles	Assignment	Seminar
	Major Core Practical - I	UCDR101	Fashion Illustration Practical	Exhibits	Exhibits
	Major Core Practical - II	UCDA102	Basics of apparel Construction Practical	Exhibits	Exhibits
II	Major Core II	UCDM201	Fibre and Yarn Manufacturing	Assignment	Seminar
	Major Core III	UCDM202	Pattern Making	Assignment	Seminar
	Major Core Practical III	UCDR201	Advance Fashion Illustration	Exhibits	Exhibits
	Major Core Practical IV	UCDR202	Kids Apparel	Exhibits	Exhibits
	Allied -II	UCDA201	Apparel Marketing	Assignment	Seminar
	Allied – II Practical	UCDR203	Surface Embellishment	Exhibits	Exhibits

INTERNAL QUALITY ASSURANCE CELL

1. OBE : CIA / ESE QUESTION PAPER (WITH EFFECT FROM 2022 – 2023 ONWARDS)

QUESTION PAPER SETTING WITH RBT LEVEL FOR UG

CONTINUOUS INTERNAL ASSESSMENT (CIA) TEST - I

Duration : 2 Hrs **Max.Marks : 50**

Section	Total No. of questions	To be Answered	Total Marks	Category		
				Course Outcomes	No. of Questions	Blooms Level
A	10 (MCQ)	ALL the questions	10 X 1 = 10	CO1	3 2	K1 K2
				CO2	3 2	K1 K2
B	5 (Descriptive)	Any FOUR 200 words/ 2 pages per question	4 x 5 = 20	CO1	1 1	K1/K2 K3/K4
				CO2	1 1	K1/K2 K3/K4
				CO1/CO2	1	K5/K6 (Compulsory Question)
C	3 (Descriptive)	All the questions each in 500 words/ 4 pages per question	2 x 10 = 20	CO1	1	K3
				CO2	1	K4
				CO1/CO2	1	K5/K6

CONTINUOUS INTERNAL ASSESSMENT (CIA) TEST - II

Duration : 2 Hrs **Max.Marks : 50**

Section	Total No. of questions	To be Answered	Total Marks	Category		
				Course Outcomes	No. of Questions	Blooms Level
A	10 (MCQ)	ALL the questions	10 X 1 = 10	CO3	3 2	K1 K2
				CO4	3 2	K1 K2
B	5 (Descriptive)	Any FOUR 200 words/ 2 pages per question	4 x 5 = 20	CO3	1 1	K1/K2 K3/K4
				CO4	1 1	K1/K2 K3/K4
				CO3/CO4	1	K5/K6 (Compulsory Question)
C	3 (Descriptive)	All the questions each in 500 words/ 4 pages per question	2 x 10 = 20	CO3	1	K3
				CO4	1	K4
				CO3/CO4	1	K5/K6

Note: K1-Remembering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

END SEMESTER EXAMINATION (ESE)

Duration : 3 Hrs **Max.Marks : 70**

Section	Total No. of questions	To be Answered	Total Marks	Category		
				Course Outcomes	No. of Questions	Blooms Level
A	15 (MCQ)	ALL the questions	15 X 1 = 15	CO1	2 1	K1 K2
				CO2	2 1	K1 K2
				CO3	2 1	K1 K2
				CO4	2 1	K1 K2
				CO5	2 1	K1 K2
B	7 (Descriptive)	FIVE Questions 200 words/ 2 pages per question	5 x 5 = 25	CO1	1	K1/K2
				CO2	1	K1/K2
				CO3	1	K3/K4
				CO4	1	K3/K4
				CO5	1	K5/K6
				CO1/CO2/CO3	1	K1/k2/K3
				CO4/CO5	1	K5/k6 (Compulsory Question)
C	3 (Descriptive)	ALL the questions each in 500 words/ 4 pages per question	3 x 10 = 30	CO1/CO2	1	K1/K2
				CO3/CO4	1	K3/K4
				CO5	1	K5/K6

QUESTION PAPER SETTING WITH RBT LEVEL FOR PG
CONTINUOUS INTERNAL ASSESSMENT (CIA) TEST - I

Duration : 2 Hrs **Max.Marks : 50**

Section	Total No. of questions	To be Answered	Total Marks	Category		
				Course Outcomes	No. of Questions	Blooms Level
A	10 (MCQ)	ALL the questions	10 X 1 = 10	CO1	3 2	K1 K2
				CO2	3 2	K1 K2
B	5 (2 marks)	ALL the questions 50 words/ 5 lines per question	5 x 2 = 10	CO1	2 3	K1 K2
				CO2	2 3	K1 K2
C	2 (Descriptive)	ALL the questions 200 words /2 pages per question	2 x 5 = 10	CO1	1	K1/K2
				CO2	1	K3/K4
				CO1/CO2	1	K5/K6 (Compulsory Question)
D	2 (Descriptive)	ALL the questions 500 words / 5 pages per question	2 x 10 = 20	CO1 CO1 CO2 CO2	1 1 1 1	K3 / K4 K4 / K6 K3 / K4 K5 / K6

Note: K1-Remembering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

CONTINUOUS INTERNAL ASSESSMENT (CIA) TEST – II

Duration : 2 Hrs **Max.Marks : 50**

Section	Total No. of questions	To be Answered	Total Marks	Category		
				Course Outcomes	No. of Questions	Blooms Level
A	10 (MCQ)	ALL the questions	10 X 1 = 10	CO3	3	K1
					2	K2
				CO4	3	K1
					2	K2
B	5 (2 marks)	ALL the questions 50 words/ 5 lines per question	5 x 2 = 10	CO3	2	K1
					3	K2
				CO4	2	K1
					3	K2
C	2 (Descriptive)	ALL the questions 200 words /2 pages per question	2 x 5 = 10	CO3	1	K1/K2
				CO4	1	K3/K4
				CO3/CO4	1	K5/K6 (Compulsory Question)
D	2 (Descriptive)	ALL the questions 500 words / 5 pages per question	2 x 10 = 20	CO3	1	K3 / K4
				CO3	1	K5 / K6
				CO4	1	K3 / K4
				CO4	1	K5 / K6

END SEMESTER EXAMINATION (ESE)

Duration : 3 Hrs **Max.Marks : 70**

Section	Total No. of questions	To be Answered	Total Marks	Category		
				Course Outcomes	No. of Questions	Blooms Level
A	10 (MCQ)	ALL the questions	10 X 1 = 10	CO1	1	K1
					1	K2
				CO2	1	K1
					1	K2
				CO3	1	K1
					1	K2
				CO4	1	K1
					1	K2
				CO5	1	K1
					1	K2
B	7 (2 marks)	Any FIVE questions 50 words/ 5 lines per question	5 x 2 = 10	CO1	1	K1
				CO2	1	K1
				CO3	1	K2
				CO4	1	K2
				CO5	1	K2
				CO1/CO2	1	K1/K2
				CO3/CO4/CO5	1	K1/K2
C	5 (Descriptive)	ALL the questions 200 words /2 pages per question	5 x 4 = 20	CO1	2	K1/ K2
				CO2	2	K2/ K3
				CO3	2	K3/ K4
				CO4	2	K3/K4
				CO5 (Compulsory Question)	2	K5/ K6 (Compulsory Question)
D	3 (Descriptive)	ALL the questions 500 words / 5 pages per question	3 x 10 = 30	CO1	1	K1/K2
				CO2	1	K3/ K4
				CO3	1	K1/K2
				CO4	1	K3/K4
				CO5	1	K3/K4
				CO5	1	K5/K6

2. GUIDELINES FOR RESEARCH PUBLICATIONS

(a) The TACW follows the UGC norms for research articles and accepts Journals indexed with UGC Care as the minimum standard for publishing in a journal with high index and high impact factor (We expect our research fraternity to aim higher)

(b) The primary responsibility of the Research Supervisor is to ensure the quality, authenticity and originality (absence of unacceptable plagiarism) of any research/ review article.

(c) Articles published in cloned/ predatory journals will not be accepted and may also invite punitive action against the Candidate. Due diligence is to be exercised before submitting a paper to any journal.

(d) Repeated submissions to such journals may lead to the assumption that the Supervisor is not monitoring the publication process and may invite punitive action against the Supervisor.

(e) For award of Ph.D. a candidate has to publish two research articles related to her research topic / award of M.Phil. a candidate has to publish one research article related to her research topic.

(f) For award of B.Sc,/M.Sc., a candidate shall publish one research article related to her research topic

(g) Review Article(s) related to the Ph.D. work **may be accepted for course work** (on the recommendation of Faculty Research Committee) but will **not fulfill the publications requirements** for award of Ph.D. to the Candidate.

(h) Review/ research article(s) **not related to the research topic** shall count towards the Faculty's total research output but will **not fulfill the publications requirements** for award of Ph.D. to the Candidate.

(i) **Authorship:**

- **First Author:** The student from whose work the research/ review article has been written shall be the First Author.
- **Last Author:** The Supervisor shall be the Last Author **and also the Corresponding Author. Student will not be the corresponding author.** This will ensure due credit to the Supervisor as well as quality control of paper.
- Authors in between the First Author (Student) and the Last Author (Supervisor) shall be arranged in a sequence proportionate to their contribution to the work being published in the paper
    a. Corresponding author position should be always in the last (if complete research work is carried out in the TACW)

b. In case of equal contribution of two corresponding authors, TACW author position should be listed before the corresponding author in the authors list (if partial research work is carried out in the TACW)

c. There will not be any consideration for more than two corresponding authors (TACW) since it is difficult to identify the author & contributions and takes away the credits of all authors in the publication.]

- Bogus authorship or gift authorship to people working at the same place or inthe same laboratory but who are not contributors to the work being published is to be avoided.
- Prefixes like Prof./ Associate Prof./ Asst. Prof./ Dr./ Mr./ Ms./ Mrs. are not to be put in front of the name in the paper.

(j) Affiliation:

The affiliation to TACW shall be written in full as, **Department of _____, Faculty of _____, Theivanai Ammal college for women(A), Villupuram, Tamilnadu, INDIA.**

For example:

Arun Kumar[1], Jaya Pandey[2], Ankur Nigam[1], Hari Om Sharan[1*]

[1] Department of ----------, Theivanai Ammal college for women(A), Villupuram, Tamilnadu, India-605401.

For example:

[2] Centre for Physics, IIT Delhi, New Delhi, INDIA.

*__Corresponding author:__ principal @tacw.in

Note: Authors should follow the journal's style for writing the name (e.g., A. Kumar/ Kumar A/ Arun Kumar/ Arun K etc.). This guideline illustrates only the order of authorship and establishing the corresponding author of the paper.

Science Departments:

The faculty is advised to do project and they should be invariably acknowledge the usage of DST FIST lab in the upcoming paper publications.

Acknowledgements

The author gratefully acknowledges the Theivanai Ammal College for Women (A), Villupuram, Tamilnadu, India for providing the DST-FIST lab.

III. ESE ANSWER SCRIPT VALUATION FOR THE COURSE PROFESSIONAL ENGLISH

Professional English course is introduced to assess the language skills of the students in their profession as per TANSCHE guidelines. Exemptions can be given for this course in ESE question paper setting and valuation of the answer scripts with Internal Teacher instead of external.