Course Code	Title		
23U1TAM101	Part - I : Elanthamizh (இளந்தமிழ்)		
Semester: I	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
Course Objective	மொழி இலக்கியத்தின் வாயிலாக அறம் சார் பண்பு மற்றும் ஆளுமைமிக்க மாணவர்களை உருவாக்குதல்.		
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)		
Development Needs	Regional (உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)		
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல் மற்றும் உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	சங்க இலக்கியங்கள் வாயிலாக சமூகச் சீர்திருத்தச் சிந்தனைகள் பெறப்படும்.	விரிவுரை/ காணொளிப்பட விளக்கம்	ஒப்படைவு
CO 2	அற இலக்கியங்களின் வழி தமிழர்களின் வாழ்வியல் பண்புகளைக் கற்று அறிதல்.	விரிவுரை	குழுத்திட்டம்
CO 3	பெண்ணியக் கவிஞர்களின் படைப்புத்திறனை மாணவர்களுக்கு உணர்த்துதல்	விரிவுரை/ காணொளிப்பட விளக்கம்	கருத்தரங்கு
CO 4	சிறுகதைகளின் வழி சமூக கருத்துகளை மாணவர்களுக்கு அறிவுறுத்தல்	விரிவுரை / குழு விவாதம்	ஒப்படைவு
CO 5	தமிழ் இலக்கிய வரலாற்றுத் திறனை வளர்த்தல்	விரிவுரை/ குழு விவாதம்	கருத்தரங்கு

Offered by தமிழ்த்துறை

Course Content : Elanthamizh (இளந்தமிழ்) — **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	சங்க இலக்கியம்	1. ஐங்குறுநூறு 2. பதிற்றுப்பத்து 3. பத்துப்பாட்டு - முல்லைப்பாட்டு 4. சிறுபாணாற்றுப்படை	கிள்ளைப்பத்து (281-290) பாடல்கள் இரண்டாம் பத்து (11-15 ஐந்து பாடல்கள்) முல்லைப்பாட்டு முழுவதும் (1-103 வரிகள்) சேரநாட்டின் வளமை
		Instructional Hours	**12 Hours**
Suggested Learning Methods: நாடக முறையில் கலந்துரையாடல்			
II	அற இலக்கியம் நீதிநூல்கள்	1. அறன் வலியுறுத்தல் 2. புகழ் 3. வாய்மை 4. நாலடியார்-பொருட்பால் 5. நான்மணிக்கடிகை	31 - 40 குறட்பாக்கள் 231 - 240 குறட்பாக்கள் 291 - 300 குறட்பாக்கள் 11 ஆவது அதிகாரம் (கூடா நட்பு 1-10) முதல் ஐந்து பாடல்கள்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : கலந்துரையாடல்			
III	பெண்ணியக் கவிதைகள்	1. ஆண்டாள் பிரியதர்ஷினி 2. கவிஞர் இளம்பிறை 3. சுகிர்தராணி 4. அ. வெண்ணிலா	பூச்சி வாழ்க்கை- சுயம் பேசும் கிளி தொட்டிச்செடி அம்மா நீரில் அலையும் முகம்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : புதுக்கவிதை எழுதும் திறன் பெற்றமை			

IV	சிறுகதைகள்	1. குட்டி ரேவதி 2. ஜெயமோகன் 3. ச.தமிழ்ச்செல்வன் 4. வண்ணநிலவன் 5. உமாமகேஸ்வரி	நிறைய அறைகள் உள்ள வீடு யானை டாக்டர் வெயிலோடு போய் எஸ்தர் மரப்பாச்சி
		Instructional Hours	**12 Hours**
Suggested Learning Methods : சிறுகதை படைக்கும் திறன் பெற்றமை			
V	தமிழ் இலக்கிய வரலாறு	1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் 2. சிறுகதையின் தோற்றமும் வளர்ச்சியும் 3. படிமம், குறியீடு பற்றிய – விளக்கம்	தமிழ் இலக்கிய வரலாறு
		Instructional Hours	**12 Hours**
Suggested Learning Methods : குழு விவாதம்			
		Total Hours	**60 Hours**

Text Books	இளங்கலை முதலாம் ஆண்டுத்தமிழ் மாணவர்களுக்குரிய பாடநூல்"**இளந்தமிழ்"** தொகுப்பு: தமிழ்த்துறை ,நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	சங்க இலக்கியம் - உரையாசிரியர் ஒளவை. துரைசாமிப்பிள்ளை, பதிப்பாசிரியர்கள் இரா.இளங்குமரனார், முனைவர்.பி.தமிழ்மகன், தமிழ்மண் அறக்கட்டளை, சென்னை.17. நிறைய அறைகள் உள்ள வீடு - குட்டிரேவதி எழுத்து பிரசுரம், 11மாடல் நகர், 10-ஆவது வீதி, சென்னை.
Web. URLs	https://youtu.be/2SMM5LvZYo0

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
4	4	5	2	2	3	20

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	-	H	H	M	H	L	M	M	L	M
CO2	-	-	M	-	H	L	H	H	M	M	L	L	M
CO3	-	-	L	-	M	M	H	H	M	L	L	M	M
CO4	-	-	**H**	-	**H**	**M**	**M**	**L**	L	M	M	L	L
CO5	-	-	**H**	-	**H**	**L**	**H**	**H**	M	M	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh kumar	Dr. A. Sridevi

Course Code			
23U1HIN101	Part - 1 - Rachnathmak Hindi (रचनात्मक हिंदी)		
Semester: I	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
(Common to all UG Programmes)			
Course Objective	हिंदी भाषा का अच्छा ज्ञान प्राप्त करने के लिए।		
Course Category	Skill Development		
Development Needs	Regional		
Course Description	Improves Accuracy & Quality, Improves Communication Skillls		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	नाटक से रचनात्मकता का विकास होता है। यह हमारे आसपास की दुनिया को समझने में भी मदद करता है।	Lecture / Video Methods	Assignment
CO 2	कहानियां छात्रों की कल्पना और जिज्ञासा को जगाने में मदद करती हैं।	Case Studies	Group Project
CO 3	व्याकरण हिंदी भाषा को सही ढंग से बोलने, लिखने और समझने में मदद करता है। विज्ञापन लेखन और कहानी लेखन छात्रों को उनके रचनात्मक लेखन और कल्पना शक्ति को विकसित करने में मदद करेगा।	Lectures / Video Lessons	Seminar
CO 4	अनुवाद सभी लोगों के बीच प्रभावी संचार को सक्षम बनाता है।	Lecture / Video Methods	Assignment
CO 5	गद्यांश लेखन लिखित पाठ के सार को समझने और संदर्भ के आधार पर आपके निष्कर्षों का अनुमान लगाने में आपकी बुद्धिमत्ता का आकलन करता है।	Lecture / Dumb Charades	Seminar

Offered by	Hindi

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	नाटक लड़ाई - 1979 - सर्वेश्वर दयाल सक्सेना	1	All
		Instructional Hours	12
Suggested Learning Methods : Visual Learning			
II	कहानी - 1. मजबूरी' - मन्नू भंडारी 2. ठाकुर का कुआँ - मुंशी प्रेमचंद 3. चीफ की दावत - भीष्म साहनी 4. भोलाराम का जीव -हरिशंकर परसाई	1	1 to 4
		Instructional Hours	12
Suggested Learning Methods : Auditory			
III	1. अनुप्रयुक्त व्याकरण - संज्ञा, सर्वनाम, क्रिया और विशेषण की पहचान करना। 2. विज्ञापन लेखन 3. दिए गए संकेतों से कहानी लेखन।	1	1,2,3

		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			
IV	**अनुवाद : अंग्रेज़ी से हिंदी (अनुवाद अभ्यास - 3) 1 - 10 अनुच्छेद**	3	1,2
		Instructional Hours	12
Suggested Learning Methods : Auditory, Visual			
V	पारिभाषिक शब्दावली , गद्यांश लेखन	5	1,2
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			
		Total Hours	**60**

Text Books	1. नाटक लड़ाई - 1979 - सर्वेश्वर दयाल सक्सेना 2. 2. कहानी संग्रह 3. अनुवाद अभ्यास - 3 दक्षिण भारत हिंदी प्रचार सभा , चेन्नई -17 4. Bharatdarshan.co.nz 5. भाषाशास्त्र का पारिभाषिक शब्द कोश - राजेंद्र द्विवेदी 6. श्री रामदेव , व्याकरण प्रदीप, लोक भारती प्रकाशन, इलाहाबाद
Reference Books	संदर्भ ग्रंथ 1. हिंदी नाटक और रंगमंच - डॉ राम कुमार वर्मा 2. हिन्दी अलोचना की परीभाषिक शब्दावली - पेपरबैंक 3. आधुनिक हिंदी व्याकरण और रचना - डॉ. वासुदेव नंदन प्रसाद
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	M	L	-	-	L	L	M	M	M
CO2	-	-	H	L	L	H	-	-	L	L	M	M	M
CO3	-	-	-	L	M	H	-	-	M	M	M	M	M
CO4	-	-	M	M	H	L	-	-	L	L	M	M	M
CO5	-	-	L	M	H	L	-	-	M	M	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr.S.Swarnalatha	Dr.S.Swarnalatha

Course Code			
23U1MAL101	**Part - I : Kadhayum Samskaaravum (കഥയും സംസ്കാരവും)**		
Semester: I	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**

(Common to all UG Programmes)

Course Objective	ആധുനികകാലത്തെ മലയാളകഥകളെ കുറിച്ചും സംസ്കാരത്തെ കുറിച്ചും അവബോധം ഉണ്ടാക്കുന്നു
Course Category	Skill Development
Development Needs	Regional
Course Description	Improve accuracy & quality, improve communication

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	കഥയുടെ സംവേദനം ആസ്വാദകന്റെ അഭിരുചിയെ പൂർത്തിയാക്കുന്നു	Lecture / Video Methods	Assignment
CO 2	പ്രകൃതിയുമായി ബന്ധപ്പെടുന്ന കഥാപരിസരം	Case studies	Group Project
CO 3	ഭക്ഷണവും അതിന്റെ സംസ്കാരവും കൂട്ടായ്മ ഉണ്ടാക്കുന്നു	Lectures / Video Lessons	Seminar
CO 4	ഭക്ഷണത്തിന്റെ മൂല്യം അർത്ഥവത്താക്കുന്നു	Lecture / Video Methods	Assignment
CO 5	ആശയ വിപുലനം	Lecture / Dumb Charades	Seminar

Offered by | **Malayalam**

Course Content | **Instructional Hours / Week : 4**

Unit	**Description**	**Text Book**	**Chapters**
I	ചെറുകഥകൾ - സമകാലിക കഥകൾ 1. പരുന്ത് - ഇ.സന്തോഷ്കുമാർ 2. പാലാഴിമഥനം - കെ.രേഖ 3. കുളവാഴ - വി .എം .ദേവദാസ് 4. മരണമുണ്ടാക്കിക്കളിക്കാം - പി .വി ഷാജികുമാർ 5. കക്കുകളി - ഫ്രാൻസിസ് നൊറോണ	1	1 to 5
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			
II	നവോത്ഥാനകഥകൾ 1. വെള്ളപ്പൊക്കത്തിൽ - തകഴി 2. ബസു യാത്ര - കേശവദേവ് 3. മരപ്പാവകൾ - കാരൂർ 4. മാണിക്കൻ - ലളിതാംബിക അന്തർജനം 5. ജന്മദിനം - ബഷീർ	1	6 to 10
		Instructional Hours	**12**
Suggested Learning Methods : Auditory			
III	സംസ്കാര പഠനം - കേരളത്തിലെ രുചിഭേദങ്ങൾ 1. കാസർകോടും കന്നയാളവും ദൈവവിപ്ലവത്തിന്റെ കണ്ണൂരും	1	1,2,3

	2. സാമൂതിരി ,മുട്ടമാല ,എരന്ത് ,ബ്രാഹ്മണാൾ -(കോഴിക്കോട്) 3. മലപ്പുറം കേരളത്തിൻറെ അറേബ്യ		
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			
IV	സംസ്കാര പഠനം - കേരളത്തിലെ രുചിഭേദങ്ങൾ 1. ചേട്ടായിയെ ഇത് ശൂരാട്ടാ - തൃശ്ശൂർ 2. കരിമ്പനകളുടെ നാട്ടിൽ - പാലക്കാട്	1	4,5
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual			
V	നവമാധ്യമങ്ങൾ - വിവർത്തനം	1	1,2,3
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			
		Total Hours	**60**

Text Books	1. ചെറുകഥകൾ - (10 ചെറുകഥകൾ) 2. സംസ്കാര പഠനം - നാടൻ കേരള എക്സ്പ്രസ്സ് ഡോ.സി. ഗണേഷ്, ഗ്രീൻ ബുക്ക്സ് തൃശ്ശൂർ 3. നവമാധ്യമങ്ങൾ - ടി.കെ .സന്തോഷ്കുമാർ ഡി.സി.ബുക്ക്സ് കോട്ടയം
Reference Books	1. എം. അച്യുതൻ - ചെറുകഥ ഇന്നലെ ഇന്ന് - ഡി.സി.ബുക്സ് കോട്ടയം 2. ചെറുകഥയുടെ ഛന്ദസ്- വി. രാജകൃഷ്ണൻ മാതൃഭൂമി ബുക്സ് കോഴിക്കോട് 3. പുതിയ കഥ പുതിയ വായന - എഡി : ഡോ.ഷീബാ ദിവാകരൻ പുസ്തകലോകം പ്രസദ്ധീകരണം കോഴിക്കോട് 4. കേരള സംസ്കാരം - എ .ശ്രീധര മേനോൻ നാഷണൽ ബുക്ക്സ് കോട്ടയം 5. ന്യൂസ് റൂമിന്റെ അകവും പുറവും - ബി.ആർ .പി.ഭാസ്കർ ഗ്രീൻ ബുക്ക്സ് തൃശ്ശൂർ
Web. URLs	**http://www.keralaculture.org>literature**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO 5
CO1	H	H	H	M	H	H	H	H	L	L	M	M	M
CO2	H	H	H	L	H	M	H	H	M	M	M	M	M
CO3	H	M	H	M	M	H	H	M	M	M	M	M	M
CO4	H	H	L	M	L	H	H	H	L	M	M	M	M
CO5	H	L	L	L	H	H	H	L	M	M	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. N. RAJANI	Dr. SMITHA C. R.

Course Code	Title		
23U1FRN101	Part - I : Le Français Fondamental - I		
Semester : I	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	Acquisition of standard French through fundamental French grammar.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	This course has basic knowledge of the French grammar and aims to build a solid foundation in the acquisition of standard French through fundamental French grammar		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Learn basic French grammar along with French civilisation	Lecture	Assignment
CO 2	Knows the gender of nouns	Word game/ Lecture	Seminar
CO 3	Learn Negation, articles, and understand the usage of prepositions.	Lectures / Video Lessons	Quiz
CO 4	Learn Futur proche, Pronominal verb,	Tutorial / Case Studies	Assignment
CO 5	Know to self-introduce and translate simple sentences	Lecture /	Group project

Offered by	French

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	Mes cinq sens en action	1	0
		Instructional Hours	12
Suggested Learning Methods: Worksheets , Reading practice			
II	S'ouvrir aux autres	1	1
		Instructional Hours	12
Suggested Learning Methods: Kahoot App, Worksheets			
III	Partager son lieu de vie	1	2
		Instructional Hours	12
Suggested Learning Methods : Audio & Visual, Speaking practice			
IV	Vivre au quotidien	1	3
		Instructional Hours	12
Suggested Learning Methods : Comprehensive Writing			

V	S'ouvrir à la culture	1	4
		Instructional Hours	**12**
Suggested Learning Methods: Translating simple sentences, comprehending the passage.			
		Total Hours	**60**
Text Books	Saison 1 Méthode de Français – Marie-Noëlle Cocton, Anouchka De Oliveira, Dorothée Dupleix (Unit 0 to 4)		
Reference books	A1 Echo Méthode de Français		
Web. URLs	Lingua.com, TV 5 app,		

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	H	H	-	-	L	M	M	L	M
CO2	-	-	H	L	H	M	-	-	M	L	M	M	M
CO3	-	-	-	M	M	H	-	-	L	M	M	M	M
CO4	-	-	L	M	L	H	-	-	M	L	L	M	M
CO5	-	-	L	-	H	-	-	-	L	M	M	L	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Ms. SUNITA. R	Ms. SUNITA. R

Course Code	Title		
23U2ENG101	Part – II : Professional English – I		
Semester : I	Credits : 3	CIA : 20 Marks	ESE : 55 Marks

(Common to all UG Programmes)

Course Objective	To help students to imbibe, develop, practice and use the LSRW skills and fine tune their productive skills.
Course Category	Skill Development
Development Needs	Global
Course Description	SD: Helps to develop LSRW skill

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Recognize listening, and reading proficiency through the prose discourses.	Lecture/Tutorial	Assignment
CO 2	Use and interpret imaginative, and creative skills through the poetic genre.	Lecture/Tutorial	Assignment
CO 3	Enhance the students to use English effectively through short story.	Lecture/Tutorial	Speaking
CO 4	Execute and exercise grammatical skills in academics and career.	Lecture/Tutorial	Reading
CO 5	Evaluate the LSRW skills through literature.	Lecture/Tutorial	Writing

Offered by | **Department of English**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Prose** Leigh Hunt – Getting Up On Cold Morning Rajagopalachari – Tree Speaks A.G. Gardiner – On the Rule of the Road **Listening Activity** – Comprehension practice from Prose.	1	1-3
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			
II	**Poetry** John Milton – On His Blindness Maya Angelou -Phenomenal Women A. K. Ramanujan – A River **Speaking Activity** – Group Discussion Forum	1	4-6
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			

III	**Short Stories** O. Henry – The Last Leaf R. K. Narayan – The Missing Mail Oscar Wilde - The Happy Prince **Reading Activity** – Pronunciation practice and enhancement from Short-stories	1	7-9
		Instructional Hours	**12**
Suggested Learning Methods : Tutorial			
IV	**Grammar** Parts of Speech Tenses Kinds of Sentences **Writing Activity** – Paragraph Writing using grammar Components	1	10-13
		Instructional Hours	**12**
Suggested Learning Methods : Tutorial			
V	**Writing Skills** Letter Writing (Formal & Informal) Notice, Writing Circular Memo, Advertisement Minutes of the Meeting	1	14-17
		Instructional Hours	**12**
Suggested Learning Methods : ABL			
		Total Hours	**60**

Text Books	Compiled by the Department of English, NASC.
Reference Books	CLIL (Content & Language Integrated Learning) – Module by TANSCHE NOTE: (Text: Prescribed chapters or pages will be given to the students by the department and the college)
Web. URLs	https://www.youtube.com/watch?v=QrUPneyZNf0

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Speaking	Reading	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	H	L	M	M	H	M	H	H	M	H	M
CO2	M	L	H	L	H	M	H	M	H	H	M	H	M
CO3	M	L	H	L	H	H	H	H	H	H	M	H	M
CO4	M	L	H	L	H	L	H	H	H	H	M	H	H
CO5	H	M	H	L	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Mr. Pradeek .D	Dr.R.Malathi

Course Code	Title		
23U3ETC101	Core Paper I : Introduction to Internet of Things		
Semester: I	Credits: 4	CIA: 25 Marks	ESE:75 Marks

Course Objective	To familiarize students with the IoT ecosystem and impart knowledge of the technologies and standards associated with the Internet of Things.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to introduce the concepts, basic networks, predecessors, sensing, and actuation of IoT, along with their applications

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the comprehensive grasp of the fundamental principles and concepts of the Internet of Things	Lecture	Group Discussion
CO 2	Applying the basics of networking and effectively implementing network security measures in IoT systems.	Lecture	Quiz
CO 3	Analyze the predecessors and historical context that contributed to the emergence of IoT technology.	Tutorial / Video Lessons	Seminar
CO 4	Proficient in evaluating and selecting appropriate sensing, actuation, and data processing topologies for specific IoT applications.	Tutorial / Video Lessons	Seminar
CO 5	Apply IoT concepts through the analysis and presentation of relevant case studies from various industry domains.	Tutorial / Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**Fundamental of IoT :** Introduction - Evolution of IoT concept - IoT vision - IoT Definition - IoT basic characteristics - IoT Distinction - IoT General Enablers - IoT Architectures – -Advantages and Disadvantages of IoT	1	1
		Instructional Hours	**15**
Suggested Learning Methods : Tutorial			
II	**Basics of Networking and Network Security :** Network Types - Layered Network Models - Addressing - TCP/IP Transport layer - Security - Network Confidentiality - Cryptography - Message Integrity and Authenticity - Key Management - Internet Security - Firewall.	2	1,2
		Instructional Hours	**15**
Suggested Learning Methods : Group Discussion			

III	**Predecessors and Emergence of IoT :** Introduction - Wireless Sensor Networks - Machine-to-Machine Communications - Cyber Physical Systems -Architectural components of CPS - IoT versus M2M - IoT versus CPS - IoT versus WoT - Enabling IoT and the Complex Interdependence of Technologies – IoT Networking Components - Addressing Strategies in IoT.	2	3,4
		Instructional Hours	**15**
Suggested Learning Methods : Group Discussion			
IV	**IoT Sensing, Actuation and Processing Topologies :** Introduction – Sensors - Sensor Characteristics – Sensorial Deviations – Sensing Types - Sensing Considerations, Actuators - Actuators Types - Actuator Types - Actuator Characteristics - Data Formats - Processing in IoT - Processing Topologies - IoT Device Design and Selection - Considerations - Processing Offloading.	2	5,6
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
V	**IoT Case Studies: Agricultural IoT:** Components of an agricultural IoT - Advantages of IoT in agriculture - Case Studies **Vehicular IoT:** Components of vehicular IoT - Advantages of vehicular IoT **Healthcare IoT** : Components of healthcare IoT - Advantages and risk of healthcare IoT - Case Studies. Evolution of New IoT Paradigms - Challenges Associated with IoT - Emerging Pillars of IoT.	2	12-15
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
		Total Hours	**75**

Text Books	1. Muhammad Azhar Iqbal, Sajjad Hussain, Huanlai Xing, and Muhammad Ali Imran, Enabling the Internet of Things: Fundamentals, Design, and Applications, Published 2021 by John Wiley & Sons Ltd. 2. Sudip Mishra, Anandarup Mukherjee, Arijit Roy: Introduction to IoT, Cambridge University Press.
Reference Book	1. Bassi, Alessandro, et al, "Enabling things to talk", Springer-Verlag Berlin
Web. URL	1. https://onlinecourses.nptel.ac.in/noc17_cs22/course

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	M	M	M	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	M	M	H	M	M	H	H	M	H	H	M	M
CO4	M	H	M	M	H	H	H	M	H	M	H	H	M
CO5	H	H	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETC102	Core Paper II : Digital Electronics and Computer Architecture		
Semester: I	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To make the students familiar with digital circuits and Computer Architecture
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed for digital logic circuits operational understanding and its application design also for understanding computer architecture.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Gain a thorough understanding of number systems and logic gates, enabling you to work confidently with digital data representations and basic logical operations.	Lecture	Group Discussion
CO 2	Apply Boolean algebra concepts and understand the core arithmetic building blocks, allowing you to design and analyze digital circuits effectively.	Lecture	Quiz
CO 3	Develop the skills to design and analyze sequential circuits, including flip-flops and registers, for various applications.	Video Lessons	Seminar
CO 4	Learn to configure and interface computer peripherals, enhancing your ability to work with a wide range of external devices and hardware components.	Tutorial / Video Lessons	Seminar
CO 5	Develop a comprehensive understanding of computer architecture, including its components and their interactions, which will lay the groundwork for advanced studies in this field.	Video Lessons	Assignment

Offered by | **Internet of Things**

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**Number System:** Decimal - Binary - Octal - Hexadecimal – Codes: BCD - Excess3 - Gray Code **Logic Gates**: AND, OR, NOT, XOR, Universal Logic gates - NOR, NAND	1,2	1-2 1-5 2-2 2-3
	Instructional Hours		**15**
Suggested Learning Methods: Tutorial			
II	**Boolean algebra**: Boolean operation – Laws - De Morgan's Theorems - Karnaugh map - Product of sum, Sum of products Simplifications. **Arithmetic Building Blocks**: Half adder - Full adder - BCD adder - Half subtractor - Full subtractor – 4 Bit binary adder	1,2	1-6 2-4
	Instructional Hours		**15**

Suggested Learning Methods: Group Discussion			
III	**Sequential circuits:** Flip-Flops: RS – D - JK and T - Multiplexers - Demultiplexers – Decoder - Encoder – Shift Registers-Counters, D/A and A/D converter	1	1-8 1-9 1-10 1-12
		Instructional Hours	**15**
Suggested Learning Methods : Group Discussion			
IV	**Computer Peripherals:** Introduction – Keyboard – CRT Display monitor – Printer – Magnetic storage devices – Hard disk drive – Optical disk drive – Mouse and Track ball – Modem - Scanner – Digital camera	3	3-11 3-9
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
V	**Architecture:** Introduction – Processor role – Processor design goals – Processor design process – Data path organization – Control unit organization – Instruction sequencing – Hardware and Software interface – CISC vs RISC – Instruction types and Operations – Addressing modes	3	3-3
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
		Total Hours	**75**

Text Books	1. Albert Paul Malvino ,Donald P.Leach, Digital Principles and Applications, Tata McGraw Hill Publications,6th edition 2. Floyd and Jain, Digital Fundamentals, Prentice Hall2010. 3. Govindarajalu.B, Computer Architecture and Organization: Design Principles and Applications, Tata McGraw Hill Publications,2nd edition
Reference Books	1. Thomas L.Floyd, Digital Fundamentals, Prentice Hall, Second edition, 2. M. Morris Mano Charles Kime, Digital Logic and Computer Design Fundamentals, Pearson Education Limited, 2014
Web. URLs	1. https://nptel.ac.in/courses/117106086 2. https://onlinecourses.nptel.ac.in/noc22_cs88/preview

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	H	M	H	H	H	L	L	L	L	L
CO2	M	M	M	H	M	H	H	M	M	M	M	M	M
CO3	H	H	H	H	M	M	M	M	H	H	H	M	M
CO4	H	H	H	H	H	M	H	H	H	H	H	H	H
CO5	H	M	H	M	H	H	H	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. S. Kannan	Dr. M. Sathishkumar

Course Code	Title		
23U3ETP103	Core Paper III : Digital and Computer Hardware Practical		
Semester: I	Credits : 4	CIA: 40 Marks	ESE: 60 Marks

Course Objective	On the successful completion of the course the students will able to design digital circuits and to familiar with computer hardware.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to familiar with logic gates and its design

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Familiar with basic logic gates, demonstrating a comprehensive understanding of their functions and applications.	Circuit Demonstration	Circuit Creativity
CO 2	Implement the design of basic gates using Universal gates, showcasing proficiency in creating logical circuits.	Circuit Demonstration	Circuit Development
CO 3	Design digital circuits, illustrating competence in the conceptualization and implementation of digital systems.	Circuit Demonstration	Circuit Development
CO 4	Familiar with the installation of software relevant to digital circuit design, indicating practical knowledge in software tools and applications.	Installation Demonstration	Installation verification
CO 5	Design of various components of computers, demonstrating a comprehensive comprehension of computer architecture and its constituents.	Assembly Demonstration	Assembly verification
Offered by	**Internet of Things**		

Course Content	Instructional Hours / Week : 4

Program List
(Any 8 Experiments)

1. Realization of Basic Logic Gates.
2. Verification of DeMorgan's Theorems
3. Verification of Boolean laws
4. Universal Gates (NAND & NOR)
5. Design Half-Adder & Full-Adder
6. Installation of printer and scanner software
7. Disassembly and Reassembly of hardware
8. Install, upgrade and configure Windows operating systems.

9. Identify, install and manage network connections Configuring IP address
10. Disk formatting, partitioning and Disk operating system commands

Total Hours	**60**

Tools for Assessment (40 Marks)

Laboratory Performance I	Laboratory Performance II	Laboratory Performance III	Test 1	Test 2	Observation Note Book	Total
5	5	5	10	10	5	40

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	H	M	L	L	L	L	M	L	L	L	L
CO2	H	L	L	H	L	L	M	L	H	L	L	M	L
CO3	M	H	H	M	L	L	M	L	M	L	L	M	L
CO4	H	M	H	L	L	L	L	H	L	L	L	L	H
CO5	H	H	H	L	L	M	L	L	L	L	M	L	L

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. S. Kannan	Dr. M. Sathishkumar

Course Code	Title		
23U3MEA101	Allied Paper I : Applied Mathematics - I		
Semester: I	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To enable the students to learn concepts of Statistical and Numerical Methods used in Computer applications.
Course Category	Skill Development
Development Needs	Regional
Course Description	This course covers a mix of applied linear algebra, Statistics and Numerical Analysis; it covers a central point of contact between Mathematics and Computer science.

Course Outcomes		Teaching Methods	Assessment Methods
CO1	Know the concepts of Matrices and solve the problem for Eigen values and Eigen vectors.	Lectures / Video Lectures	Problem solving Skill
CO2	Understand the Security Techniques and its Architecture	Lectures / Tutorial	Assignment
CO3	Solve Simultaneous Linear algebraic equations.	Lectures / Video Lectures	Seminar
CO4	Relate various formulae in Numerical Differentiation and Integration	Lectures / Peer Teaching	Problem solving Skill
CO5	Evaluate the Measures of central tendency and dispersion.	Lecture / Tutorial	Quiz

Offered by	**Mathematics**

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**Matrices:** Introduction – Types of Matrices –Matrix Operations - Determination – Inverse of a matrix – Rank of a Matrix. Characteristic equation of a Matrix – Condition for consistency- Tests for consistency of linear equation- Eigen values and Eigen vectors – Cayley – Hamilton theorem	1	1- 4
	Instructional Hours		**15**
Suggested Learning Methods: Problem Solving Practice			
II	Introduction to Cryptography: Security trends – The OSI security architecture – Security attacks - Security IV services - Security mechanisms – A model for network security - Symmetric cipher model.	2	1,2
	Instructional Hours		**15**
Suggested Learning Methods: Class Test https://youtu.be/uNzaMrcuTM0			
III	**System of Simultaneous Linear Algebraic Equations:** Gauss Elimination, Gauss Jordon, Gauss Jacobi Method, Gauss Seidal method (up to 3x 3 matrices).	2	9
	Instructional Hours		**15**
Suggested Learning Methods: Problem Solving Practice			

IV	**Numerical Differentiations:** Newton's forward Difference - Backward Difference – Stirling's formula. **Numerical Integration:** Trapezoidal Rule - Simpson's 1/3rd rule& Simpson's 3/8th rule.	3	7,8
		Instructional Hours	**15**
Suggested Learning Methods : Quiz			
V	**Measures of Central Tendency:** Mean Median and Mode – Empirical Relationship between mean, median and mode. **Measures of Dispersion:** Range, Quartile deviation and Standard deviation.	4	1
		Instructional Hours	**15**
Suggested Learning Methods: Problem Solving Practice			
		Total Hours	**75**

Text Books	1. P. Kandasamy and Thilagavathy, Mathematics for B.Sc. Branch I – Vol.II (For B. Sc-I semester), S.Chand and Company Ltd, New Delhi, 2004. Unit I- Chapters 1,2,3,4 - Pg.No : 03-972. 2. William Stallings, Cryptography and Network Security Principles and Practices, Fourth edition, PHI publication, New Delhi, 2008. Unit 2: Chapter 1, Sections – 1.1 to 1.6 , Chapter 2 , Section - 2.1 to 2.3. 3. P.Kandasamy, K.Thilagavathy and K.Gunavathy, Numerical Methods, S.Chand& Company LTD, Revised 2005. Unit III : Chapter 4, Section: 4.1- 4.2.1, 4.7-4.9 ; Pg.No : 112-121, 145-159 Unit IV : Chapter 9, Sections: 9.1-9.4, 9.7, 9.9, 9.13, 9.14; Pg.No :281-297,299-317. 4. S. P. Gupta, Statistical Methods, Sultan Chand & Sons, Fourth edition, Reprint 2017. Unit V: Chapter 7 (only Mean, Median and Mode), Chapter 8 (only Range,Q.D and S.D) Pg.No : 181-189, 198-222 ,275-280, 287-293.
Reference Books	1. E. Balagurusamy, Numerical Methods, Tata McGraw Hill publishing company LTD, Reprint, 2008. 2. P.A.Navanitham, Business Mathematics and Statistics, (Part II), Jai Publishers, Trichy – 21.
Web. URLs	1. https://youtu.be/MG7t6SWBnwA 2. https://www.youtube.com/watch?v=1MiT06JFNo4

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Problem Solving Skills	Assignment	Seminar	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	M	M	M	H	M	H	H	M	M
CO2	H	H	L	M	M	M	M	H	H	H	H	M	H
CO3	H	M	L	M	M	M	M	M	M	H	H	M	M
CO4	H	M	L	M	M	H	M	H	H	M	H	H	M
CO5	H	M	L	M	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Ms. S. Ruth Kethsial	Dr. T. Chandra Pushpam

Course Code	Title	
21U4ENV101	Ability Enhancement Compulsory Course - Environmental Studies	
Semester : I	Credits : 2	CIA : 50 Marks
(Common to all UG Programmes)		
Course Objective	This course enables the students to recognize the interconnectedness of multiple factors in environmental challenges and communicate clearly and competently matters of environment concern.	
Course Category	Employability	
Development Needs	National & Global	

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions	Lecture/ Video Lectures	Album Preparation
CO 2	Understand concepts and methods from ecological and physical sciences and their application in environmental problem solving.	Lecture/ Peer Teaching	Album Preparation
CO 3	Solve the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.	ABL/ Group Discussions	Group Discussions
CO 4	Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.	Video Lessons/ Group discussions	Group Discussions
CO 5	Apply systems concepts and methodologies to analyse and understand interactions between social and environmental processes.	Field visits	Field visit Report

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Natural Resources:** Forest resources, Water resources, Mineral resources, Food resources, Energy resources and Land resources.	1	2
		Instructional Hours	**6**
Suggested Learning Methods: Video lectures			
II	**Ecosystems:** Concept of an ecosystem, Structure and function; Introduction, types, characteristic features, structure and function of ecosystem - Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). **Activity: Prepare an album on types of Ecosystem.**	1	3
		Instructional Hours	**6**
Suggested Learning Methods: Peer Teaching			
III	**Environmental Pollution:** Definition Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution and Noise pollution, Solid waste management. **Activity: Discuss the solutions for water pollution**	1	5
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			

IV	**Social Issues and the Environment:** Water conservation, rain water harvesting, watershed management, Environmental ethics - Issue summits' and possible solutions and Public awareness. **Activity: Identify and analyse a Social Issue and an Environment issue in your locality.**	1	6
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			
V	**Disaster Management:** Floods, Earthquakes, Cyclones, Landslides: From management to mitigation of disasters: The main elements of a mitigation and measures of strategy: Floods, Earthquakes, Cyclones and Landslides	2	16
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
Field Work: Visit to local area to document Environmental assets (River / Forest / Grass land / Mountain), Visit to local polluted site (Urban / Rural /industrial / Agricultural), Study of common plants, insects, birds, Study of simple ecosystem: Pond, River, Hill slopes.			
		Total Hours	**30**

Text Book(s):	1. Shashi Chawla. A Text Book of Environmental Studies, Tata McGraw-Hill, 2012. 2. From UGC website: https://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf
Reference Book(s):	1. Agarwal, K.C. 2001 Environmental Biology, Nidi Public Ltd., Bikaner. 2. Jadhav, H &Bhosale, V.M. 1995 Environmental Protection and Laws Himalaya Pub.House, Delhi 284 p. 3. Mckinney, M.L. &Schoch R.M. 1996. Environmental Science systems & Solutions 4. Odum, E.P. 1971 Fundamentals of Ecology. W.B. Saunders Co. USA. 574 p 5. Rao MN &Datta, A.K. 1987 Waste Water treatment, Oxford & IBH Publication Co. Pvt. Ltd., 345 p.

Tools for Assessment (50 Marks)

Ecosystem Album Preparation	Field visit and report submission	Group discussions about issues related to their locality / about Disaster Management	CIA Test	Total
10	10	5	25	50

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	-	L	H	H	H	H	L	L	M	M	M	M
CO2	L	-	L	H	H	H	H	L	L	L	M	L	M
CO3	L	-	L	H	H	H	H	L	L	M	M	M	M
CO4	L	-	L	H	H	H	H	L	L	L	M	M	L
CO5	L	-	L	H	H	H	H	L	L	M	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. M. Thangavel	Dr. M. Thangavel

Course Code	Title		
23U1TAM202	Part - I : Pynthamizh (பைந்தமிழ்)		
Semester: II	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
Course Objective	மொழி இலக்கியத்தின் வாயிலாக அறம் சார் பண்பு மற்றும் ஆளுமை மிக்க மாணவர்களை உருவாக்குதல்.		
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)		
Development Needs	Global /Regional(உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)		
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல் மற்றும் உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	பக்தி இலக்கியங்கள் வழி வாழ்வியல் நெறிகளை மாணவர்களுக்கு எடுத்துரைத்தல்	விரிவுரை/காணொளிப்பட விளக்கம்	ஒப்படைவு
CO 2	சிற்றிலக்கியங்களின் மூலம் தமிழர்களின் வாழ்க்கை கூறுகளை எடுத்துரைத்தல்	விரிவுரை	குழுத்திட்டம்
CO 3	தமிழ் நாவல்களின் வழி சமுதாயச் சிந்தனைகளைக் கூறுதல்	விரிவுரை/காணொளிப்பட விளக்கம்	கருத்தரங்கு
CO 4	இலக்கண அறிவை வளர்த்தல்	விரிவுரை	ஒப்படைவு
CO 5	தமிழ் இலக்கிய வரலாற்றுத்திறனை மேம்பாடு அடையச் செய்தல்	விரிவுரை/ குழு விவாதம்	கருத்தரங்கு

Offered by தமிழ்த்துறை

Course Content: Pynthamizh (பைந்தமிழ்) — **Instructional Hours / Week : 4**

Unit	Description		Text Book & Chapters
I	பக்தி இலக்கியங்கள்	1. திருமந்திரம் - மூன்றாம் தந்திரம் (அதிகாரம் 2) 2. நாலாயிரத் திவ்வியப்பிரபந்தம்- பெரியாழ்வார் 3. மாணிக்கவாசகர்-எட்டாம் திருமுறை 4. திருநாவுக்கரசர்- திருவரங்கமாலை	அட்டமாசித்திகள் திருப்பல்லாண்டு அச்சோப்பதிகம் நான்காம் திருமுறை - தேவாரம்
		Instructional Hours	**12 Hours**
Suggested Learning Methods: ஆன்மிக சிந்தனைத்திறன் பெற்றமை			
II	சிற்றிலக்கியங்கள்	1. கலம்பகம் - நந்திக்கலம்பகம் 2. பள்ளு – முக்கூடற்பள்ளு 3. குறவஞ்சி – திருக்குற்றாலக்குறவஞ்சி 4. பிள்ளைத்தமிழ் - மீனாட்சியம்மை பிள்ளைத்தமிழ் 5. பட்டினத்தார் பாடல்கள்	91 -100 பாடல்கள் 350 - 360 செய்யுள்கள் 1-10 செய்யுள்கள் 1 -10 செய்யுள்கள் 358 - 367 பாடல்கள்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : கலந்துரையாடல்			
III	நாவல்	1. இமையம் (வெ.அண்ணாமலை)	செல்லாத பணம்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : நாவல் எழுதும் திறன் பெற்றமை			

IV	இலக்கணம்	1. வல்லினம் மிகும் இடங்கள் 2. வல்லினம் மிகா இடங்கள் 3. யாப்பின் உறுப்புகள் (எழுத்து முதல் தொடை வரை) 4. பாவின் வகைகள்	தமிழ் இலக்கணம்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : பிழையின்றி தமிழ் எழுதுதல்			
V	தமிழ் இலக்கிய வரலாறு	1. சிற்றிலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 2. புதினத்தின் தோற்றமும் வளர்ச்சியும் 3. பக்தி இலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 4. விண்ணப்பங்கள், மடல்கள் எழுதச்செய்தல்	தமிழ் இலக்கிய வரலாறு
		Instructional Hours	**12 Hours**
Suggested Learning Methods : குழு விவாதம்			
		Total Hours	**60 Hours**

Text Books	1. இளங்கலை முதலாம் ஆண்டுத்தமிழ் மாணவர்களுக்குரிய பாடநூல் "பைந்தமிழ்" தொகுப்பு: தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	1. திருமந்திரம் - மாணிக்கவாசகர் அருளிய திருவாசகம் - சித்தாந்த பண்டிதர் திரு.ப.இராமநாத பிள்ளை விளக்க உரையுடன் கழக வெளியீடு, திருநெல்வேலி, 2. தமிழண்ணல - புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சிப் புத்தக நிலையம் மதுரை.
Web. URLs	https://youtu.be/cL89sSZq_FI

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
4	4	5	2	2	3	20

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	**L**	H	L	H	H	M	H	L	L	L	M	M
CO2	H	**L**	M	L	H	L	H	H	M	M	M	M	M
CO3	H	**L**	L	L	M	M	H	H	M	L	L	M	L
CO4	H	**L**	H	L	H	M	M	L	L	L	M	M	M
CO5	H	**L**	H	L	H	L	H	H	M	M	L	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh kumar	Dr. A.Sridevi

Course Code	Title		
23U1HIN202	Part - 1 Sanchar Hindi (संचार हिन्दी)		
Semester: II	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
(Common to all UG Programmes)			
Course Objective	पाठ्यक्रम संवादी हिंदी में पारंगत होने में मदद करता हैI		
Course Category	Skill Development		
Development Needs	National		
Course Description	Improves Reading and Translation Skills.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	कविता की मूल शब्दावली और व्यावहारिक तत्वों को समझें। मुक्त छंद और कविता के पारंपरिक रूपों में अंतर्निहित सामान्य तकनीकों को समझें।	Lecture / Video Methods	Assignment
CO 2	छात्र विभिन्न प्रकार की संवादात्मक स्थितियों में हिंदी में प्रदर्शित करने, चित्रित करने, नाटक करने और व्याख्या करने के लिए अर्जित कौशल को लागू करने में सक्षम होंगे	Case Studies	Group Project
CO 3	छात्र औपचारिक और अनौपचारिक पत्र लिखने में सक्षम होंगे।	Lectures / Video Lessons	Seminar
CO 4	अनुवाद सभी लोगों के बीच प्रभावी संचार को सक्षम बनाता है।	Lecture / Video Methods	Assignment
CO 5	छात्र हिंदी भाषा के वक्ता के साथ किसी भी सामान्य विषय पर विभिन्न स्तरों पर बातचीत करने में सक्षम होंगे I	Lecture / Dumb Charades	Seminar

Offered by	Hindi

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	आधुनिक हिंदी काव्य : रश्मिरथी , रामधारी सिंह 'दिनकर'	1	All
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	**एकांकी संग्रह :** 1. **शिवाजी का सच्चा स्वरूप** - सेठ गोविंददास 2. औरंगजेब की आखिरी रात - रामकुमार वर्मा 3. रीढ़ की हड्डी - जगदीशचंद्र माथुर 4. सिपाही की माँ - मोहन राकेश	1	1 to 4
		Instructional Hours	**12**
Suggested Learning Methods : Auditory			**02 Hrs**
III	पत्र लेखन : (छुटटी पत्र , संपादक को पत्र , पुस्तकों के लिए आदेश पत्र , नौकरी के लिए आवेदन पत्र , निजी पत्र)	1	1,2,3
		Instructional Hours	**12**

Suggested Learning Methods : Comprehensive writing			**02 Hrs**
IV	**अनुवाद : हिंदी से अंग्रेजी (अनुवाद अभ्यास** - 3) 1 - 10 passages	3	1,2
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual			**02 Hrs**
V	बोलचाल की हिन्दी : 1. शिक्षक - विद्यार्थी 2. ग्राहक-दुकानदार 3. डॉक्टर - रोगी, 4. साक्षात्कार 5. दो यात्री 6. माँ - बेटा	5	1,2
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			**02 Hrs**
		Total Hours	**60**

Reference Books	1. रश्मिरथी / रामधारी सिंह "दिनकर" - कविता कोश 2. सरस एकांकी नाटक : डॉ. रामकुमार वर्मा 3. अनुवाद अभ्यास - 3 दक्षिण भारत हिंदी प्रचार सभा , चेन्नई -1
Reference Books	1. श्रेष्ठ हिन्दी एकांकी -डॉ विजयपाल सिंह 2. बोलचाल : पं० अयोध्या सिंह उपाध्याय 3. हिंदी व्याकरण निबंध और पत्र लेखन -डॉ. एन. एल. माथुर
Web. URLs	**www.webdunia.com**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assign ment	Seminar	Group project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	H	H	M	L	M	L	M	M	M	M	M	M
CO2	M	L	H	L	H	H	H	L	L	L	L	M	M
CO3	H	L	L	L	M	H	M	H	M	M	M	M	M
CO4	H	M	M	M	L	L	L	H	L	L	M	M	M
CO5	M	H	L	M	M	M	M	M	M	M	M	L	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S.Swarnalatha	**Dr.S.Swarnalatha**

Course Code			
23U1MAL202	**Part – I: Novalum Bhashaapadanavum** (നോവലും ഭാഷാപഠനവും)		
Semester: II	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**

(Common to all UG Programmes)

Course Objective	വിദ്യാർത്ഥികളിൽ മലയാള ഭാഷയുടെ വികാസവും മലയാള സാഹിത്യത്തിൽ നോവലുകൾക്കുള്ള സ്ഥാനവും വായനാശീലവും വർദ്ധിപ്പിക്കുന്നു
Course Category	Skill Development
Development Needs	Regional
Course Description	Proper guidance, opportunities and encouragement that help them to achieve their ambitions

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	സമൂഹത്തിലെ ഒരു വിഭാഗത്തിന്റെ ജീവിതം	Lecture / Video Methods	Assignment
CO 2	പ്രകൃതിയുടെയും മറ്റു ജീവജാലങ്ങളുടെയും മാറ്റങ്ങൾ	Case studies	Group Project
CO 3	പ്രകൃതി നാശത്തിനെതിരായി ഒന്നിച്ചു പ്രവർത്തിക്കുന്നു	Lectures / Video Lessons	Seminar
CO 4	സമൂഹത്തിലെ ഭാഷാസങ്കല്പം തിരിച്ചറിയുന്നു	Lecture / Video Methods	Assignment
CO 5	നല്ല ഭാഷ എങ്ങനെ സൃഷ്ടിക്കാമെന്ന് മനസ്സിലാക്കുന്നു	Lecture / Dumb Charades	Seminar

Offered by	**Malayalam**

Course Content	**Instructional Hours / Week : 4**

Unit	**Description**	**Text Book**	**Chapters**
I	നോവൽ - എൻമകജെ	1	1 to 16
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	നോവൽ - എൻമകജെ	1	17 to 34
		Instructional Hours	**12**
Suggested Learning Methods : Auditory Method			**02 Hrs**
III	നോവൽ - എൻമകജെ	1	35 to 51
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**
IV	ഭാഷാപഠനം - തെളിമലയാളം	1	1,2,3
		Instructional Hours	**12**
Suggested Learning Methods : Auditory &Visual Method			**02 Hrs**

V	ഭാഷാപഠനം - തെളിമലയാളം	1	4,5
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	1. അംബികാസുതൻ മാങ്ങാട്, എൻമകജെ - ഡി.സി.ബുക്സ് കോട്ടയം 2. എം.എൻ.കാരശ്ശേരി, തെളിമലയാളം - ഡി.സി.ബുക്സ് കോട്ടയം
Reference Books	1. പ്രൊഫ.എൻ.കൃഷ്ണപ്പിള്ള, കൈരളിയുടെ കഥ - ഡി.സി.ബുക്സ് കോട്ടയം 2. ഡോ. പന്മന രാമചന്ദ്രൻ നായർ, സമ്പൂർണ്ണമലയാള സാഹിത്യ ചരിത്രം - ഡി.സി.ബുക്സ് കോട്ടയം 3. ഡോ.കെ.എം. ജോർജ്ജ്, ആധുനിക മലയാള സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - ഡി.സി.ബുക്സ് കോട്ടയം 4. എരുമേലി, മലയാള സാഹിത്യം കാലഘട്ടത്തിലൂടെ - ഡി.സി.ബുക്സ് കോട്ടയം
Web. URLs	**http://www.keralaculture.org>literature** **http://www.manoramaonline.com**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	H	H	H	H	H	H	M	M	M	M	M
CO2	H	L	H	M	H	M	H	H	M	M	M	M	M
CO3	M	L	M	M	M	H	H	M	M	M	M	M	M
CO4	H	L	L	H	L	H	H	H	M	M	M	M	M
CO5	M	L	L	M	L	H	H	H	M	L	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. N. RAJANI	Dr. SMITHA C. R.

Course Code	Title		
23U1FRN202	Part – I : Le Français Fondamental – II		
Semester : II	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	This course is comprised of deep study of grammar categories and aims to apply the grammatical structures correctly.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	This course aims to develop communicative competence of the students in French, to create cultural awareness, to promote autonomy in learning French.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Acquire an understanding of French culture, use the basic foundation of verbs.	Lecture	Assignment
CO 2	Describe a place, learn pronom en, y and adjectives.	Tutorial / Case Studies	Seminar
CO 3	Recall the tenses and learn Imparfait tense	Lectures / Video Lessons	Quiz
CO 4	Write about the weather and learn pronom COD,	Word game / Lecture	Assignment
CO 5	Write short passages and translate, Comprehend the passage and learn pronom COI	Lecture	Group project

Offered by	Department of French

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	Goûter à la campagne	1	5
	Instructional Hours		**12**
Suggested Learning Methods: Worksheets, TV5 App			
II	Voyager dans sa ville	1	6
	Instructional Hours		**12**
Suggested Learning Methods: Kahoot App, Duolingo			
III	Faire du neuf avec du vieux	1	7
	Instructional Hours		**12**
Suggested Learning Methods : Comprehensive Writing			

IV	Changer d'air	1	8
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			
V	Devenir éco-citoyen	1	9
		Instructional Hours	**12**
Suggested Learning Methods : Translating simple sentences and short passages			
		Total Hours	**60**

Text Books	Saison 1 Méthode de Français – Marie-Noëlle Cocton, Anouchka De Oliveira, Dorothée Dupleix (Unit 5 to 9)
Reference Books	A1 Echo Méthode de Français
Web. URLs	Lingua.com, TV 5 app, Learn French by podcast (spotify)

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	H	H	-	-	M	M	M	L	M
CO2	-	-	H	L	H	M	-	-	M	L	M	M	L
CO3	-	-	-	M	M	H	-	-	M	M	M	M	M
CO4	-	-	L	M	L	H	-	-	M	L	L	M	L
CO5	-	-	L	-	H	-	-	-	M	M	M	L	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Ms. SUNITA. R	Ms. SUNITA. R

Course Code	Title		
23U2ENG202	Part – II : Professional English – II		
Semester : II	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	To equip the students with the language skills and its functional usage. Facilitate the insight and taste of Literature.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	SD: Helps to develop LSRW skill		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Mastering life skills through prose discourse.	Lecture/Tutorial	Assignment
CO 2	Acquire ethics and values through poetic genre.	Lecture/Tutorial	Assignment
CO 3	Recognise the nuances of English language through short stories.	Lecture/Tutorial	Speaking
CO 4	Enhance fluency over language with self-confidence.	Lecture/Tutorial	Reading
CO 5	Examine how the language is used in literature and develop LSRW Skills	Lecture/Tutorial	Writing

Offered by | **Department of English**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Prose** E.M. Forster - Tolerance Mahatma Gandhi - Women Not the Weaker Sex Issac Asimov - The Fun They had **Listening Activity** – Comprehension practice from Prose.	1	1-3
		Instructional Hours	**12**
Suggested Learning Methods : Cooperative Learning			
II	**Poetry** Robert Frost - Stopping by Woods on a Snowy Evening William Blake - A Poison Tree Alexander Pope – Ode on Solitude **Speaking Activity** – Group Discussion Forum	1	4-6
		Instructional Hours	**12**
Suggested Learning Methods : Inquiry Based Learning			
III	**Short Stories** Mark Twain - The Cat and the Painkiller Japanese Folk Tale - The Envious Neighbour Hector Hugh Munro (Saki) – The Open Window **Reading Activity** – Pronunciation practice and enhancement from Short-stories	1	7-9
		Instructional Hours	**12**
Suggested Learning Methods : Classroom Activity			

IV	**Grammar** Articles Concord Active and Passive Voices Direct and Indirect Speech **Writing Activity** – Paragraph Writing using grammar Components	1	10-13
		Instructional Hours	**12**
Suggested Learning Methods : Direct Method			
V	**Writing Skills** Resume Writing Email Writing Dialogue Writing Testimonial Writing Creative Writing	1	14-17
		Instructional Hours	**12**
Suggested Learning Methods : Activity Based Learning			
		Total Hours	**60**

Text Books	Compiled by the Department of English NASC.
Reference Books	CLIL (Content & Language Integrated Learning) – Module by TANSCHE NOTE: (Text: Prescribed chapters or pages will be given to the students by the department and the college)
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Speaking	Reading	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	H	L	M	M	H	M	H	H	M	H	M
CO2	M	L	H	L	H	M	H	M	H	H	M	H	M
CO3	M	L	H	L	H	H	H	H	H	H	M	H	M
CO4	M	L	H	L	H	L	H	H	H	H	M	H	H
CO5	H	M	H	L	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Mr. D. Pradeek	Dr. R. Malathi

Course Code	Title		
23U3ETC204	Core Paper IV : Internet of Things Architecture and Design Principles		
Semester: II	Credits: 4	CIA: 25 Marks	ESE:75 Marks

Course Objective	This course is to explore IoT architecture concepts, design principles, data acquisition, and internet connectivity.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is meticulously crafted to introduce fundamental concepts of the Internet of Things (IoT), design principles systems, data acquisition processes, and their wide-ranging applications.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the fundamental concepts of the Internet of Things	Lecture	Group Discussion
CO 2	Learn design principles for creating efficient and user-friendly connected devices	Lecture	Quiz
CO 3	Describe different methods and protocols for connecting IoT devices to the internet.	Tutorial / Video Lessons	Seminar
CO 4	Understand the process of data acquisition in IoT systems.	Tutorial / Video Lessons	Seminar
CO 5	Explore the enabling technologies that support IoT ecosystems.	Tutorial / Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**IoT - An Overview:** Introduction – Definition - IoT conceptual framework – IoT Architectural view – Components of IoT system – Sources of IoT – M2M communication – Examples of IoT	1	1
		Instructional Hours	**15**
Suggested Learning Methods : Tutorial			
II	**Design Principles for Connected Devices :** Introduction – IoT/M2M system layers – Communication Technologies – Data Enrichment – Consolidation and Management – Ease of Designing and Affordability	1	2
		Instructional Hours	**15**
Suggested Learning Methods : Group Discussion			
III	**Internet Connectivity Principle:** Introduction – Internet connectivity – Internet based communication – IP addressing in the IoT – Media Access Control – Application Layer Protocols : HTTP, HTTPS, FTP, Telnet	1	4
		Instructional Hours	**15**
Suggested Learning Methods : Group Discussion			

IV	**Data Acquisition and Processing :** Introduction – Data acquiring and Storage – Organizing the data – Transaction and processing – Knowledge acquiring , Managing and Storing Process – Analytics	1	5
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
V	**Enabling Technologies :** Wireless sensor networks – Cloud Computing – Big data Analytics – Communication protocol – Embedded Systems **IoT Levels and Deployment Templates:** IoT Level 1 - IoT Level 2 - IoT Level 3 - IoT Level 4 - IoT Level 5 - IoT Level 6.	2	1
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
		Total Hours	**75**

Text Books	1. Raj Kamal ,Internet of Things – Architecture and Design Principles, Mc Graw Hill,2020 2. Internet of Things- A Hands – on Approach – Arshdeep Bahga, Vijay Madisetti, University Press India Pvt. Ltd 2015
Reference Book	1. Pethuru Raj and Anupama C. Raman, The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press
Web. URL	1. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	M	M	M	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	M	M	H	M	M	M	M	M	H	H	M	M
CO4	M	H	M	M	M	M	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETC205	Core Paper V: Electronic Devices and Circuits		
Semester: II	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To enable students to become familiar with semiconductor devices and to design analog circuits.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed for students to understand semiconductor devices and circuit design concepts.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the operation and characteristics of PN junction diodes.	Lecture	Group Discussion
CO 2	Differentiate between BJT and FET transistors and their operating principles.	Lecture	Quiz
CO 3	Comprehend the principles of signal amplification and gain.	Video Lessons	Seminar
CO 4	Analyze the role of regulators in stabilizing voltage and current.	Tutorial / Video Lessons	Seminar
CO 5	Design and simulate oscillator and multivibrator circuits for various waveforms and frequencies.	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**PN Junction Diode:** Semiconductor, conductor - Intrinsic and Extrinsic semiconductor – doping – P type – N type semiconductor - Formation of PN Junction diode - Forward bias - Reverse bias condition – characteristics - Clipping and Clamping.	1	1-1
		Instructional Hours	**15**
Suggested Learning Methods: Tutorial			
II	**BJT:** Introduction to Bipolar Junction Transistor – Construction - Transistor Biasing - Operation of NPN and PNP transistor - CB, CE & CC configuration - Method of Biasing: Fixed bias - Collector to base bias - Voltage divider bias – Bias compensation **FET:** Introduction to FET - Construction and operation of N-channel JFET - Characteristics	1	1-6 1-7
		Instructional Hours	**15**
Suggested Learning Methods: Group Discussion			
III	**Amplifiers:** CE, CB, CC amplifiers – Calculation of I/P resistance, O/P resistance – Current gain -Voltage gain – power gain – single stage transistor amplifier – DC and AC load line - Multi stage amplifier - RC coupled amplifier — gain frequency response – bandwidth – Transformer coupled amplifier – Impedance matching – FET amplifier	2,3	2-11 2-13 3-4 2-14

		Instructional Hours	**15**
Suggested Learning Methods : Group Discussion			
IV	**Rectifiers & Regulators:** Half wave, Full waves and bridge rectifiers – Calculation of RMS value – Average value – Ripple factor – Efficiency – Transformer utility factor – Peak inverse voltage – Inductor filter – Capacitor filter – LC filter – filter. Voltage doubler – Voltage regulator – Zener diode shunt regulator – Transistor shunt and series regulator – Overload protection – Construction of DC power supply.	2	2-9
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
V	**Oscillators And Multivibrators**: Barkhausen criterion – Hartley Oscillator – Colpitts oscillator – Phase shift oscillator – Wein bridge oscillators – Peizo electric crystal and it effects – Crystal oscillator – Astable multivibrator – Monostable multivibrator – Bistable multivibrator – Schmitt trigger	2	2-17 2-21
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
		Total Hours	**75**

Text Books	1. S. Salivahanan, N. Suresh Kumar, A. Vallavaraj, Electronics Devices And Circuits, Tata McGraw Hill Publishing Company Limited, New Delhi, 8th edition, 2012. 2. V.K.Metha, Rohit Metha, Principles of Electronics S Chand, 2006 3. B.Sasikala, C.Poornachandra, Electronic Devices and Circuits, Scitech 2003
Reference Books	1. S.K. Sahdev, Electronic Principles, Dhanpat Rai & Co (P) Ltd, 2nd Edition, 1998 2. Bernard Grob, Basic Electronics, Eight Edition, Tata Mc Graw hill Publishing Company Limited, 1984.
Web. URLs	1. https://archive.nptel.ac.in/courses/108/108/108108122/ 2. https://onlinecourses.nptel.ac.in/noc22_ee15/preview

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	H	M	M	M	M	M	M	H	M	M
CO2	M	M	M	H	M	M	H	M	M	M	H	M	M
CO3	M	M	H	H	M	M	M	H	M	H	H	M	M
CO4	H	H	M	H	M	H	M	H	H	M	H	M	M
CO5	H	M	H	M	H	M	H	H	M	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. S. Kannan	Dr. M. Sathishkumar

Course Code	Title		
23U3ETP206	Core Paper VI : Electronic Devices and Circuits Practical		
Semester: II	Credits : 4	CIA: 40 Marks	ESE: 60 Marks

Course Objective	To analyze the operation of diodes, transistors, and FETs and design their applications.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed for students to understand the design principles and operation of semiconductor devices and to design electronic circuits.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate a comprehensive understanding of diode principles, including their operation and applications.	Circuit Demonstration	Circuit Development
CO 2	Analyze and interpret transistor characteristics, and apply this knowledge to various electronic circuits.	Circuit Demonstration	Circuit Development
CO 3	Design and evaluate rectifier circuits for converting AC to DC power efficiently.	Circuit Demonstration	Circuit Development
CO 4	Develop power supply solutions, considering voltage regulation, current handling, and efficiency.	Circuit Demonstration	Circuit Development
CO 5	Construct and analyze oscillator circuits for generating various waveforms and frequencies in electronic systems.	Circuit Demonstration	Circuit Development
Offered by	**Internet of Things**		

Course Content	Instructional Hours / Week : 4

Program List (Any 8 Experiments)

1. Study of Multimeter and CRO
2. V-I Characteristics of Junction Diode
3. Clipping and Clamping
4. Transistor Characteristics of CE Configuration
5. V-I Characteristics of JFET
6. RC coupled amplifier
7. Half and Full Wave Rectifier
8. DC Regulated Power Supply 3.3 Voltage

9. Hartley Oscillator	
10. Schmitt Trigger	
Total Hours	**60**

Tools for Assessment (40 Marks)

Laboratory Performance I	Laboratory Performance II	Laboratory Performance III	Test 1	Test 2	Observation Note Book	Total
5	5	5	10	10	5	40

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	H	M	M	M	H	H	M	M	M	H
CO2	H	M	H	H	M	H	M	H	H	M	H	M	H
CO3	H	M	H	H	M	H	M	H	H	M	H	M	H
CO4	M	H	M	M	H	M	H	M	M	H	M	H	M
CO5	M	H	H	M	H	H	H	M	M	H	H	H	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. S. Kannan	Dr. M. Sathishkumar

Course Code	Title		
23U3MEA202	Allied Paper II : Applied Mathematics - II		
Semester : II	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To enable the students to learn the basic concepts of Vector differentiation, Laplace transforms Fourier series, Fourier Transforms and Z- Transforms.
Course Category	Skill Development
Development Needs	Regional
Course Description	This course covers a mix of Linear algebra and Calculus; it covers a central point of contact between Mathematics and Communication Systems.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Remember various formulae in Vector calculus.	Lectures / Video Lectures	Problem solving Skill
CO 2	Evaluation of Differential Equations using Laplace transforms	Lectures / Tutorial	Assignment
CO 3	Gain the knowledge of Fourier Series.	Lectures / Video Lectures	Seminar
CO 4	Evaluate the finite integrals using Fourier transform.	Lectures / Peer Teaching	Problem solving Skill
CO 5	Apply Z transform to solve difference equations.	Lecture / Tutorial	Quiz

Offered by	**Mathematics**

Course Content	Instructional Hours / Week :5

Unit	Description	Text Book	Chapters
I	**Vector Differentiation:** Scalar and Vector point function-Gradient-Gradient of a scalar point function – Divergence and curl of a vector point function-Vector identities-Integration of Vectors. (Simple Problems only)	1	-
	Instructional Hours		**15**
Suggested Learning Methods: Problem Solving Practice			
II	**Laplace Transforms:** Definition - Properties of Laplace Transform - Inverse Laplace transform –Solving Differential equation using Laplace Transforms. (Simple Problems only)	1	-
	Instructional Hours		**15**
Suggested Learning Methods: Class Test			
III	**Fourier Series:** Fourier coefficients-Fourier series for odd and even functions – Half range Fourier series. (Simple Problems only)	2	1
	Instructional Hours		**15**
Suggested Learning Methods: Problem Solving Practice			

IV	**Fourier Transforms:** Fourier Integral Transform (without proof) – Fourier Transform pair – Sine & Cosine Transform – Properties – Transforms of Simple function – Convolution Theorem. (Simple Problems only)	2	4
		Instructional Hours	**15**
Suggested Learning Methods : Quiz https://www.youtube.com/watch?v=1MiT06JFNo4			
V	**Z Transform :** Elementary Properties – Inverse Z Transform – Convolution theorem – Formation of Difference Equations – Solution of Difference Equation using Z Transform. (Simple Problems only)	2	5
		Instructional Hours	**15**
Suggested Learning Methods: Problem Solving Practice			
		Total Hours	**75**

Text Books	1. P.Kandasamy and K.Thillagavathy, Allied Mathematics Paper II, S.Chand & company Ltd, Reprint 2016. Unit I: Page No: 299-361 Unit II: Page No: 234-298 2. P.Kandasamy and K.Thillagavathy, Engineering Mathematics Vol III, S.Chand & company Ltd, Reprint 2007. Unit III: Chapter 1: Page No: 1-53 Unit IV: Chapter 4 :Page No: 273-285 Unit V: Chapter 5: Page No:371-417
Reference Book	1. P.Kandasamy, K.Thilagavathy and K.Gunavathy, Engineering Mathematics, Volume – I,S.Chand and Company Ltd, 6th revised edition 2006.
Web. URL	https://youtube.com/playlist?list=PLhSp9OSVmeyLke5_cby8i8ZhK8FHpw3qs (Fourier Series)

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Problem Solving Skills	Assignment	Seminar	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	H	M	M	M	M	M	L	L	M	M	L
CO2	H	H	H	M	M	M	H	M	L	M	M	H	L
CO3	M	H	H	M	M	M	H	L	M	M	L	L	M
CO4	H	H	H	M	H	M	H	M	L	L	M	H	L
CO5	H	H	H	M	H	M	M	M	L	L	M	M	L

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Ms. S. Ruth Kethsial	Dr. T. Chandra Pushpam

Course Code	Title	
21U4HRC202	**Ability Enhancement Compulsory Course - Human Rights and Constitution of India**	
Semester : II	**Credits : 2**	**CIA : 50 Marks**

(Common to all UG Programmes)

Course Objective:

Understand the concept of human rights and the importance of Indian Constitution.

Course Outcomes:

CO1	Understand the principal aspects of human rights and duties in a broad sweep.
CO2	Acquire the knowledge about the Fundamental Duties and Rights of Indian Citizen
CO3	To know the rights of women and Children in India
CO4	Understand the structure and importance of Indian Constitution
CO5	Know the functions of Government and Election Commission of India

Course Content **Instructional Hours / Week : 2**

Unit	Description	
I	An Introduction to Human Rights :Values – Dignity, Liberty, Equality, Justice, Unity in Diversity - Human Rights – Meaning and features; Significance of the study - Classification of Human Rights - Rights and Duties – Correlation	
	Instructional Hours	**6**
II	Human Rights and Fundamental Rights - Fundamental Rights and Fundamental Duties- Directive Principles - Role of Judiciary in the protection of Human Rights- National Human Rights Commission *Activity : Case Study related to Human Rights*	
	Instructional Hours	**6**
III	Human Rights of Women and Children- Social Practice and Constitutional Safeguards – Female foeticide and infanticide-Physical assault and Harassment- Domestic violence- Conditions of Working Women *Activity : Conduct a Group Discussion on the above topics*	
	Instructional Hours	**6**
IV	**Constitution – Structure and Principles -** Meaning and importance of Constitution - Making of Indian Constitution –Sources - Salient features of Indian Constitution- Government of Union- Government of State-Features of judicial system in India	
	Instructional Hours	**6**
V	Federalism in India – Features - Local Government -Panchayat –Powers and functions -Election Commission –Organisation and functions-Citizen oriented measures – RTI – Provisions and significance *Activity : Seminar/ Role play related to Indian Constitution*	
	Instructional Hours	**6**
	Total Hours	**30**

Text Book:

1. **"Human Rights and Constitution of India",** Complied by Curriculum Development Cell, Nehru Artsand Science College.

Tools for Assessment (50 Marks)

Case Study and Report submission	Seminar / Role play	Group Discussion	Comprehensive test for 5×5 = 25 marks	Total
10	10	5	25	50

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	-	L	H	H	H	H	L	M	L	L	M
CO2	-	-	-	L	H	H	H	H	M	M	L	M	M
CO3	-	-	-	L	H	H	H	H	L	L	M	L	L
CO4	-	-	-	L	H	H	H	H	M	L	M	M	L
CO5	-	-	-	L	H	H	H	H	L	M	M	L	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. N. Saranya

Course Code	Title	
22U4HVY201	Value Education : Human Values and Yoga Practice	
Semesters : I & II	Credits : 2	CIA : 50 Marks

(Common to all UG Programmes)

Course Objective:

- To help the students appreciate the essential complementarity between 'values' and 'skills' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings.
- To prepare and distribute standardized Yoga teaching and training material with reference to institute health**.**

Course Outcomes:

CO1	To know the importance of Ethics to be followed in the Human life.
CO2	To inculcate a sense of respect towards harnessing values of life and spiritof fulfilling social responsibilities.
CO3	To gain knowledge about the values that develops life skills.
CO4	To understand and Practice Meditation & Surya Namaskar.
CO5	To understand and apply the knowledge for physical health and well being through Asanas

Course Content **Instructional Hours / Week : 1 (For Semesters I and II)**

Unit	Description
I	**Human Values –** Introduction - Definition of Ethics and Values - Character and Conduct - Nature and Scope of Ethics. **Individual and Society** - Theories of Society - Social Relationships and Society - Empathy: Compassion towards other beings.
	Instructional Hours 4
II	**Self-realization and Human Values**-Self-realization and Harmony-Rules and Regulations-Rights and Duties-Good and Obligation-Integrity and Conscience. **Obligation to Family**-Trust and Respect-Codes of Conduct.
	Instructional Hours 5
III	**Character Formation Towards Positive Personality**: Truthfulness, Constructivity, Sacrifice, Sincerity, Self Control, Altruism, Tolerance, Scientific Vision. **Refinement of worries**: Neutralization of anger-Intelligent quotient(IQ),Emotional quotient(EQ),Spiritual Quotient (SQ)
	Instructional Hours 5
IV	**Power of Meditation**- Development of mind in stages - Mental Frequencies Methods for Concentration. Meditation Practices - Surya Namaskar. Physical Exercises -Kayakalpa Practices Training for Potentialising the Mind.
	Instructional Hours 6

V	**ASANAS** **Standing Posture:** Tadasana, Utkattasana, arthaKadi Chakrasana, Trikonasana, Artha Chandrarasana, Padahastasana, Virabhadrasana, Vrikshasana, Artha, Natarajasana. **Sitting posture:** Padmasana, Gomukasana, Ustrasana, ArdhaMatsyendrasana, Patchimottanasana. **Prone posture:**Bhujangasana, shalabhasana, Dhanurasana, Chakrasana. **Supine posture:**Sarvangasana, Halasana, Matsyasana, Shanti asana **Pranayama:** Bhastrika, Bhramari, NadiShodhan	
	Instructional Hours	**10**
	Total Hours	**30**

Text book:

1. **"Value Education",** compiled by Curriculum Development cell, Nehru Arts and Science College.

Tools for Assessment

25 marks	25 marks
Comprehensive test in Units I to III for 25 marks during CIA III of Sem. II	Perform 02 Yoga postures for Practical exam to be conducted during the mid. of Sem. II

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	-	H	L	M	H	H	L	M	L	M	L
CO2	-	-	-	L	M	H	M	H	M	M	M	M	M
CO3	-	-	-	L	M	H	S	H	M	M	M	M	M
CO4	-	-	-	L	L	H	M	H	L	L	M	L	L
CO5	-	-	-	L	L	H	M	H	L	M	L	M	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Mr. Karthik	Dr. N. Kavitha

Course Code	Title		
23U1TAM303	Part -I : Arunthamizh (அருந்தமிழ்)		
Semester: III	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

Course Objective	தமிழ்க் காப்பியங்களின் வழி அறம் சார்ந்த சிந்தனைகளை உருவாக்குதல்
Course Category	**Skill Development (**மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)
Development Needs	**Global/Regional (**உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்**)**
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல் மற்றும் உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	தமிழ் நூல்களில் அணிநலம் அறிதல், அறம் சார்ந்த சிந்தனைகளை வளர்த்தல்.	விரிவுரை/ காணொளிப்பட விளக்கம்	ஒப்படைவு
CO 2	தமிழ் இலக்கிய வகைகளைக் கூறுவதன் மூலம் தமிழின் இலக்கிய வளத்தை உணரச்செய்தல்.	விரிவுரை	குழுத்திட்டம்
CO 3	மாணவர்களிடையே காலத்திற்கேற்ப மொழிவளர்ச்சியை உருவாக்குதல்.	விரிவுரை/ காணொளிப்பட விளக்கம்	ஒப்படைவு
CO 4	நாட்டின் சிறந்த குடிமக்களாக மாணவர்களை உருவாக்குதல்.	விரிவுரை// குழு விவாதம்	கருத்தரங்கு
CO 5	மாணவர்களின் மனநலத்தை வளர்த்தல்.	விரிவுரை/ குழு விவாதம்	கருத்தரங்கு

Offered by தமிழ்த்துறை

Course Content : Arunthamizh (அருந்தமிழ்) — **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	காப்பியங்கள்	1.சிலப்பதிகாரம் 2.மணிமேகலை 3.சீவகசிந்தாமணி 4.கம்பராமாயணம்	1.1அடைக்கலக்காதை (மதுரைக்காண்டம்-பகுதி- 15) 1.2.பீடிகைக் கண்டுபிறப்புணர்ந்தக் காதை-பகுதி-9) 1.3.பூமகள் இலம்பகம் (பகுதி- 11-2347-2377 பாடல்கள்) 1.4சுந்தரகாண்டம்(கடல் தாவுப்படலம் 1-10பாடல்கள்)
		Instructional Hours	**12 Hours**
Suggested Learning Methods: நாடக முறையில் கலந்துரையாடல்			
II	சைவ,வைணவ, சுவடியியல்	1. தேவாரம் 2..நாலாயிரத்திவ்வியப் பிரபந்தம் 3.சுவடியியல்	2.1.திருநல்லூர்ப் பெருமணம் (பாடல் எண்-4137-4146) 2.2.ஆண்டாள் திருப்பாவை - (பாடல் எண்- 474-483) 2.3.சுவடியியல் - அறிமுகம் 2.4 சைவம் தமிழுக்குச் செய்த தொண்டு 2.5 வைணவம் தமிழுக்குச் செய்த தொண்டு
		Instructional Hours	**12 Hours**
Suggested Learning Methods : பக்தி பாசுரங்கள் கலந்துரையாடல்			

III	மொழித்திறன் (இலக்கணம்)	1.நன்னூல் 2.தொல்காப்பியம்	3.1 நூல் வரலாறு (முதல் நூல், வழி நூல், சார்பு நூல்) 3.2 மாணாக்கர் வரலாறு 3.3 ஆசிரியர் வரலாறு 3.4 எண்வகை மெய்ப்பாடுகள்
Instructional Hours			**12 Hours**
Suggested Learning Methods :	மொழித்திறன் வாயிலாக பிழையின்றி எழுதும் திறன் பெற்றமை		
IV	நாட்டுப்புற வழக்காறுகள்	நாட்டுப்புறவியல்	4.1. பழமொழிகள் 4.2. விடுகதைகள் 4.3 தமிழர்க்கலைகள் 4.4 சிறுதெய்வ வழிபாடு மட்டும் 4.5 விளையாட்டுகள் (சிறுவர்,சிறுமியர் மட்டும்)
Instructional Hours			**12 Hours**
Suggested Learning Methods :	நாட்டுப்புறவியல் வழி நாட்டுப்புற மக்களின் வாழ்வியலை அறியச்செய்தல்		
V	இலக்கிய வரலாற்றுத் திறன்	தமிழ் இலக்கிய வரலாறு	1. காப்பியத்தின் தோற்றமும் வளர்ச்சியும் 2. பக்தி இலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 3. தமிழக நாட்டுப்புறவியல் வரலாறு
Instructional Hours			**12 Hours**
Suggested Learning Methods:	பாடத்திட்டத்தில் கொடுக்கப்பட்டுள்ள இலக்கிய வரலாற்றினை உணர்த்துதல்		
Total Hours			**60 Hours**
Text Books	இளங்கலை இரண்டாம் ஆண்டு தமிழ் மாணவர்களுக்குரிய பாடநூல் **"அருந்தமிம்"** தொகுப்பு: தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.		
Reference Books	நாட்டுப்புறவியல் ஓர் ஆய்வு: டாக்டர் சு. சக்திவேல் விஜயா பதிப்பகம் சென்னை. தமிழண்ணல் - புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சிப் புத்தக நிலையம், மதுரை- 625 001.		
Web. URLs	https://youtu.be/EJcYgyw7e94, https://youtu.be/MgtwmerI4yw		

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
4	4	5	2	2	3	20

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	H	L	L	H	M	L	L	M	L	M	M
CO2	M	L	H	L	H	L	M	H	M	M	M	M	M
CO3	H	L	L	L	H	M	H	M	M	L	M	L	M
CO4	M	L	H	L	M	M	H	L	M	M	M	M	M
CO5	H	L	M	L	H	L	M	H	M	L	M	L	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh Kumar	Dr. A. Sridevi

Course Code	Title		
23U1HIN303	Part I - Sahityak Hindi (साहित्यिक हिंदी)		
Semester: III	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

(Common to all UG Programmes)

Course Objective	चुनिंदा कविताओं के माध्यम से हिंदी कविता की उत्पत्ति और विकास को समझना।. संकलन में उपलब्ध कराए गए सर्वोत्तम नमूनों का उपयोग करते हुए कविता की सराहना।
Course Category	Skill Development
Development Needs	National
Course Description	Improves Writing Skills.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	छात्र हिंदी भाषा से अच्छी तरह वाकिफ हो सकेंगे।	Role play	Assignment
CO 2	व्यक्तिगत अनुभवों की पहचान करें जिनका उपयोग कविताएँ लिखते समय किया जा सकता है।	Group learning Acting	Seminar
CO 3	कविता की मूल शब्दावली और व्यावहारिक तत्वों को समझें।	Story Narration	Assignment
CO 4	छात्रों को रचनात्मक लेखन में अच्छा अभ्यास मिलेगा।	Group learning and Work sheets	Group Project
CO 5	पाठ्यक्रम संवादी हिंदी में पारंगत होने में मदद करता है।	Worksheets and Exercises	Seminar

Offered by	**Hindi**

Course Content	**Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	नाटक – सत्यमेव जयते – (श्री सूर्यनारायण मूर्ति)	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	प्राचीन काव्य : कबीर के दोहे (10 दोहा), सूरदास के पद (4 पद) (काव्य तरंग)	1	2
		Instructional Hours	**12**
Suggested Learning Methods : Auditory			**02 Hrs**
III	1.आधुनिक काव्य : पुष्प की अभिलाषा– माखनलाल चतुर्वेदी, जलियांवाला बाग़ में बसंत - सुभद्राकुमारी चौहान, शक्ति और क्षमा - रामधारी सिंह दिनकर 2.संक्षिप्तीकरण	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**
IV	**अलंकार** : 1) **अर्थ अलंकार** और **शब्द अलंकार**, 2) **दिए गए चित्र पर कुछ वाक्य लिखना ।**	1	2
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual, Comprehensive			**02 Hrs**

V	गद्यांश लेखन, वाक्य शुद्धि, शब्द शुद्धि, अनेक शब्द के लिए एक शब्द	1	4
		Instructional Hours	**12**
Suggested Learning Methods : comprehensive writing			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	**1. नाटक – सत्यमेव जयते – (श्री सूर्यनारायण मूर्ति)** 2. काव्य सुमन - राजपाल एंड सन्स
Reference Books	1. हिंदी नाटक और रंगमंच - डॉ राम कुमार वर्मा 2. ओंकार नाथ वर्मा , सामान्य हिंदी अरिहंत प्रकाशन इंडिया लिमिटेड
Web. URLs	1. www.webdunia.com 2. https://www.hindikunj.com 3. www.bhashaindia 4. www.hindisamay.com

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group Project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	M	L	H	M	L	M	M	M	M
CO2	H	H	H	L	L	H	M	H	L	L	M	M	M
CO3	L	M	L	L	M	H	M	L	L	M	L	M	L
CO4	M	M	M	M	H	L	L	L	L	M	M	M	M
CO5	M	L	L	M	H	L	L	H	L	M	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr.S.Swarnalatha	Dr.S.Swarnalatha

Course Code	Title		
23U1MAL303	**Part - I : Kavithayum Smaranayum** (കവിതയും സ്മരണയും)		
Semester: III	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**
(Common to all UG Programmes)			
Course Objective	കവിതാ സാഹിത്യ പരിചയത്തോടൊപ്പം പുതു കവിതകളെ കുറിച്ച് അവബോധവും ആസ്വാദനവും ഉയർത്തുക. വിദ്യാർത്ഥികൾക്ക് മാതൃകയാവുന്ന സമൂഹത്തിലെ ഉന്നത വ്യക്തിത്വങ്ങളെ പരിചയപ്പെടുത്തുക		
Course Category	Skill Development		
Development Needs	Regional		
Course Description	Developing Personality and Self confidence		

Course Outcomes		**Assessment Methods**	**Assessment Methods**
CO 1	കവിതയിലൂടെയുള്ള സംവേദനം	Smart boards/ Chalk and Talk	Assignment
CO 2	പ്രകൃതിയുടെ നിസ്വാർത്ഥമായ പ്രവർത്തനങ്ങൾ	Group learning	Seminar
CO 3	അധ്യാപക വിഭാഗത്തിനിടയിൽ അവകാശ ബോധം ഉണ്ടാക്കുന്നു	Peer Teaching	Assignment
CO 4	സമൂഹത്തിന് മൂല്യബോധമുണ്ടാക്കുന്ന പ്രവർത്തനങ്ങൾ	Group learning	Group Project
CO 5	സമൂഹത്തിൽ അധ്യാപനത്തിന്റെ പ്രാധാന്യം	Smart boards/ Chalk and Talk	Assignment

Offered by	**Malayalam**

Course Content	**Instructional Hours / Week : 4**

Unit	**Description**	**Text Book**	**Chapters**
I	നവീന കവിത - പുതു കവിതകൾ	1	4
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	നവീന കവിത - പുതു കവിതകൾ	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Auditory Method			**02 Hrs**
III	കണ്ണീരും കിനാവും - വി.ടി.ഭട്ടതിരിപ്പാട്	1	3
		Instructional Hours	**12**
Suggested Learning Methods : : Comprehensive writing			**02 Hrs**
IV	കണ്ടൽക്കാടുകൾക്കിടയിൽ എന്റെ ജീവിതം - കല്ലേൻ പൊക്കുടൻ	1	2
		Instructional Hours	**12**
Suggested Learning Methods: Auditory &Visual Methods			**02 Hrs**
V	കണ്ടൽക്കാടുകൾക്കിടയിൽ എന്റെ ജീവിതം - കല്ലേൻ പൊക്കുടൻ	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	1. നവീന കവിത (പുതു കവിതകൾ) - നെഹ്റു കോളെജ് മലയാള വിഭാഗം എഡിറ്റു ചെയ്ത 10 കവിതകൾ . 2. കണ്ണീരും കിനാവും - വി.ടി.ഭട്ടതിരിപ്പാട് -ഡി.സി. ബുക്ക്സ്

	3. കണ്ടൽകാടുകൾക്കിടയിൽ എന്റെ ജീവിതം - കല്ലേൻ പൊക്കുടൻ - ഗ്രീൻ ബുക്ക്സ്
Reference Books	1. മലയാള കവിതാപഠനങ്ങൾ - സച്ചിദാനന്ദൻ ,മാതൃഭൂമി ബുക്സ്, കോഴിക്കോട് 2. കവിതാ സാഹിത്യ ചരിത്രം - ഡോ.എം.ലീലാവതി കേരള സാഹിത്യ അക്കാദമി, തൃശൂർ 3. ആധുനികത മലയാള കവിതയിൽ എൻ. അജയകുമാർ , പഠനസംഘം, ചങ്ങനാശ്ശേരി 4. സാഹിത്യം മലയാളത്തിൽ ആത്മകഥ - നടുവട്ടം ഗോപാലകൃഷ്ണൻ , ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട് , തിരുവനന്തപുരം
Web. URLs :	**http://www.keralaculture.org>literature**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	H	M	H	H	H	H	M	L	M	L	M
CO2	M	L	H	L	H	M	H	H	M	L	M	M	M
CO3	H	L	L	M	M	H	M	H	M	M	M	M	L
CO4	M	L	L	M	L	H	H	M	M	L	M	L	M
CO5	M	L	L	M	H	L	H	M	M	M	M	L	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms.RAJANI N.	Dr. SMITHA C.R.

Course Code	Title		
23U1FRN303	Part – I : Le Francais General – III		
Semester : III	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	Acquisition of standard French by knowing more about the culture.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Improved understanding and communication		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Learn about the other French speaking nations, hobbies,	Lectures/ Tutorial	Assignment
CO 2	Le passé compose, l'imparfait	Group Learning	Assignment
CO 3	Social network, les indicateurs de temps	Peer Teaching	Seminar
CO 4	Le discours direct et indirect	Video Lecture / Lectures	Group Project
CO 5	To learn to answer questions orally in French	Group learning	Assignment

Offered by	Department of French

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	La langue francaise en action	1	1
		Instructional Hours	12
Suggested Learning Methods : Visuals			
II	Aller a la rencontre des autres	1	2
		Instructional Hours	12
Suggested Learning Methods : Group discussions			
III	Enrichir son reseau	1	3
		Instructional Hours	12
Suggested Learning Methods : Group discussions			
IV	Vivre l'information	1	4
		Instructional Hours	12
Suggested Learning Methods : Visuals			
V	Interroger le passe	1	5
		Instructional Hours	12
Suggested Learning Methods : Comprehensive writing			
		Total Hours	60

Text Books	1. Saison 2 Méthode de Français – Marie-Noëlle Cocton, Anouchka De Oliveira, Dorothée Dupleix (Unit 0 to 4)
Reference Books	1. Connexions 2 Methode de Français Régine Mérieux , Yves Loiseau
Web. URLs	1. www.academia.edu

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	H	H	-	-	M	M	M	L	M
CO2	-	-	H	L	H	M	-	-	M	L	M	M	L
CO3	-	-	-	M	M	H	-	-	M	M	M	M	M
CO4	-	-	L	M	L	H	-	-	M	L	L	M	L
CO5	-	-	L	-	H	-	-	-	M	M	M	L	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Ms. SUNITA. R	Ms. SUNITA. R

Course Code	Title		
23U2ENG303	Part – II : Communicative English – I		
Semester : III	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to All UG Programmes)			
Course Objective	To enable the students to learn the different genres of literature and gain a better understanding of the English language.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	SD: Helps to develop LSRW skill		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Execute moral, ethical and literary merits and relate it to the society.	Lecture/Tutorial	Assignment
CO 2	Exhibit a comprehensive knowledge of poetry and execute life skills and human values through it.	Lecture/Tutorial	Assignment
CO 3	Develop reading strategies with enriched vocabulary, through short story.	Lecture/Tutorial	Speaking
CO 4	Identify the use of English language through the study of Grammar and use them in specific contexts.	Lecture/Tutorial	Reading
CO 5	Interpret their understanding of English works in LSRW mode	Lecture/Tutorial	Writing

Offered by | **Department of English**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Prose** J.B. Priestley - Travel by Train R.K. Narayan - Headache E.M. Forster - Tolerance	1	1 - 3
		Instructional Hours	**12**
Suggested Learning Methods : Intensive Reading			
II	**Poetry** William Blake - The School Boy Rudyard Kipling - If Sarojini Naidu - The Queen's Rival	1	4 - 6
		Instructional Hours	**12**
Suggested Learning Methods : Scaffolding Method			
III	**Short Stories** O. Henry - After Twenty Years Edgar Allan Poe – Tell - Tale Heart Frank R.Stockton - The Lady or The Tiger?	1	7 - 9
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			

IV	Herman Melville-Moby Dick (Abridged Version)	1	10 - 13
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			
V	**Oral & Written Communication (UnitI–IV) Listening** – Comprehension practice from Poetry, Prose, Online Voice Practice, observing / viewing E-content (with subtitles), Guest / Invited Lectures, Conference/ Seminar Presentations & Tests, and DD National News Live, BBC, CNN, VOA etc **Speaking** – In Group Discussion Forum, participate in the Turn Taking, and Conversation Management, Debating, Defending / Mock Viva Voce, Seminar Presentations on Classroom-Assignments, and Peer-Team-interactions. **Reading**–Different Reading Strategies in Poetry, Prose, Novel, Newspaper etc **Writing** – Modals, Concord, E-Mail & Report Writing, Spotting the Errors and How to avoid them, Sentence Completion, Prepositions, Idioms and Phrases, Collocation.	1	14 - 17
		Instructional Hours	**12**
Suggested Learning Methods : Activity Based Learning			
		Total Hours	**60**

Text Books	Unit I–V: Compiled by the Department of English
Reference Books	CLIL (Content & Language Integrated Learning) – Module by TANSCHE NOTE:(Text: Prescribed chapters or pages will be given to the students by the department
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Speaking	Reading	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	-	H	-	M	M	H	M	H	H	M	H	M
CO2	M	-	H	-	H	M	H	M	H	H	M	H	M
CO3	M	-	H	-	H	H	H	H	H	H	M	H	M
CO4	M	L	H	-	H	-	H	H	H	H	M	H	H
CO5	H	M	H	-	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Mr. D. Pradeek	Dr. R. Malathi

Course Code	Title		
23U3ETC307	Core Paper VII : Data Communications and Computer Networks		
Semester : III	Credits : 3	CIA : 20 Marks	ESE : 55 Marks

Course Objective	To learn the principles, design, and implementation of computer networks and data transmission
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed the principles, technologies, and protocols that enables the exchange of data between computers and other devices in a networked environment.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the fundamentals of data communication and computer networks	Lecture	Quiz
CO 2	Explain the importance of data link layer protocols used in data communications	Tutorial	Quiz
CO 3	Describe the significance of network layer protocols used in data communications	Video Lessons	Seminar
CO 4	Use transport layer protocols in data communication and networks	Demonstration	Seminar
CO 5	Understand the various client–server protocols used in application layer	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week: 4

Unit	Description	Text book	Chapters
I	**Data Communications**: Components – Direction of Data flow – Networks – Components and Categories – Types of Connections – Topologies –Protocols and Standards – ISO / OSI model, Example Networks such as ATM, Frame Relay, ISDN Physical layer: Transmission modes, Multiplexing, Transmission Media.	1	1,2
	Instructional Hours		**12**
Suggested Learning Methods : Quiz			
II	**Data Link Layer & Media Access** **Error Detection And Correction:** Introduction Block Coding- **Cyclic Codes:** Cyclic Redundancy Check, Polynomials, Cyclic Code Encoder, Using Polynomials, Cyclic Code Analysis, Advantages of Cyclic Codes–Checksum **Media Access Control:** Controlled Access– Channelization **Wired LANs :** Ethernet..	1	9,10,12, 13,15
	Instructional Hours		**12**

Suggested Learning Methods : Quiz			
III	**Network layer**: Logical Addressing, Internetworking, Tunneling, Address mapping, ICMP, IGMP, Forwarding, Uni-Cast Routing Protocols, Multicast Routing Protocols	1	16,17,18
		Instructional Hours	**12**
Suggested Learning Methods: Seminar			
IV	**Transport Layer: Introduction to Transport Layer:** Introduction – Transport Layer Protocols. **Transport Layer Protocols :** Introduction – Services – Port Numbers – User Datagram Protocol – Transmission Control **Protocol:** TCP Services, TCP Features, Segment - Stream Control Transmission Protocol: SCTP Services,Features, Segment	1	23,24
		Instructional Hours	**12**
Suggested Learning Methods : Video Lectures			
V	**Application Layer – Introduction :** Providing Services, Application-Layer Paradigms - **Standard Client - Server Protocols :** WWW and HTTP – FTP – Electronic mail – Telnet – SECURE SHELL(SSH) - Domain Name System	1	25, 26
		Instructional Hours	**12**
Suggested Learning Methods: Video Lectures			
		Total Hours	**60**

Text Book	1. Behrouz A. Forouzan, Data Communications and Networking, Fifth Edition TMH,2013.
Reference Books	1. Andrew S. Tanenbaum, Computer Networks, Fourth Edition, PHI. 2. Madhulika Jain, Prof. Satish Jain, "Data Communication and Networking", BPBPublications,2003
Web. URLs	1. https://www.tutorialspoint.com/data_communication_computer_network/index.htm 2. https://www.javatpoint.com/computer-network-tutorial

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	3	2	2	20

Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	H	M	M	H	H	H	M	M	M	M	H
CO2	M	M	H	H	H	M	H	M	H	H	H	H	M
CO3	M	H	H	H	H	M	H	M	H	H	H	H	M
CO4	M	H	H	H	H	M	H	M	H	H	H	H	M
CO5	H	H	H	M	H	H	H	H	M	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U3ETC308	Core Paper VIII : Microprocessor and Microcontroller		
Semester: III	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

Course Objective	To familiarize students with microprocessor and microcontroller architecture and programming.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to help students understand the operation of microprocessors and microcontrollers, as well as their application in design.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the architecture and organization of the 8085 microprocessor.	Lecture	Group Discussion
CO 2	Explain the architecture and features of the 8086 microprocessor.	Lecture	Quiz
CO 3	Identify different types of peripheral devices used in computer systems.	Video Lessons	Seminar
CO 4	Understand the architecture and features of the 8051 microcontroller.	Tutorial / Video Lessons	Seminar
CO 5	Apply the knowledge of microprocessors and microcontrollers in real-world applications.	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	**8085 microprocessor** Introduction - Evolution of microprocessors - 8085 microprocessor: Pin assignments – architecture - addressing modes – interrupts - instruction set - assembly language programming	1	1,6,12
		Instructional Hours	**12**
Suggested Learning Methods: Tutorial			
II	**8086 Microprocessor** pin assignments – registers – architecture - minimum and maximum mode - instruction format - addressing modes- instruction set and assembly language programming	2	1,2,3
		Instructional Hours	**12**
Suggested Learning Methods: Group Discussion			
III	**Peripheral Devices and Interfacing** Basics of interfacing – I/O interfacing - memory and I/O – Interfacing data converters - programmable peripheral interface	1	5,13,14, 15

	(8255) - programmable keyboard/display interface (8279) – DMA controller (8237)		
		Instructional Hours	**12**
Suggested Learning Methods : Group Discussion			
IV	**8051 Microcontroller :** Introduction – Architecture - addressing modes - instruction sets - Assembly language programming	3	3,4,5,6, 7,8
		Instructional Hours	**12**
Suggested Learning Methods : Video Presentation			
V	**Applications:** LED – ADC - DAC - Sensor Interfacing - Keyboard Interfacing - Stepper Motor interfacing	4	12,13,14
		Instructional Hours	**12**
Suggested Learning Methods : Video Presentation			
		Total Hours	**60**

Text Books	1. R.S.Gaonkar, Microprocessor Architecture Program And Its Application With 8085, Penram International Publishing,2000. 2. 2.AK Ray , KM Bhurchandi, Advanced Microprocessor & Peripherals, Tata McGraw Hill , 2nd edition 2006 3. 3.Kenneth J. Ayala, 8051 Microcontroller, Delmar Cengage Learning, 3rd Editon-2005 4. 4.Muhammad Ali Mazidi, Janice GillispieMazidi and Rolin D. McKinlay, 8051 Microcontroller And Embedded Systems Using Assembly And C , PHI, 2nd edition 2006
Reference Books	1. S.Malarvizhi, Microprocessor and Its Application, Anuradhe Agencies Publications – I edition, 1999. 2. David E Simon, An Embedded Software Primer, Pearson Publication,.2000
Web. URLs	1. https://onlinecourses.nptel.ac.in/noc22_ee12/preview 2. https://nptel.ac.in/courses/108107029

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	3	2	2	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	H	M	M	H	H	H	M	M	M	M	H
CO2	H	M	H	H	H	M	H	M	H	H	H	H	M
CO3	H	H	H	H	H	M	H	M	H	H	H	H	M
CO4	H	H	H	H	H	M	H	M	H	H	H	H	M
CO5	H	H	H	M	H	H	H	H	M	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. S. Kannan	Dr. M. Sathishkumar

Course Code	Title		
23U3ETP309	Core Paper IX : Microprocessor and Microcontroller Practical		
Semester: III	Credits : 3	CIA: 30 Marks	ESE: 45 Marks

Course Objective	The students will be able to proficiently write assembly language programs and effectively interface with Microprocessors and Microcontrollers.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to typically focus on providing students with hands-on experience and skills in working with microprocessors and microcontrollers.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the architecture and organization of the 8085 microprocessor.	Demonstration	Program Development
CO 2	Execute and analyze programs written for the 8085 microprocessor.	Program Demonstration	Program Development
CO 3	Develop proficiency in programming the 8051 microcontroller using embedded C.	Program Demonstration	Program Development
CO 4	Identify different types of senor devices used in embedded systems.	Program Demonstration	Program Development
CO 5	Identify different types of display devices used in embedded systems.	Program Demonstration	Program Development

Offered by	**Internet of Things**
Course Content	**Instructional Hours / Week : 4**

Program List
(Any 8 Experiments)

1. 8-Bit Addition and Subtraction in 8085
2. 8-Bit Multiplication and Division in 8085
3. Maximum, Minimum Number in an Array in 8085
4. Sum of series in 8085
5. BCD addition in 8085
6. Automatic water tank controller
7. LED interfacing in 8051
8. DAC Interfacing in 8051

9. Sensor Interfacing in 8051
10. LCD Interfacing in 8051
11. Keyboard Interfacing in 8051
12. DC motor control

Total Hours	**60**

Tools for Assessment (30 Marks)

Laboratory Performance I	Laboratory Performance II	Laboratory Performance III	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	30

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	H	H	H	M	M	M	M	M
CO2	H	H	H	H	H	H	H	H	H	M	M	M	M
CO3	M	M	M	M	M	H	H	H	M	M	M	M	M
CO4	H	H	H	H	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	M	M	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. S. Kannan	Dr. M. Sathishkumar

Course Code	Title		
23U3ETA303	Allied Paper III : C Programming using Data Structures		
Semester : III	Credits : 3	CIA : 20 Marks	ESE : 55 Marks

Course Objective	To impart knowledge on writing programming ability on data structures dealing with Stacks, Queues, List, Searching and Sorting algorithms etc.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to help students understand Data structure concepts and C programming, which can be applied in various fields, including software development, government administration, business, science, arts, education, and more.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Comprehend the fundamental principles of C programming.	Lecture / Flipped Classroom	Assignment
CO 2	Explain the rationale behind the existence of various decision-making and loop constructs in C for iterative processes.	Demonstration / Tutorial	Seminar
CO 3	Exhibit proficiency in utilizing Structures, Unions, and file operations in practical applications.	Lectures / Video Lessons	Quiz
CO 4	Acquire a foundational understanding of linear data structures.	Demonstration / Case Studies	Program Execution
CO 5	Demonstrate knowledge of searching and sorting techniques in the context of data structures.	Lecture / Demonstration	Program Execution

Offered by	**Internet of Things**

Course Content	**Instructional Hours / Week: 3**

Unit	Description	Text book	Chapters
I	**Programming development styles and Basics of C :** Programming development methodologies – Programming style – Problem solving techniques – Algorithm – Flowchart – Pseudocode - Structure of a C program. **The C Declarations :** The C character set – Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion.	1	1, 2
		Instructional Hours	**09**
Suggested Learning Methods: Video Lectures			
II	**Operators:** Arithmetic – Relational – Logical – Bitwise. **Input and Output in C:** Formatted and Unformatted I/O functions. **Decision Statements:** If statement – If….else statement – Nested If….else statement – Switch statement. **Arrays – String – Pointers – Functions**	1	3, 4
		Instructional Hours	**09**
Suggested Learning Methods : Develop basic programmes			

III	**Structure and Union:** Features of structure - Declaration and initialization of structure - Structure within structure - Array of structure - Pointer to structure - Enumerated data types - Union. **Files:** Streams and file types - Steps for file operation - File I/O - Structures read and write - other file functions - Command line arguments - I/O redirection.	1	12, 13
		Instructional Hours	**09**
Suggested Learning Methods: Practice using Flow Charts			
IV	**Linear Data Structures:** Introduction to data structures – List – Implementations – Traversal – Searching and retrieving an element – Predecessor and Successor – Insertion – Deletion – Sorting, Merging lists – Stack related Terms – Operations on stack – Implementation – Single linked list –Linked list with and without header – Insertion – Deletion – Double linked list	1	14
		Instructional Hours	**09**
Suggested Learning Methods : Develop small applications			
V	**Non Linear Data Structures:** Trees – Binary Trees – Types of Binary Trees – Traversing Binary Search Trees. **Searching and Sorting :** Searching – Linear, Binary – Sorting – Insertion sort – Selection sort – Bubble sort – Quick sort – Tree sort	1	15, 16
		Instructional Hours	**09**
Suggested Learning Methods: Laboratory practice			
		Total Hours	**45**

Text Book	1. Ashok N Kamthane, Programming and Data Structures, Pearson Education, First Indian Print 2004, ISBN 81-297-0327-0.
Reference Books	1. E Balagurusamy: Programming in ANSI C, Tata McGraw-Hill, 1998. 2. Ellis Horowitz and Sartaj Sahni: Fundamentals of Data Structure, Galgotia Book Source, 1999. 3. Data structure using C – Aaron M Tanenbaum, Yedidyeh langsam, Moshe J Augenstein, PHI Pub
Web. URL	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	3	2	2	20

Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	H	M	M	M	H	M	H	M	M	M
CO2	M	H	H	H	M	M	H	H	H	H	M	M	H
CO3	M	H	H	H	H	M	H	H	H	H	H	M	H
CO4	H	H	M	M	H	H	H	H	M	M	H	H	H
CO5	H	H	M	M	H	H	M	H	M	M	H	H	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U4ETZ301	**Skill Based Paper I : C and Data Structures Practical**		
Semester : III	**Credits : 3**	**CIA: 30 Marks**	**ESE: 45 Marks**

Course Objective	To develop a skill set in C programming and apply the concepts to develop applications to meet both local and global needs.
Course Category	Skill Development
Development Needs	Global / National
Course Description	To practice basic concepts, branching and looping statements, and gain knowledge in arrays, functions, structures, pointers, and file handling.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the logic for a given problem and to generate Primenumbers & Fibonacci Series	Program Demonstration	Program Creativity
CO 2	Examine the concepts to print the Magic square, Sorting the data , Strings, Recursive functions and Pointers	Program Demonstration	Debugging
CO 3	Apply the concept of looping constructs and Functions for solving basic programs.	Laboratory Practice	Application of Logic
CO 4	Develop proficiency in designing and implementing algorithms using the Stack and Queue data structures.	Code review	Program Development
CO 5	Analyze and evaluate the fundamental concepts of Searching and Sorting algorithms.	Demonstration	Program Development

Offered by | **Internet of Things**

Course Content	Instructional Hours / Week: 3

S. No.	List of Practical (Any 8 Experiments)
1	Find the sum, average, standard deviation for a given set of numbers
2	Generate n prime numbers.
3	Generate Fibonacci series.
4	Print magic square of order n where n > 3 and n is odd.
5	Sort the given set of numbers in ascending order.
6	Check whether the given string is a palindrome or not using pointers.
7	Find the factorial of a given number using recursive function
8	Experiment the operation of STACK using array implementation.

9	Create menu drive program to implement QUEUE to perform the following : • Insertion • Deletion • Modification • Listing of elements using pointers
10	Create LINKED LIST representation of employee records and do the following operations using pointers: • Add a new record • Delete an existing record • Print the information about an employee • Find the number of employees in the structure
11	Arrange a set of numbers in ascending order using QUICK-SORT.
12	Arrange a set of numbers in descending order using EXCHANGESORT.
	Total Hours **45**

Suggested Learning Methods:

Solving Case studies, Program development, Code Review and Peer Coding

Tools for assessment (30 Marks)

Application of Logic	Program Creativity	Program Debugging	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	30

Mapping

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	M	H	M	H	H	H	H	H	M	M
CO2	M	M	M	M	H	M	M	H	H	H	H	M	M
CO3	H	H	M	M	H	M	M	H	H	H	H	H	H
CO4	H	H	M	M	H	M	M	H	H	H	H	H	H
CO5	H	H	M	H	H	M	H	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title	
22U3NM3BT1	Part IV : Basic Tamil – I (அடிப்படைத்தமிழ் - I)	
Semester: III	Credits: 2	CIA: 50 Marks

(Common to all UG Programmes)

Course Objective	தமிழ் மொழியைக் கற்பித்தல்–மொழித்திறனை வளர்த்தல்.
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)
Development Needs	Regional (தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	தமிழ் எழுத்துக்கள் அறிமுகம் செய்தல் மற்றும் வாசித்தல் ஆகியவற்றின் பயன்பாடு.	குழு விவாதம்	ஒப்படைவு
CO 2	பிறமொழி கற்றல் ஆர்வம் தூண்டல்.	குழு விவாதம்	கருத்தரங்கு
CO 3	பிறமொழி அறிவுத் திறன் மேம்படச்செய்தல	விரிவுரை/ காணொளிப்பட விளக்கம்	குழுத்திட்டம்
CO 4	வார்த்தை அமைக்கும் திறன் பெறச்செய்தல்.	விரிவுரை/ குழு விவாதம்	குழுத்திட்டம்
CO 5	கையெழுத்துத்திறன் பெறச்செய்தல்.	குழு விவாதம்	குழுத்திட்டம்

Offered by தமிழ்த்துறை

Course Content : Basic Tamil – I அடிப்படைத்தமிழ் - I — **Instructional Hours / Week : 2 Hours**

Unit	Description	Text Book	Chapters
I	தமிழ் மொழியின் அடிப்படைக் கூறுகள்	இலக்கணம்	1.உயிர்எழுத்துக்கள் 2.மெய் எழுத்துக்கள் 3.உயிர்மெய் எழுத்துக்கள்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : எழுத்துக்களை எழுதும் மற்றும் வாசிக்கும் திறன் பெற்றமை			
II	சொல் அமைத்தல்	இலக்கணம்	1.ஓர் எழுத்து ஒருமொழி 2.இரண்டுமுதல் ஐந்து எழுத்துச்சொற்கள் 3.தமிழ் மாதங்கள் பெயர்,கிழமைகளின் பெயர் 4.வண்ணங்கள் பெயர், 5.சொல் ஆக்கம்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : எழுத்துக்களை கொண்டு சொற்களை உருவாக்கும் பயிற்சி பெற்றமை			
III	தொடரமைப்பு	தொடரமைப்பு	1.எழுவாய் 2.செயப்படுபொருள்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : சொற்களைக் கொண்டு தொடர் உருவாக்கும் பயிற்சி பெற்றமை			
IV	குறிப்பு எழுதுதல்	இலக்கணம்	1.தொடரமைப்பு 2.பத்தி அமைப்பு
		Instructional Hours	**6 Hours**
Suggested Learning Methods : பத்தி அமைப்பு உருவாக்கும் திறன் பெற்றமை			

V	பிழைநீக்குதல்	இலக்கணம்	1.ஒற்றுப்பிழை 2.வாக்கியப் பிழை
		Instructional Hours	**6 Hours**
Suggested Learning Methods : இலக்கணப் பிழை இன்றி எழுதும் திறன் பெற்றமை			
		Total Hours	**30 Hours**

Text Books	1. இளங்கலை தமிழ் மாணவர்களுக்குரிய பாடநூல்"அரிச்சுவடி" தொகுப்பு: தமிழ்த்துறை,நேரு கலை மற்றும் அறிவியல் கல்லூரி,கோயம்புத்தூர்.
Reference Books	1. பவணந்தி முனிவர்,நன்னூல் பூலியூர்க்கேசிகன் உரை,சாரதா பதிப்பகம், சென்னை–40. 2. தொல்காப்பியம், கணேசையர் பதிப்பு,உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை -113.
Web. URLs	https://youtu.be/P7vvUnjI6vY, https://youtu.be/Zx4R3yZseuQ.

Tools for Assessment (50 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
8	8	10	8	8	8	50

Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	H	L	H	M	H	H	L	M	M	M	M
CO2	M	L	H	L	M	M	L	H	L	M	M	M	M
CO3	H	L	H	L	L	M	M	H	L	M	M	M	M
CO4	H	L	M	L	L	M	H	M	L	M	M	M	M
CO5	M	L	H	L	M	M	H	H	L	M	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh kumar	Dr. A. Sridevi

Course Code	Title	
22U4NM3AT1	Part IV: Advanced Tamil – I (சிறப்புத்தமிழ் -I)	
Semester: III	Credits: 2	ESE: 50 Marks
Course Objective	புதுக்கவிதை உருவாக்கும் திறன் வளர்த்தல் - மொழித்திறனை மேம்படுத்துதல்	
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)	
Development Needs	Regional (தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)	
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்	

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	புதுக்கவிதை படைக்கும் திறன்வளர்த்தல்	விரிவுரை	குழுத்திட்டம்
CO 2	படைப்பாக்கத்திறன் அறிவு பெறச்செய்தல்.	விரிவுரை / குழு விவாதம்	கருத்தரங்கு
CO 3	தகவல் தொடர்பியலுக்கான கடிதம்,அமைவுத்திறன் பெறச்செய்தல்	விரிவுரை / காணொளிப்பட விளக்கம்	கருத்தரங்கு
CO 4	மொழியைப் பிழையின்றிப் பேசும் ,எழுதும் திறன் பெறச் செய்தல்	விரிவுரை	ஒப்படைவு
CO 5	கடிதம் எழுதுதல் மற்றும் மொழியறிவைப் பெறுதல்.	விரிவுரை / காணொளிப்பட விளக்கம்	குழுத்திட்டம்

Offered by	தமிழ்த்துறை

Course Content: Advanced Tamil - I (சிறப்புத்தமிழ் -I)	Instructional Hours / Week : 2 Hours

Unit	Description	Text Book	Chapters
I	புதுக்கவிதை	1. பாரதியார் 2. பாரதிதாசன்	1.1.தேசபக்திபாடல் தாயின் மணிக்கொடி பாரீர் 1.2.பாரதிதாசன்(தமிழ்மொழிபற்று- கனியிடை,தமிழுக்கும் அமுதென்று)
		Instructional Hours	6 Hours
Suggested Learning Methods : கவிதை எழுதும் திறன் பெற்றமை			
II	பிழை நீக்குதல்	இலக்கணம்	2.1.சொற்பிழை நீக்கம் 2.2.தொடர் பிழை நீக்கம் 2.3.பத்தி எழுதச் செய்தல்
		Instructional Hours	6 Hours
Suggested Learning Methods :வாக்கியங்களைப் பிழை இன்றி எழுதும் திறன் பெற்றமை			
III	இலக்கணப் பயிற்சி அளித்தல்	இலக்கணம்	3.1.தொகை நிலைத்தொடர், 3.2.தொகா நிலைத்தொடர் 3.3.ஆகுபெயர் வகைகள்

		Instructional Hours	**6 Hours**
Suggested Learning Methods : இலக்கணப் பிழை இன்றி எழுதும் பயிற்சி பெற்றமை			
IV	கடிதம் எழுதுதல்	இலக்கணப் பயிற்சி ஏடு	4.1. பாராட்டுக்கடிதம் 4.2. நன்றிக்கடிதம் 4.3. அழைப்புக்கடிதம் 4.4. அலுவலகக் கடிதம் 4.5. நட்புக்கடிதம்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : கடிதம் எழுதும் திறன் பெற்றமை			
V	இலக்கிய வரலாறு	தமிழ் இலக்கிய வரலாறு	1.வேலு நாச்சியார் 2.கப்பலோட்டிய தமிழன்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : தமிழ் இலக்கிய வரலாற்றின் சிறப்பினை அறிய பெற்றமை			
		Total Hours	**30 Hours**

Text Books	1. இளங்கலை தமிழ் மாணவர்களுக்குரிய பாட நூல்"திரட்டு"தமிழ்த்துறை. தொகுப்பு: தமிழ்த்துறை,நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	1. பாரதியார்- பாரதியார் கவிதைகள், அபிராமி பதிப்பகம், 7- பி, கொடிமரத் தெரு, சென்னை– 013. 2. பவணந்தி முனிவர் – நன்னூல் புலியூர்க்கேசிகன் உரை, சாரதா பதிப்பகம், சென்னை -040.
Web. URLs	https://youtu.be/xnsvFOHxDeo, https://youtu.be/kQoIj-29VIk.

Course designed by	**Verified by**
Dr. S. Satheesh kumar	Dr. A. Sridevi

Course Code	Title	
22U4NM3CAF/ 21U4NM3CAF	**Non Major Elective : Consumer Affairs**	
Semester : III	**Credits : 2**	**ESE : 50 Marks**
(Common to all UG Programmes)		
Course Objective	To enable the students to understand the concepts of Consumers and Markets	
Course Category	Employability	
Development Needs	National & Global	

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Know their rights and responsibilities as a consumer	Lecture/ Video Lectures	Assignment
CO 2	Gain knowledge about Consumer protection law in India	Lecture/ Peer Teaching	Seminar
CO 3	Understand the procedure about redressed of consumer complaints	Lecture/ Group Discussion	Seminar
CO 4	Learn about Consumer related regulatory agencies and Norms	Lecture/ Role Play	Assignment
CO 5	Comprehend Business Firms, Interface with Consumers.	Lecture/ Group Discussion	Quiz

Offered by | **Department of Business Administration**

Course Content | **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Conceptual Framework - Consumer and Markets:** Concept of Consumer, Nature of markets: Liberalization and Globalization of markets with special reference to Indian Consumer Markets, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP), Fair Price, GST, labelling and packaging along with relevant laws, Legal Metrology. Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Complaint Handling Process.	1	1 & 2
		Instructional Hours	**6**
Suggested Learning Methods : Video lectures			
II	**The Consumer Protection Law in India** **Objectives and Basic Concepts:** Consumer rights and UN Guidelines on consumer protection, Consumer goods, defect in goods, spurious goods and services, service, deficiency in service, unfair trade practice.	1	5 & 6
		Instructional Hours	**6**
Suggested Learning Methods : Peer Teaching			

III	**Grievance Redressal Mechanism under the Indian Consumer Protection Law** Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal f cases, Relief/Remedy available; Temporary Injunction, Offences and penalties.	2	1
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
IV	**Role of Industry Regulators in Consumer Protection -** Industry self-regulation (ISR) Protection Policies, Consumer Protection Agencies i. Telecommunication: TRAI ii. Food Products: FSSAI Insurance : IRDA and Insurance Ombudsman	2	4
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			
V	**Contemporary Issues in Consumer Affairs** **Consumer Movement in India:** Formation of consumer organizations and their role in consumer protection, Misleading Advertisements and sustainable consumption, National Consumer Helpline, Comparative Product testing. **Quality and Standardization:** Voluntary and Mandatory standards; Role of BIS, Indian Standards Mark (ISI), Ag-mark, Hallmarking, Licensing and Surveillance.	2	6 & 7
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
		Total Hours	**30**

Reference Books	1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. (2007) Consumer Affairs, Universities Press. 2. Choudhary, Ram Naresh Prasad (2005). Consumer Protection Law Provisions and Procedure, Deep and Deep Publications Pvt Ltd.

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	-	-	-	M	H	H	M	M	M	L	M	M
CO2	L	-	-	-	M	H	H	M	M	L	M	M	L
CO3	L	-	-	-	M	H	M	M	M	M	M	L	M
CO4	L	-	-	-	M	H	H	M	M	L	L	M	M
CO5	L	-	-	-	M	H	H	M	M	M	M	M	L

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. R. A. Ayyapparajan	Dr. R. A. Ayyapparajan

Course Code	Title	
22U4NM3GST	Non Major Elective : Gender Sensitization	
Semester : III	Credits : 2	ESE : 50 Marks

(Common to all UG Programmes)

Course Objective	To raise awareness of gender, promote gender equality, and equip learners with key concepts and principles of gender sensitization.
Course Category	Skill Development, Employability and Entrepreneurship
Development Needs	Local, National and Global
Course Description	The course aims an exploration of overview of gender, its social construction, gender issues and challenges in India, and equips learners with key concepts and principles of gender sensitization to promote inclusivity and equity.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Learn gender roles, socialization, and stereotypes.	Direct Instruction	Assignment
CO 2	Recognize the gender discrimination causes, areas, and levels in institutions.	Direct Instruction	Seminar
CO 3	Identify the gender identity formation, types, families, and socialization in India.	Video Lessons	Assignment
CO 4	Understand the gender concerns in access, enrollment, retention, participation, and achievement.	Direct Instruction	Assignment
CO 5	Apply the Laws Related to Women	Direct Instruction	Exhibition

Offered by | **Department of Costume Design and Fashion**

Course Content | **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Gender Socialisation and Gender Roles:** Introduction- Meaning of Sex and Gender, Gender Socialisation– Definitions, Agents of Gender Socialisation, Gender Roles- Meaning, Definitions, Nature of Gender Roles, Factors Determining Gender Roles/Stereotypes	1	-
	Instructional Hours		**6**
Suggested Learning Methods : Group discussions			
II	**Gender Discrimination:** Gender Discrimination - Meaning and Causes of Gender Discrimination, Areas of Gender Discrimination, Gender Discrimination at Different Levels of Institutions	1	-
	Instructional Hours		**6**
Suggested Learning Methods : Video documentaries and films			
III	**Gender Identity:** Gender Identity - Meaning, Formation and Factors of Gender Identity, Types of Gender Identity, Types of Families in India, Gender Socialisation within Indian Families	1	-
	Instructional Hours		**6**
Suggested Learning Methods : Case Method			

IV	**Gender Concerns:** Gender Concerns Related to Access, Enrolment, Retention, Participation, and Achievement	1	-
		Instructional Hours	**6**
Suggested Learning Methods : Video documentaries and films			
V	**Laws Related to Women:** Laws Related to Rape, Laws Related to Dowry - Dowry Prohibition Act, 1961, Laws Related to Remarriage, Laws Related to Divorce, Laws Related to Property Inheritance, Laws Related to Trafficking, Constitutional and Legal Aspects related to Women - Women's Reservation Bill – History and Current Status	1	-
		Instructional Hours	**6**
Suggested Learning Methods : Case Method			
		Total Hours	**30**

Text Books	1. Gender School and Society : Self-learning Material, MANGALORE UNIVERSITY, Printed at Datacon Technologies, Bangalore, 2018
Reference Books	1. United Nations Development Programme. (2014). Gender Equality and Women's Empowerment: Training Manual. New York: UNDP.
Web. URLs	1. Coursera - https://www.coursera.org/courses?query=gender%20sensitization 2. edX - https://www.edx.org/learn/gender-sensitization 3. Udemy - https://www.udemy.com/topic/gender-sensitization/

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	M	M	H	H	M	L	M	M	L	M
CO2	H	M	M	M	H	H	M	M	-M	M	M	-M	M
CO3	H	M	M	M	M	H	H	M	L	L	M	M	L
CO4	H	M	M	M	L	H	H	M	M	-M	L	M	-M
CO5	H	M	M	M	M	H	M	M	M	L	-M	M	L

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. M. Nandhini	Dr. S. Jayapriya

Course Code	Title	
22U4NM3WRT / 21U4NM3WRT	Non Major Elective : Women's Rights	
Semester : III	Credits : 2	ESE : 50 Marks
(Common to all UG Programmes)		
Course Objective	To facilitate the awareness about the social, economical, political, intellectual or cultural contributions of Women in India.	
Course Category	Skill Development	
Development Needs	National	
Course Description	Apply the knowledge of Rights related to women for their betterment.	

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Aware of basic constitutional rights	Lecture/ Case Study/ Role Play	Seminar
CO 2	Gain awareness on Political rights	Lecture/ Case Study/ Role Play	Role Play
CO 3	Understand individual and familial rights	Lecture/ Case Study/ Role Play	Role Play
CO 4	Grasp the provisions for Women's Rights in India	Lecture/ Case Study/ Role Play	Role Play
CO 5	Develop an understanding of the Protection Mechanisms for women	Lecture/ Case Study/ Role Play	Assignment

Offered by	Department of Social Work

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	**Constitutional Rights of Women in India**: Indian constitution relating to women - Fundamental rights - Directive principles of state policy - right to equality – rights against exploitation cultural and educational rights - the right to constitutional remedy - University Declaration of Human Rights -Enforcement of Human Rights for Women and Children - Role of Cells and Counseling Centers - Legal AID cells, Help line, State and National level Commission	4	2
		Instructional Hours	**6**
Suggested Learning Methods : Seminar			
II	**Political Rights of Women in India:** Political Rights of Women in India - Electoral process – women as voters - candidates and leader - pressure group, 73rd and 74th amendment and representation of women in local self –government – women in Rural and urban local bodies - Reservation of women - party ideologies and women's issues.	5	1
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			

III	**Women's Rights: Access to Justice:** Introduction – Criminal Law – Crime Against Women Domestic Violence – Dowry Related Harassment and Dowry Deaths - Molestation – Sexual Abuse and Rape Loopholes in Practice–Law Enforcement Agency	3	7
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			
IV	**Women's Rights:** Violence Against Women – Domestic Violence The Protection of Women from Domestic Violence Act 2005, The Marriage Validation Act 1982 - The Hindu Widow Remarriage Act 1856 - The Dowry Prohibition Act 1961.	3	5
		Instructional Hours	**6**
Suggested Learning Methods : Creative Art Assignments			
V	**Special Women Welfare Laws:** Sexual Harassment at Work Places, Rape and Indecent Representation, The Indecent Representation (Prohibition) Act, 1986, Immoral Trafficking, The Immoral Traffic (Prevention) Act, 1956 - Acts Enacted for Women Development and Empowerment, Role of Rape Crisis Centers. Protection of Children from sexual Offences Act 2012.	3	9
		Instructional Hours	**6**
Suggested Learning Methods : Community Participation Program			
		Total Hours	**30**

Reference Books

1. P. D. Kaushik "Women Rights" Book well Publication 2007 UN Centre for Human Rights, Discrimination against Women (Geneva: World Campaign for Human Rights,1994).
2. Agnes, Flavia. (1992). "Give us "Give us This Day Our Daily Bread: Procedures and Case Law on Maintenance". Majlis, Bombay.
3. Agnes, Flavia. (1999). "Law and Gender Inequality: The Politics of Women"s Rights in India". OUP, New Delhi

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	M	H	M	M	M	L	M	L	M	M
CO2	H	M	M	H	M	M	H	H	M	M	L	L	L
CO3	H	M	M	H	M	H	M	M	M	M	L	M	M
CO4	M	H	M	H	M	M	M	H	L	M	L	L	M
CO5	H	M	M	H	M	H	M	M	L	M	L	L	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. P. Nathiya	Dr. P. Nathiya

Course Code	Title	
23U4ET3ED1	Extra Departmental Course : Digital Electronics Practical	
Semester : III	Credits : 2	ESE: 50 Marks

Course Objective	Upon successful completion of the course, students will understand the operation and be able to design digital circuits.
Course Category	Skill Development
Development Needs	Global / National / Regional / Local
Course Description	This course is designed to make students familiar with logic gates and their digital circuit design.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Develop familiarity with basic logic gates and their operations.	Circuit Demonstration	Circuit Creativity
CO 2	Proficiently implement the design of basic gates using universal gates.	Circuit Demonstration	Circuit Development
CO 3	Verify theorems and use converters to manipulate digital logic.	Circuit Demonstration	Circuit Development
CO 4	Demonstrate the ability to design combinatorial circuits effectively.	Circuit Demonstration	Circuit Development
CO 5	Exhibit competence in designing sequential circuits for specific applications.	Circuit Demonstration	Circuit Development
Offered by	**Internet of Things**		

Course Content	Instructional Hours / Week : 2

Program List
(Any 6 Experiments)

1. Realization of Basic Logic Gates.
2. Universal Gates (NAND & NOR)
3. Verification of DeMorgan's Theorems
4. Design and verify Code Converters (Binary to Gray &Gray to Binary).
5. Design Half-Adder & Full-Adder
6. Parity Generators and Checkers
7. BCD Adder
8. Design of Magnitude Comparator (2-bit).

9. Design of Universal Shift Register (Serial to Parallel, Parallel to Serial)													
10. ALU Design													
Total Hours													**30**
Mapping													
CO \ PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	L	M	H	M	L	L	L	L	M	L	L	L	L
CO2	H	L	L	H	L	L	M	L	H	L	L	M	L
CO3	M	H	H	M	L	L	M	L	M	L	L	M	L
CO4	H	M	H	L	L	L	L	H	L	L	L	L	H
CO5	H	H	H	L	L	M	L	L	L	L	M	L	L
H-High; M-Medium; L-Low													
Course Designed by								**Verified by Chairman**					
Dr. S. Kannan								Dr. M. Sathishkumar					

Course Code	Title	
23U4ET3ED2	Extra Departmental Course : Multimedia Technologies	
Semester: III	Credits: 2	ESE: 50 Marks

Course Objective	To learn about the fundamental concepts, principles, and components of multimedia technologies.
Course Category	Skill Development
Development Needs	Global / National
Course Description	To equip students with a comprehensive understanding of multimedia technologies, enabling them to create, evaluate, and effectively use multimedia content in various applications and industries.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate an understanding of multimedia concepts and principles through the introduction to multimedia.	Lecture	Group Discussion
CO 2	Exhibit proficiency in identifying and utilizing multimedia components effectively.	Tutorial	Quiz
CO 3	Demonstrate competence in working with graphics and animation in multimedia applications.	Video Lessons	Seminar
CO 4	Achieve proficiency in handling multimedia audio and video, including editing and integration.	Video Lessons	Seminar
CO 5	Design multimedia websites, incorporating graphics, audio, video, and interactive elements for effective communication.	Video Lessons	Assignment

Offered by | **Internet of Things**

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	**Introduction to Multimedia:** What is Multimedia?- Types of Multimedia productions- The development of multimedia- Connecting to the internet-Multimedia and Education	1	1,2,3
	Instructional Hours		**6**
Suggested Learning Methods: Video Lectures			
II	**Multimedia Components:** Text: The role of text in multimedia- Working with text- **Formatting Text:** Font choice, Alignment, lists, Text spacing, Special formatting and Effects, Text wraps -Using fonts-Font selection Guidelines.	1	7
	Instructional Hours		**6**
Suggested Learning Methods: Seminar			
III	**Graphics and Animation:** The role of graphics in multimedia- Computer graphics Technology-Editing. **Graphics-Animation:**	1	8

	Frame based animations-Vector Animations-Morphing-3-D Graphics and Virtual Reality.		
		Instructional Hours	**6**
Suggested Learning Methods : Quiz			
IV	**Multimedia Audio and Video:** Audio :Audio on PC's, Sound quality, Audio file size, Streaming Audio, Audio File Formats-Software and Hardware for Audio. **Video:** Video quality, Streaming video-Video file formats- Software and Hardware for Video.	1	11
		Instructional Hours	**6**
Suggested Learning Methods : Seminar			
V	**Multimedia Website Design:** Web Site Organization-Website Goals-Design considerations – Planning and building a WebSite: Defining the Web site's goals, Defining the targetAudience, Tools for planning, Content, Interaction, Visual Design, Web Page Design Guidelines.	1	13
		Instructional Hours	**6**
Suggested Learning Methods : Laboratory practice			
		Total Hours	**30**

Text Book	1. Ana Weston Solomon, "Introduction to multimedia" Tata McGraw-Hill, 2005. Unit I: 1.1 to 1.3, 2.2, 3.4 (Chapter 1, 2, 3) Unit II: 7.1 to 7.5 (Chapter 7) Unit III: 8.1 to 8.4 (Chapter 8) Unit IV: 9.1 to 9.2, 10.1 to 10.2(Chapter 9, 10)
Reference Book	1. Nigel Chapman and Jenny Chapman "Digital Multimedia", WILEY.
Web. URLs	

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	H	M	M	M	M	M	M	H	H	M	M
CO2	H	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	M	M	H	M	M	H	H	M	H	H	M	M
CO4	H	H	H	M	M	H	H	M	H	M	H	H	M
CO5	H	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

23U1TAM404	Part - I : Muthamizh (முத்தமிழ்)		
Semester: IV	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**
Course Objective	சங்ககால மக்களின் வாழ்வியல் வாயிலாக பண்பாட்டுக் கூறுகளை உணர்த்துதல		
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)		
Development Needs	Global/Regional (உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)		
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல் மற்றும் உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்		

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	தமிழர்களின் வாழ்வியல் பண்புகளைக் கற்று அறிதல்.	விரிவுரை/காணொளிப் பட விளக்கம்	ஒப்படைவு
CO 2	தமிழ் இலக்கிய வகைகளைக் கூறுவதன் மூலம் தமிழின் இலக்கிய வளத்தை உணரச்செய்தல்.	விரிவுரை	குழுத்திட்டம்
CO 3	மாணவர்களிடையே காலத்திற்கேற்ப மனவளர்ச்சியை உருவாக்குதல்.	விரிவுரை/காணொளிப் பட விளக்கம்	கருத்தரங்கு
CO 4	நாட்டின் சிறந்த குடிமக்களாக மாணவர்களை உருவாக்குதல்.	விரிவுரை	ஒப்படைவு
CO 5	மாணவர்களின் மனநலத்தை வளர்த்தல்.	விரிவுரை/குழு விவாதம்	கருத்தரங்கு

Offered by தமிழ்த்துறை

Course Content: Muthamizh (முத்தமிழ்)			**Instructional Hours / Week : 4**
Unit	**Description**	**Text Book**	**Chapters**
I	எட்டுத்தொகை	1. நற்றிணை 2. குறுந்தொகை 3. பதிற்றுப்பத்து 4. புறநானூறு	1.1 குறிஞ்சி: நின்ற சொல்லார் .., 1.2 முல்லை : இளமை பாரார் ..., குறிஞ்சி : நிலத்தினும்..., பாலை :ஆடு அமை ...விளையாட்டு ஆயமொடு 1.3 ஐந்தாம் பத்து : ஊன் தூவை அடிசில் 1.4. யாதும் ஊரே .. பல் சான்றீரே .., அற்றைத்திங்கள்
			Instructional Hours **12 Hours**
Suggested Learning Methods: சங்க இலக்கிய வழி நற்பண்புகளை அறியச்செய்தல்			
II	பத்துப்பாட்டு	1.சிறுபாணாற்றுப்படை 2.குறிஞ்சிப்பாட்டு 3.பொருநர்ஆற்றுப்படை 4.மதுரைக்காஞ்சி	2.1 கடையெழு வள்ளல்கள் சிறப்பு 2.2 அறத்தொடு நிற்றல் 2.3 மன்னனின் விருந்தோம்பல் 2.4 பாண்டிய நெடுஞ்செழியன் குடிச்சிறப்பு
			Instructional Hours **12 Hours**
Suggested Learning Methods : புலவர்களின் மாண்புகளை வெளிப்படுத்துதல்			
III	அற இலக்கியங்கள்	1. நான்மணிக்கடிகை 2. இனியவை நாற்பது 3. களவழி நாற்பது- 4. ஆசாரக்கோவை	விளம்பிநாகனார் - (1-5 பாடல்கள்) பூதஞ்சேந்தனார் - (1-5 பாடல்கள்) பொய்கையார் - (11-15பாடல்கள்) பெருவாயின் முள்ளியார் (1-5 பாடல்கள்)
			Instructional Hours **12 Hours**
Suggested Learning Methods : அற இலக்கியங்களின் மாண்புகளை அறிய பெற்றமை			
IV	தமிழ்ச் செயலிகள்	தனித்தமிழ்	4.1 செயலிகள் அறிமுகம் 4.2 வகைகள்

			4.3 மொழிபெயர்ப்புச் செயலிகள் 4.4 தமிழ்ச் செயலிகள்
Instructional Hours			**12 Hours**
Suggested Learning Methods : தமிழ்ச் செயலிகள் பற்றி அறியும் வாய்ப்பு பெற்றமை			
V	இலக்கணம்	1.நன்னூல் 2.தொல்காப்பியம்	5.1 முதற்பொருள், கருப்பொருள், உரிப்பொருள் 5.2 பத்து அழகு 5.3 பத்து குற்றம் 5.4 ஆங்கிலத்திலிருந்து தமிழில் மொழிபெயர்த்தல்
Instructional Hours			**12 Hours**
Suggested Learning Methods : இலக்கண மாண்புகளை அறியும் திறன் பெற்றமை			
Total Hours			**60 Hours**

Text Books	1. இளங்கலை முதலாம் ஆண்டு தமிழ் மாணவர்களுக்குரிய பாடநூல் தொகுப்பு: "முத்தமிழ்" தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	1. சங்க இலக்கியங்கள் - எட்டுத்தொகை, பத்துப்பாட்டு கழக வெளியீடு, திருநெல்வேலி. 2. தனித்தமிழ்- இளசுந்தரம், விகடன் பிரசுரம். சென்னை.
Web. URLs	https://youtu.be/GrNnb68Fd6w , https://youtu.be/14-sEAUzXP8 .

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
4	4	5	2	2	3	20

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	**L**	H	L	H	H	M	H	L	M	L	M	M
CO2	M	**L**	H	L	M	L	M	H	M	M	M	M	M
CO3	H	**L**	H	L	H	H	M	H	L	M	L	L	M
CO4	M	**L**	M	L	H	H	H	M	M	M	M	M	L
CO5	H	**L**	L	L	M	H	L	M	L	L	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh kumar	Dr. A. Sridevi

Course Code	Title		
23U1HIN404	Part I - Prayogik Hindi (प्रायोगिक **हिंदी**)		
Semester: IV	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
(Common to all UG Programmes)			

Course Objective	साक्षरता प्रशंसा और विश्लेषण के सौंदर्य, सांस्कृतिक और सामाजिक पहलुओं के प्रति छात्रों को संवेदनशील बनाना | उन्हें विभिन्न कालों के प्रख्यात लेखकों के हिंदी कथा साहित्य के बेहतरीन नमूने उपलब्ध कराना |
Course Category	Skill Development
Development Needs	National
Course Description	Improves Creative Writing.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	छात्र हिंदी भाषा से अच्छी तरह वाकिफ हो सकेंगे।	Role play	Assignment
CO 2	पाठ्यक्रम संवादी हिंदी में पारंगत होने में मदद करता है।	Group learning Acting	Seminar
CO 3	छात्र आधुनिक हिंदी साहित्य का ज्ञान प्राप्त कर सकेंगे।	Story Narration	Assignment
CO 4	छात्रों को निबंध लेखन में अच्छा अभ्यास मिलेगा।	Group learning and Work sheets	Group Project
CO 5	छात्रों को फिल्म की समीक्षा करने का अभ्यास मिलेगा।	Worksheets and Exercises	Seminar

Offered by	**Hindi**

Course Content	**Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	विरुद्ध उपन्यास: (मृणाल पाण्डे)	1	4
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	कथा माला , (मृदुला गर्ग) लौटना और लौटना : ममता जयशंकर) ,प्रसाद आदमी का बच्चा (यशपाल)	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Auditory			**02 Hrs**
III	1.दिए गए अनुच्छेद पर समीक्षा लिखना 2.आधुनिक काल: प्रवृतियां और कवि	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**

IV	1.सामान्य निबंध: आधुनिक शिक्षा प्रणाली, मोबाइल का दुष्परिणाम, आधुनिक युवा पीढ़ी 2. हिंदी में दी गई कहानी के लिए सारांश लिखना।	1	2
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual, Comprehensive			**02 Hrs**
V	सिनेमा समीक्षा : पद्मावत	1	4
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	1. विरुद्ध उपन्यास: (मृणाल पाण्डे) 2. कहानी कुंज , गोविंद प्रकाशन , मथुरा 3. हर हाल बेगाने - मृदुला गर्ग , राजपाल एंड संस , दिल्ली 4. मेरा परिवार , लोकभारत प्रकाशन , इलाहाबाद
Reference Books	1. संजय चौहान , समकालीन हिंदी साहित्य विचार और विवाद , आशा किताबें 2. श्री रामदेव, व्याकरण प्रदीप, लोकभारती प्रकाशन, अलाहाबाद 3. डॉ वासुदेव नंदन प्रसाद, आधुनिक हिंदी व्याकरण और रचना, भारती भवन प्रकाशक 4. ओंकार नाथ वर्मा , सामान्य हिंदी , अरिहंत प्रकाशन भारत लिमिटेड
Web. URLs	1. www.webdunia.com 2. www.hindikunj.com 3. hindi-natak-vikas.html 4. www.bhashaindia. 5. www.hindisamay.com 6. https://ebook.pustak.org/

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group Project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO 5
CO1	L	M	H	M	M	L	H	L	M	M	M	M	M
CO2	L	M	H	H	L	H	L	M	M	M	M	M	M
CO3	M	L	L	L	L	H	M	M	M	M	M	M	M
CO4	M	M	M	M	H	L	M	H	M	M	M	M	M
CO5	H	H	L	L	H	L	H	H	M	M	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr.S.Swarnalatha	Dr.S.Swarnalatha

Course Code	Title		
23U1MAL404	**Part - I : Drisyakalaa Saahithyam** (ദൃശ്യകലാസാഹിത്യം)		
Semester: IV	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**

(Common to all UG Programmes)

Course Objective	സിനിമ എന്ന മാധ്യമത്തിന്റെ വിവിധ തലങ്ങളെ ആഴത്തിൽ മനസ്സിലാക്കാൻ കഴിയുന്നു.ദൃശ്യാവിഷ്ക്കരണത്തെ കുറിച്ചുള്ള അറിവ് ലഭിക്കുന്നു.
Course Category	Skill Development
Development Needs	Regional
Course Description	Guide and encourage them to achieve their ambitions

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	തിരക്കഥയിലെ സംഭാഷണത്തിന്റെ പ്രസക്തി	Smart boards/ chalk and Talk	Assignment
CO 2	മനക്കരുത്തിലൂടെ വീട്ടിലെ എല്ലാ അംഗങ്ങളെയും ദുഃഖം അറിയിക്കാതെ മംഗളകർമ്മം നടത്തുന്നു.	Group learning	Seminar
CO 3	കുടുംബത്തിന്റെ തകരുന്ന മൂല്യത്തെ ഉയർത്തുന്നു	Peer Teaching	Assignment
CO 4	ദൃ ശ്യാവിഷ്ക്കരണം മലയാളത്തിൽ	Group learning	Group Project
CO 5	രംഗവേദിയുടെ അവതരണം	Smart boards/ chalk and Talk	Assignment

Offered by **Malayalam**

Course Content **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	തിരക്കഥ - ഞാൻ പ്രകാശൻ	1	5
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	തിരക്കഥ - ഞാൻ പ്രകാശൻ	1	5
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual			**02 Hrs**
III	തിരക്കഥ - ഞാൻ പ്രകാശൻ	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
IV	നാടകം - ഭരതവാക്യം	1	2
		Instructional Hours	**12**
Suggested Learning Methods: Auditory, Visual			**02 Hrs**
V	നാടകം - ഭരതവാക്യം	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	1. തിരക്കഥ - ഞാൻ പ്രകാശൻ - ശ്രീനിവാസൻ, ഡി.സി.ബുക്സ് 2. നാടകം - ഭരതവാക്യം , ജി. ശങ്കരപ്പിള്ള
Reference Books	1. കഥയും തിരക്കഥയും ഡോ.ആർ.വി.എം.ദിവാകരൻ - എൻ. ബി. എസ് കോട്ടയം 2. മലയാള സിനിമയും സാഹിത്യവും - മധു ഇറവങ്കര - ഡി.സി.ബുക്സ് 3. ഒരു സിനിമ എങ്ങനെ ഉണ്ടാകുന്നു. - കെ.കെ. ചന്ദ്രൻ

	4. നാടക സാഹിത്യ ചരിത്രം - ജി. ശങ്കരപ്പിള്ള - ഡി.സി.ബുക്സ് 5. നാടകം കലയും കാഴ്ചയും - പി.ജി.സദാനന്ദൻ - ഡി.സി.ബുക്സ്
Web. URLs	**http://www.keralaculture.org>literature** **http://www.manoramaonline.com**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group Project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO 5
CO1	H	L	H	H	H	H	H	H	L	L	M	M	M
CO2	M	L	H	M	H	M	M	M	M	M	M	L	M
CO3	H	L	M	M	M	H	M	H	L	M	M	M	M
CO4	H	L	L	H	L	H	M	M	L	M	M	M	M
CO5	M	L	L	H	L	H	M	M	M	M	M	M	L

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms.RAJANI N.	Dr.SMITHA C. R.

Course Code	Title		
23U1FRN404	Part – I : Le Francais General – IV		
Semester : IV	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	Acquisition of standard French through French grammar and oral communication		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Improved understanding and communication		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	learn pronouns, gérondif along with culture adaptation in foreign countries	Lectures /Tutorial	Assignment
CO 2	French food culture, manners, futur simple & futur proche.	Group Learning	Assignment
CO 3	Business and economic culture, la cause et la consequence.	Peer Teaching	Seminar
CO 4	Letter writing official and to a patron, le passif, les doubles pronoms	Group Learning	Group Project
CO 5	The city and country, urbanisation, l'opposition et la concession, le subjonctif et l'infinitif	Group Learning	Assignment

Offered by	Department of French

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	Explorer l'inconnu	1	1
		Instructional Hours	12
Suggested Learning Methods : Visuals			
II	Goûter l'insolite	1	2
		Instructional Hours	12
Suggested Learning Methods : Comprehensive writing			
III	Consommer autrement	1	3
		Instructional Hours	12
Suggested Learning Methods : Group discussions			
IV	S'engager pour une cause	1	4
		Instructional Hours	12
Suggested Learning Methods : Visuals			

V	Repenser le quotidien	1	5
		Instructional Hours	**12**
Suggested Learning Methods : Group Discussion			
		Total Hours	**60**
Text Books	1. Saison 2 Méthode de Français – Marie-Noëlle Cocton, Anouchka De Oliveira, Dorothée Dupleix (Unit 0 to 4)		
Reference Books	1. Connexions 2 Methode de Français Régine Mérieux , Yves Loiseau		
Web. URLs	1. www.academia.edu		

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	**4**	**5**	**2**	**2**	**3**	**20**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	H	H	-	-	M	M	M	L	M
CO2	-	-	H	L	H	M	-	-	M	L	M	M	L
CO3	-	-	-	M	M	H	-	-	M	M	M	M	M
CO4	-	-	L	M	L	H	-	-	M	L	L	M	L
CO5	-	-	L	-	H	-	-	-	M	M	M	L	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Ms. SUNITA. R	Ms. SUNITA. R

Course Code	Title		
23U2ENG404	Part – II : Communicative English – II		
Semester : IV	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to All UG Programmes)			
Course Objective	To equip the students with Language Skills and develop interest in and appreciation of literature.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	SD: Helps to develop LSRW skill		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the values of life reflected in the prescribed prose	Lecture/Tutorial	Assignment
CO 2	Learn to interpret poem based on contextual evidence.	Lecture/Tutorial	Assignment
CO 3	Enhance imaginative and communication skills through short stories.	Lecture/Tutorial	Speaking
CO 4	Understand the performing art through drama.	Lecture/Tutorial	Reading
CO 5	Acquire proficiency in English for global competency.	Lecture/Tutorial	Writing

Offered by	Department of English
Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	**Prose** Francis Bacon – Of Adversity Dr. Radhakrishnan - Character is Destiny Sudha Murty - How I taught my grandmother to read	1	1
	Instructional Hours		**12**
Suggested Learning Methods : Intensive Reading			
II	**Poetry** Sarojini Naidu - The Soul's Prayer Emily Dickinson - Death in the Opposite House William Blake – London	1	2
	Instructional Hours		**12**
Suggested Learning Methods : Scaffolding Method			
III	**Short Stories** W. Somerset Maugham - Mr. Know-All Edgar Allan Poe-The Purloined Letter Ruskin Bond-The Thief Story	1	3
	Instructional Hours		**12**
Suggested Learning Methods : Flipped Learning			

IV	**Drama** William Shakespeare – As You Like It	1	4
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			
V	**GRAMMAR AND COMPOSITION** **Oral & Written Communication (Unit I–IV) Listening** – Comprehension practice from Poetry, Prose, Online Voice Practice, observing/viewing E-content (with subtitles), Guest/Invited Lectures, Conference/Seminar Presentations & Tests, and DD National News Live, BBC, CNN, VOA etc **Speaking** – In Group Discussion Forum, participate in the Turn Taking, and Conversation Management, Debating, Defending/Mock Viva- Voce, Seminar Presentations on Classroom-Assignments, and Peer-Team-interactions. **Reading**–Different Reading Strategies in Poetry, Prose, Novel, Newspaper etc **Writing** – Clauses – Conditional, Relative, Restrictive, Non-Restrictive, Denotation and Connotations Précis Writing, One word substitution.	1	5
		Instructional Hours	**12**
Suggested Learning Methods : Activity Based Learning			
		Total Hours	**60**

Text Books	Unit I – V: Compiled by the Department of English
Reference Books	CLIL (Content & Language Integrated Learning) – Module by TANSCHE NOTE: (Text: Prescribed chapters or pages will be given to the students by the department)
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Presentation	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	-	H	-	M	M	H	M	H	H	M	H	M
CO2	M	-	H	-	H	M	H	M	H	H	M	H	M
CO3	M	-	H	-	H	H	H	H	H	H	M	H	M
CO4	M	L	H	-	H	-	H	H	H	H	M	H	H
CO5	H	M	H	-	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Mr. D. Pradeek	Dr. R. Malathi

Course Code	Title		
23U3ETC410	**Core Paper X :** **Wireless Sensor Networks with Internet of Things Gateway and Protocols**		
Semester: IV	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**

Course Objective	To understand the operation of Wireless Sensor Networks and their architecture for enhancing IoT operations.
Course Category	Employability
Development Needs	Global / National
Course Description	Develop knowledge in Wireless Sensor Networks and utilize the system's features in IoT gateways and protocols.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the operation of wireless sensor networks and their node architecture.	Lecture	Group Discussion
CO 2	Be familiar with MAC protocols in wireless sensor networks.	Lecture	Quiz
CO 3	Understand the various security issues involved in wireless sensor networks.	Tutorial / Video Lessons	Seminar
CO 4	Evaluate IoT gateway architecture and selection criteria.	Tutorial / Video Lessons	Seminar
CO 5	Describe the mapping of IoT protocols to the layered IoT architecture.	Tutorial / Video Lessons	Assignment

Offered by **Internet of Things**

Course Content **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Introduction :** Sensing and Sensors - Wireless Sensor Networks - Challenges and Constraints **Node Architecture :** Architecture of Wireless Sensor Node - Sensing Subsystem - The Processor Subsystem - Communication Interfaces	1	1,3
		Instructional Hours	**12**
Suggested Learning Methods : Tutorial			
II	**MAC Protocol :** Overview of MAC - Wireless MAC Protocols - Characteristics of MAC Protocols in Sensor Networks - Contention-Free MAC Protocols - Contention Based MAC Protocols - Hybrid MAC Protocols	1	6
		Instructional Hours	**12**
Suggested Learning Methods : Group Discussion			
III	**Security in WSN:** Fundamentals of Network Security - Challenges of Security in Wireless Sensor Networks - Security Attacks in Sensor Networks - Protocols and Mechanisms for Security - IEEE 802.15.4 and ZigBee Security.	1	11

		Instructional Hours	**12**
Suggested Learning Methods : Group Discussion			
IV	**IoT Gateway :** The IoT Gateway - Sensing Domain and IoT Gateways - Architecture of IoT Gateway - Selection of IoT Gateway - IoT Gateways and Edge Computing - IoT Gateway Providers.	2	4
		Instructional Hours	**12**
Suggested Learning Methods : Video Presentation			
V	**IoT Protocol :** IoT Protocol Stack - Infrastructure Protocols and EPC global - IEEE 802.15.4 and IEEE 802.11ah – ZigBee layered architecture - 6LoWPAN network architecture - Data Distribution Service - Message Queue Telemetry Transport - Constrained Application Protocol.	2	5
		Instructional Hours	**12**
Suggested Learning Methods : Video Presentation			
		Total Hours	**60**

Text Books	1. Fundamentals of Wireless Sensor Networks: theory and practice by Waltenegus Dargie, Christian Poellabaue 2. Enabling the Internet of Things: Fundamentals, Design, and Applications by Muhammad Azhar Iqbal, John Wiley & Sons Ltd.
Reference Books	1. Feng Zhao & Leonidas J. Guibas, "Wireless Sensor Networks- An Information Processing Approach", Elsevier, 2007. 2. Ian F. Akyildiz, and Mehmet Can Vuran, Wireless Sensor Networks, 2010, Wiley, USA.
Web. URLs	1. https://nptel.ac.in/courses/106105160

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	3	2	2	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	M	M	M	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	M	M	H	M	M	M	H	M	H	H	M	M
CO4	M	H	H	M	H	H	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETC411	Core Paper XI : Sensors and Devices for Internet of Things		
Semester: IV	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

Course Objective	To introduce the concept of sensors and actuators, as well as Machine-to-Machine (M2M) protocols, along with various sensors and devices used for IoT applications.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to develop knowledge in IoT sensors and actuators, enabling technologies, and devices for IoT applications.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Gain familiarity with sensor classification and M2M enabling technologies.	Lecture	Group Discussion
CO 2	Explore and acquire knowledge about the functions of sensors and actuators for IoT.	Lecture	Quiz
CO 3	Develop an understanding of the functions of various sensors used in IoT applications.	Video Lessons	Seminar
CO 4	Comprehend the functions of various motors and displays commonly used in IoT contexts.	Tutorial / Video Lessons	Seminar
CO 5	Elaborate on various IoT devices suitable for diverse applications.	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	**Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Introduction :** Motivation – Definition of Sensor and Actuator – The Domain of Physical Phenomena – Classification of Sensors and Actuators – Datasheets. **IoT and M2M:** M2M Architecture – Difference between IoT and M2M - Software Defined Networks (SDN) - Network Function Virtualization (NFV)	1&2	1&3
	Instructional Hours		**12**
Suggested Learning Methods: Tutorial			
II	**Sensors :** Introduction to Sensors – Sensor calibration and Sensor profile – Sensor accuracy, resolution and rating – Operating voltage and Output – Thermal sensors – Mechanical sensors – Electrical sensors – Chemical sensors – Optical sensors – Acoustic sensors **Actuators :** Introduction – Thermal Actuators – Hydraulic Actuators – Pneumatic Actuators – Electromechanical actuators	3	8&9
	Instructional Hours		**12**

Suggested Learning Methods: Group Discussion			
III	**IoT Sensors :** DHT11/DHT22 Temperature and Humidity Sensor – BMP180 Barometric Sensor – FC-37 or YL-83 Rain Sensor – YL-69 or HL-69 Soil Moisture Sensor – DS18B20 Temperature Sensor – MQ-2 Gas/Smoke Sensor – HC-SR04 Ultrasonic Sensor – PIR Motion Sensor – MRFC522 RFID – IR Sensor Module – TCS3200 Color Sensor	4	1–10
		Instructional Hours	**12**
Suggested Learning Methods : Group Discussion			
IV	**IoT Motors and Displays :** OLED Display – 8x8 Dot Matrix – Membrane Keypad – 1.8 TFT Display — L298N DC Motor – Stepper Motor – Servo Motor SG90 – Relay Module	4	11–17
		Instructional Hours	**12**
Suggested Learning Methods : Video Presentation			
V	**IoT Devices:** Architecture and Device Specification of : Arduino Uno – NodeMcu – ESP 8266 – Raspberry pi 4 model b.	5	–
		Instructional Hours	**12**
Suggested Learning Methods : Video Presentation			
		Total Hours	**60**

Text Books	1. Sensors and Actuators by Francisco André Corrêa Alegria, World Scientific Publishing Co. Pte. Ltd. 2022 2. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015 3. Introduction to Industry 4.0 and Industrial Internet of Things by Sudip Misra Chandana Roy Anandarup Mukherjee by CRC Press, 2021 4. Ultimate guide for arduino sensor/ modules by Rui Santos and Sara Santos 5. Device Data Sheets Available in Online – Department of IoT, NASC.
Reference Books	1. N. Ida, Sensors, Actuators and Their Interfaces, SciTech Publishers, 2014.
Web. URLs	1. https://nptel.ac.in/courses/108108123

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	3	2	2	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	M	M	L	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	M	M	H	M	M	L	H	M	H	H	M	M
CO4	M	H	H	M	H	H	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETP412	Core Paper XII : Sensors and Devices Practical		
Semester: IV	Credits : 3	CIA: 30 Marks	ESE: 45 Marks

Course Objective	To enable students to identify electronic components and to design and interface sensor circuits.
Course Category	Employability
Development Needs	Global
Course Description	This course is designed to make students capable of constructing applications using various sensor circuits.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate the ability to identify electronic components.	Circuit Demonstration	Program Creativity
CO 2	Exhibit proficiency in identifying various types of sensors.	Circuit Demonstration	Program Development
CO 3	Display competence in designing different types of control circuits.	Circuit Demonstration	Program Development
CO 4	Showcase proficiency in interfacing various sensors.	Circuit Demonstration	Program Development
CO 5	Demonstrate the capability to design real-time applications.	Circuit Demonstration	Program Development

Offered by	**Internet of Things**
Course Content	**Instructional Hours / Week : 4**

Program List
(Any 8 Program and use any one of the IoT board)

1. Connect an LED to GPIO pin 25 and control it through command line.
2. Connect an LED to GPIO pin 24 and a Switch to GPIO 25 and control the LED with the switch
3. The state of LED should toggle with every press of the switch Use DHT11 temperature sensor and print the temperature and humidity of the room with an interval of 15 seconds
4. Interface MQ-2 Gas sensor and evaluate the operations.
5. Connect the LDR and control an LED that should switch-on/off depending on the light
6. Create a traffic light signal with three colored lights (Red, Orange and Green) with a duty cycle of 5-2-10 seconds
7. Switch on and off the DC motor based on the position of a switch.
8. Convert an analog voltage to digital value and show it on the screen.
9. Create a door lock application using a reed switch and magnet and give a beep when the door is opened
10. Create an application that has three LEDs (Red, Green and white). The LEDs should follow the cycle (All Off, Red On, Green On, White On) for each clap (use sound sensor)

11. Interface servo motor and evaluate its operations.	
12. Interface ultrasonic sensor and evaluate its operations.	
Total Hours	**60**

Tools for Assessment (30 Marks)

Laboratory Performance I	Laboratory Performance II	Laboratory Performance III	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	30

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	H	H	H	H	M	M
CO2	M	H	H	M	H	M	M	H	H	H	H	M	M
CO3	H	H	H	M	H	H	M	H	H	H	H	H	H
CO4	H	H	H	M	H	H	M	H	H	H	H	H	H
CO5	H	H	H	M	H	H	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETA404	Allied Paper IV : Python Programming		
Semester : IV	Credits : 3	CIA : 20 Marks	ESE : 55 Marks

Course Objective	To develop algorithmic solutions for simple computational problems using Python.
Course Category	Employability
Development Needs	Global / National
Course Description	Python is a versatile programming language that finds applications in various fields, including software development, government administration, business, science, the arts, education, and more.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the basics of Python and write simple python program.	Lecture / Demonstration	Assignment
CO 2	Develop Python programs with Control Statement and List method.	Lecture / Demonstration	Seminar
CO 3	Apply Tuples, Functions and Set Iterates to develop simple applications	Lecture / Demonstration	Quiz
CO 4	Apply Python Strings, Multithreading and Exceptions for problems solving.	Tutorial/ Case Studies	Program Execution
CO 5	Understanding of file systems and their structure within a computer environment.	Tutorial/ Case Studies	Program Execution

Offered by | **Internet of Things**

Course Content	Instructional Hours / Week: 3

Unit	Description	Text book	Chapters
I	**Fundamentals of Python Programming :** Introduction – Features–Applications – Installation – Sample Program – Python Virtual Machine –Memory management in Python –Comparison between C ,Java and Python –Keywords, Identifiers, Statements, Indentation. Syntax and Styles :Data Types–Literals–Variables-Operators and Expressions - Evaluation of Expression - Sample Programs.	1	1,2
	Instructional Hours		**09**
Suggested Learning Methods: Video lectures about the basics of Python Programming			
II	**Control Flow:** If – While – For – Break – Continue- Pass-Entry Controlled Loop – Exit Controlled Loop – Counter Controlled Loop - Condition Controlled Loop - Nested Loop - Sample Programs. Arrays – Sequences – Python Lists : Read a List type from a Keyboard - Accessing Elements of a List- Modifying Elements of a List–Basic Operations- Built-in Functions – Python List Methods.	1,2	3,4,5,9
	Instructional Hours		**09**
Suggested Learning Methods : Practice using Flow Charts			

III	**Tuples** : Need of a Tuple - Sequence of Unpacking – Methods – Sample programs. Dictionaries : Making a Dictionary – Basic Operations –Dictionary Operations – Sets – Iterates and Generators – Sample Programs. **Functions :** Defining Functions – Calling Functions –Passing Arguments – Keyword Arguments – Default Arguments –Required Arguments – Variable Length Arguments – Return Statements –Nesting of Passing Arguments - Anonymous Functions - Recursive Functions – Scope of Local and Global Variables.	1	6,7,8
		Instructional Hours	09
Suggested Learning Methods: Develop small programmes using Tuples			
IV	**Strings in Python :** Reading – Accessing – Modifying – Finding – Iterating through a String – Build – in String Functions .Errors and Exceptions – Multithreading	2	8
		Instructional Hours	09
Suggested Learning Methods : Develop small applications			
V	**Files and Directory Access:** Files and Streams - Opening a File – Reading / Writing Operations in a File - Other operations in a File –Iterating through a File – Splitting Words –Serialization and Deserialization. Events : Event Objects – Binding call backs to events- Event names - Keyboard events - Mouse Events-Sample Programs	1	13,17
		Instructional Hours	09
Suggested Learning Methods: Laboratory practice			
		Total Hours	**45**

Text Books	1. Ch.Satyanaryana, M.RadhikaMani, B.N.Jagadesh, "Python Programming", University Press Pvt. Ltd .2018. 2. Dr.S.A.Kulkarni, Problem Solving and Python Programming, 2nd Edition, Yesdee Publishing, 2018
Reference Books	1. Allen B.Downey, "Think Python:How to Think Like a Computer Scientist",2nd edition, Updated for Python 3,Shroff / O'Reilly Publishers, 2016 2. Guidovan Rossumand FredL DrakeJr, "An Introduction to Python – Revised And updated for Python 3.2",Network Theory Ltd., 2011.
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	3	2	2	20

Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	M	M	M	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	M	M	H	M	M	M	H	M	H	H	M	M
CO4	M	H	H	M	M	M	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U4ETZ402	Skill Based Paper II : Python Programming Practical		
Semester: IV	Credits: 3	CIA: 30 Marks	ESE: 45 Marks

Course Objective	This course typically focuses on providing hands-on experience and practical skills in Python programming.
Course Category	Skill Development
Development Needs	Global / National
Course Description	To develop a skill set in Python programming and apply these concepts to create applications that meet both local and global needs.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Develop simple Python programs proficiently.	Program Demonstration	Program Creativity
CO 2	Demonstrate an understanding of control statements and apply them effectively in program development.	Program Demonstration	Debugging
CO 3	Apply the concept of looping constructs and functions to solve basic programming problems.	Laboratory Practice	Application of Logic
CO 4	Develop programs for sorting Strings, Lists, Tuples, and File handling tasks.	Code review	Program Development
CO 5	Create programs using both Linear and Binary Search techniques to solve specific problems.	Demonstration Projects	Program Development

Offered by	**Internet of Things**

Course Content	**Instructional Hours/Week: 3**

S.No.	List of Practical
1	Displays the following information: Your name, Full Address Mobile number, College name, Course subjects.
2	Find the largest three integers using if-else and conditional operator.
3	Asks the user to enter a series of positive numbers (The user should enter a negative number to signal the end of the series) and the program should Display the numbers in order and their sum.
4	Find the product of two matrices.
5	Recursive functions for GCD of two integers.

6	Recursive functions for the factorial of positive integer.
7	Recursive functions for Fibonacci Sequence up to given number n.
8	Recursive functions to display prime number from 2 to n.
9	Write a series of random numbers to a file from 1 to n and display.
10	Sort a given sequence: String, List and Tuple.
11	Design a simple calculator.
12	Design Linear Search and Binary Search.
13	Write python program in which a function (with single string parameter) is defined and calling that function prints the string parameters given to function.
14	Write python program in which a class is define, the n create object of that class and call simple print function define in class.
Total Hours	**45**

Suggested Learning Methods:
Solving Case studies, Program development, Code Review and Peer Coding

Tools for assessment (30 Marks)

Application of Logic	Program Creativity	Program Debugging	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	30

Mapping

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	M	M	H	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	H	M	H	M	M	H	H	M	H	H	M	M
CO4	M	H	H	M	H	H	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title	
22U4NM4BT2	Part IV : Basic Tamil – II (அடிப்படைத்தமிழ் - II)	
Semester: IV	Credits: 2	CIA: 50 Marks

(Common to all UG Programmes)

Course Objective	அற இலக்கியங்களை அறிமுகப்படுத்தல்.
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)
Development Needs	**Regional (** தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்**)**
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	அற இலக்கிய அறிவு பெறுதல் - சிறுகதைகள் வழி சமூக அறிவு பெறுதல்.	விரிவுரை / காணொளி வகுப்பு	ஒப்படைவு
CO 2	தமிழ் எழுத்துக்கள் அறிமுகம் செய்தல் மற்றும் வாசித்தல் ஆகியவற்றின் பயன்பாடு.	குழு விவாதம்/ விரிவுரை	கருத்தரங்கு
CO 3	பிறமொழி அறிவுத் திறன் மேம்படச்செய்தல்.	விரிவுரை/காணொளி ப்பட விளக்கம்	ஒப்படைவு
CO 4	மொழிப்பெயர்ப்புத் திறன் மேம்படச்செய்தல்.	விரிவுரை/ குழு விவாதம்	குழுத்திட்டம்
CO 5	வார்த்தை அமைக்கும் திறன் பெறச்செய்தல்.	விரிவுரை / குழுத்திட்டம்	குழுத்திட்டம்

Offered by தமிழ்த்துறை

Course Content : Basic Tamil – II (அடிப்படைத்தமிழ் II) | **Instructional Hours / Week : 2 Hours**

Unit	Description	Text Book	Chapters
I	நீதி நூல்கள்	1.பாரதியார் ஆத்திச்சூடி 2.கொன்றைவேந்தன்	1.1 1 முதல் 12 வரிகள் 2.1 1 முதல் 7 வரிகள்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : நீதிநூல்களின் சிறப்பினை அறியும் பயன் பெற்றமை			
II	பதினெண் கீழ்க்கணக்கு நூல் (திருக்குறள்)	திருக்குறள்	2.1.கடவுள் வாழ்த்து -அகர முதல எனத் தொடங்கும்... அதி 1 குறள் -1 2.2. வான் சிறப்பு- நீரின்றி அமையாது உலகு. அதி-2.குறள் - 10 2.3. அன்புடைமை - அன்பின் வழியது உயிர்நிலை. அதி - 8.குறள் - 10 2.4. கல்வி - கண்ணுடையார் என்பர் . அதி-40 குறள்-393 2.5. இனியவை கூறல் - இனிய உளவாக இன்னாத அதி10. குறள் -10
		Instructional Hours	**6 Hours**
Suggested Learning Methods : திருக்குறளின் சிறப்பினை அறிந்தமை			
III	கிராமியக் கதைகள்	கிராமியக் கதைகள்	3.1.பரமார்த்தக்குரு கதைகள் 3.2.நாட்டுப்புறக் கதைகள் அறிமுகம்
	Instructional Hours		**6 Hours**
Suggested Learning Methods : கிராமியக் கதைகளின் கதை அமைப்பினை அறியும் வாய்ப்பு பெற்றமை			

IV	மொழிப்பயிற்சி	மொழிப்பயிற்சி	4.1. பிறமொழிச் சொற்களுக்கு தமிழ்ச்சொல் எழுதுதல்
Instructional Hours			**6 Hours**
Suggested Learning Methods :		தமிழ்ச்சொல் எழுதும் திறன் பெற்றமை	
V	எழுத்துப்பயிற்சி	எழுத்துப்பயிற்சி	5.1தன்விவரம் எழுதுதல் 5.2 பெயர், கல்லூரி விவரம் எழுதச்செய்தல்
Instructional Hours			**6 Hours**
Suggested Learning Methods : பிறமொழி கலப்பு இன்றி தமிழ்ச்சொல் எழுதும் திறன் பெற்றமை			
Total Hours			**30 Hours**
Text Books	1. இளங்கலை தமிழ் மாணவர்களுக்குரிய பாடநூல்"அரிச்சுவடி" 2. தொகுப்பு: தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.		
Reference Books	1. ஔவையார் ஆத்திச்சூடி மணிவாசகர் பதிப்பகம், கோயம்புத்தூர் இராஜவீதி,01. 2. திருக்குறள் - பரிமேலழகர் உரை, மணிவாசகர் பதிப்பகம், சென்னை - 600018.		
Web. URLs	https://youtu.be/d5be921uxhE, https://youtu.be/Wtg-GJPfXTM.		

Tools for Assessment (50 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
8	8	10	8	8	8	50

Mapping

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	H	L	H	M	H	H	M	L	M	M	M
CO2	L	L	H	L	M	M	L	H	M	M	M	M	L
CO3	H	L	H	L	L	M	M	H	M	M	M	M	M
CO4	H	L	M	L	L	M	H	M	M	L	M	M	L
CO5	H	L	H	L	M	M	H	H	M	M	M	M	M

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh Kumar	Dr. A. Sridevi

Course Code	Title	
22U4NM4AT2	Part IV : Advanced Tamil – II (சிறப்புத்தமிழ் -II)	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	நூல்களின் வழி அறச் சிந்தனைகளை உருவாக்குதல் செம்மொழியினைச் செம்மைப்படுத்துதல்.
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)
Development Needs	Regional (தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	அறச்சிந்தனைகள் பெறுதல் மற்றும் இலக்கண வழக்கு முறைகளைப் பெறுதல்.	விரிவுரை/காணொளிப்பட விளக்கம்	கருத்தரங்கு
CO 2	கடிதம் எழுதுதல் மற்றும் மொழியறிவைப் பெறுதல்	விரிவுரை/ குழு விவாதம்	ஒப்படைவு
CO 3	படைப்பாக்கத்திறன் அறிவுபெறச்செய்தல்	விரிவுரை	கருத்தரங்கு
CO 4	தகவல் தொடர்பியலுக்கானகடிதம்,அமைவுத்திறன் பெறச்செய்தல்	விரிவுரை/ குழு விவாதம்	குழுத்திட்டம்
CO 5	மொழியைப் பிழையின்றிப் பேச,எழுதும் திறன் பெறச்செய்தல்	விரிவுரை/காணொளிப்பட விளக்கம்	ஒப்படைவு

Offered by தமிழ்த்துறை

Course Content : Advanced Tamil – II (சிறப்புத்தமிழ் -II) | **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	பதினெண் கீழ்க்கணக்கு நூல்கள்	1.திருக்குறள் 2.நாலடியார்	1.1. கூடாநட்பு 1.2. செய்நன்றியறிதல் - நாலடியார் 1.3. கல்வி (131,132 செய்யுள்கள்)
		Instructional Hours	**6**
Suggested Learning Methods : திருக்குறளின் சுவை அறியும் வாய்ப்பு பெற்றமை			
II	சிறுகதை	1.வெ.இறையன்பு - பூனாத்தி சிறுகதைகள்	2.1 சேவியர் வாத்தியார் 2.2 தூரிகை
		Instructional Hours	**6**
Suggested Learning Methods : சிறுகதைகளின் சுவை அறியும் வாய்ப்பு பெற்றமை			
III	இலக்கணம்	இலக்கணப் பயிற்சி ஏடு	3.1 எழுத்தும் சொல்லும் 3.2 சுட்டெழுத்துகள் 3.3 சொற்களைச் சரியாகப் பயன்படுத்தும் முறை 3.4 வினைச்சொற்கள், பெயர்ச்சொற்கள் 3.5 வினா எழுத்துகள்
		Instructional Hours	**6**
Suggested Learning Methods : இலக்கணப் பிழை இன்றி எழுதும் பயிற்சி பெற்றமை			
IV	வழக்கறிதல்	இலக்கணம்	மரபு வழக்கு - இயல்பு வழக்கு, தகுதி வழக்கு - அறிதல்
		Instructional Hours	**6**
Suggested Learning Methods : வழக்குகள் பற்றி முழுமையாக அறியும் பயிற்சி பெற்றமை			

V	படைப்பாற்றல் பயிற்சி	இலக்கிய வரலாறு	கவிதை–சிறுகதை–நூல் மதிப்பீடு எழுதுதல்
Instructional Hours			**6**
Suggested Learning Methods : மதிப்பீடு செய்யும் பயிற்சி பெற்றமை			
		Total Hours	**30 Hrs**
Text Books	1. இளங்கலைத்தமிழ் மாணவர்களுக்குரிய பாடநூல்"திரட்டு" தொகுப்பு: தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.		
Reference Books	1. திருக்குறள் –பரிமேலழகர் உரை, மணிவாசகர் பதிப்பகம், சென்னை - 018 2. வெ.இறையன்பு - பூனாத்தி சிறுகதைகள், விஜயா பதிப்பகம், கோவை.		
Web. URLs	https://youtu.be/_vB59q6At8s, https://youtu.be/aSvxO_rV9eQ.		

Course designed by	Verified by
Dr. S. Satheesh Kumar	**Dr. A. Sridevi**

Course Code	Title	
22U4NM4GEN	Non Major Elective : General Awareness	
Semester : IV	Credits : 2	ESE : 50 Marks

(Common to all UG Programmes)

Course Objective:

Enable the students to learn General knowledge and prepare for different competitive exams.

Course Outcomes:

CO1	Determine Verbal Aptitude , Numerical Aptitude and Logical Reasoning
CO2	Recall basic Science, history , Tamil , Computer , Commerce concepts which would help to crack competitive Examinations
CO3	Acquire time Management skills to attempt competitive Examinations
CO4	Develop Aptitude and problem solving skills
CO5	Gain Knowledge about Current Affairs

Course Content **Instructional Hours / Week : 2**

S. No.	Topics
1.	Verbal Aptitude
2.	Numerical Aptitudeand Logical Reasoning
3.	Abstract Reasoning
4.	Tamil and Other Literature
5.	General Science and Technology
6.	Computer
7.	Economics and Commerce
8.	History and Freedom Struggle
9.	Sports
10.	Current Affairs
	Total Hours : 30

Text Book: "General Awareness", compiled by Nehru Arts and Science College, Coimbatore

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	-	-	H	-	-	L	M	M	L	M	M
CO2	H	L	-	-	H	-	-	L	L	M	L	M	M
CO3	H	L	-	-	H	-	-	M	M	L	M	L	L
CO4	H	L	-	-	H	-	-	L	M	L	M	M	M
CO5	H	L	-	-	H	-	-	L	M	M	M	L	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Ms. P. Sheeba Maybel	Dr. T. Chandra Pushpam

Course Code	Title	
22U4VBOE01	Value Based Open Elective Course : Design Ecosystem	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To gain the knowledge on ecosystem and environmental sustainability
Course Category	Crosscutting Issue : Environment And Sustainability
Development Needs	Global
Course Description	Design ecosystem describes about the components, types, structural and functional unit of ecology where the living organisms interact with each other and the surrounding environment.

Course Outcomes		Teaching Methods
CO 1	Understand about the basic concepts of ecosystem and environmental planning	Lecture / Video Lessons
CO 2	Gain knowledge of challenges and design process of ecosystem	Lectures / Video Lessons
CO 3	Understand about functions and flow of energy in ecosystem	Case study / Model
CO 4	Analyse about process and mechanism of ecosystem control	Tutorial / Group Discussion
CO 5	Demonstrate about green infrastructure and regulatory framework	Lecture / Tutorial

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Sustainable Human Dominated-Ecosystem and Environmental planning:** Introduction to Ecology & environmental sciences; Principles and Scope of Ecology. Axioms of Ecological Engineering, Sustainable design principles, Global population dymanics, Human dominated earth.	1	1
		Instructional Hours	**6**
Suggested Learning Methods: Video Lectures			
II	**Designing Ecosystem services & Biomes:** Design challenges and needs, the design process, biomes, ecoregions, other land classification systems.	1	3 & 4
		Instructional Hours	**6**
Suggested Learning Methods: Video Tutorials			
III	**Energy and mass flow through ecosystem:** Structure and Functions of Ecosystems - Abiotic and Biotic components, Flow of energy and cycling of materials; water, carbon, nitrogen and phosphorus	3	2
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			

IV	**Ecosystem control:** Population control process, community control process. Stream restoration design -hydrology, sedimentology, geomorphology, habitat, riparian corridor and construction.	2	6
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
V	**Green infrastructure design:** Green infrastructure network, sustainable cities initiatives, agricultural sustainability indicators, surrounding environmental, ecological and social justice; environmental ethics, issues and possible solutions	3	4
		Instructional Hours	**6**
Suggested Learning Methods : Online Tutorial			
		Total Hours	**30**

Text Books	1. Matlock, M. D. and M. Robert. Ecological Engineering Design: Restoring and Conserving Ecosystem Services. JohnWiley& Sons, Inc. 2011. 2. Meffe, G.K., L. Nielson, R. L. Knight and D. Schenborn. Ecosystem Management: Adaptive, Community-Based Conservation. Island Press. 2012. 3. Elliot, D. 2003. Energy, Society and Environment, Technology for a Sustainable Future. Routledge Press.
Reference Books	1. Sim Van Der Ryn and S. Cowan. Ecological Design. Island Press, 1996. 2. Neeraja, N. Environment and Ecology: A Dymanic Approach, 3rd Edition. GKP Books Catalogue. 2018.
Web. URLs	1. https://www.nationalgeographic.org/encyclopedia/ecosystem/ 2. https://www.environmentandecology.com/

Course Designed by	**Verified by Chairman**
Dr. S. Esath Natheer	Dr. N. Thangavel

Course Code	Title	
22U4VBOE02	Value Based Open Elective Course: Design Thinking	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	Inculcate the fundamental concepts of design thinking and develop the students as a good designer by imparting creativity and problem solving ability
Course Category	Crosscutting Issue : Professional Ethics
Development Needs	Local, National and Global
Course Description	The course aims to provideintroduction to the basic concepts and techniques of design thinking and methods of implementing design thinking in the real world.

Course Outcomes		Teaching Methods
CO 1	Learn the basic concepts of design thinking	Direct Instruction
CO 2	Develop the skill of applying the design thinking	Direct Instruction
CO 3	Learn the business uses of design thinking	Video Lessons
CO 4	Understand the variety of approaches within the design thinking discipline	Direct Instruction
CO 5	Impart knowledge in design thinking mindset	Direct Instruction

Course Content	Instructional Hours / Week: 2

Unit	Description	Text Book	Chapters
I	**Design Thinking Background** Definition of Design Thinking, Variety within the Design Thinking Discipline, Design Thinking Mindset	1	1
		Instructional Hours	**06**
Suggested Learning Methods:Brain Storming			
II	**Design Thinking Approach** Fundamental Concepts – Empathy, Ethnography, Divergent Thinking, Convergent Thinking, Visual Thinking, Assumption Testing, Prototyping, Time for Learning and Validation	1	5,1,3
		Instructional Hours	**06**
Suggested Learning Methods :Learning by Teaching			
III	**Design Thinking Resources** – People, place, material, organizational fit **Design Thinking Processes** - Numerous Approaches, Double Diamond Process, 5-Stage, School Process, Designing for Growth Process, Role of Project Management	1	5,6
		Instructional Hours	**06**
Suggested Learning Methods :DIY Activities			

IV	**Design Thinking in Practice I:** Process Stages of Designing for Growth - Design Thinking Tools and Methods – I- Purposeful Use of Tools and Alignment with Process, Visualization, Journey Mapping	1	6
		Instructional Hours	**06**
Suggested Learning Methods: Case Method			
V	**Design Thinking in Practice II:** Design Thinking Tools and Methods – II- Value Chain Analysis, Mind Mapping, Brainstorming, Concept Development, Assumption Testing, Rapid Prototyping, Customer Co-Creation, Learning Launch	2	8
		Instructional Hours	**06**
Suggested Learning Methods :Project Based Learning			
		Total Hours	**30**

Text Books	1. "Designing for growth: A design thinking tool kit for managers", by Jeanne Liedtka and Tim Ogilvie., 2011, ISBN 978-0-231-15838-1 2. "The design thinking playbook: Mindful digital transformation of teams, products, services, businesses and ecosystems", by Michael Lewrick, Patrick Link, Larry Leifer., 2018, ISBN 978-1-119-46747-2
Reference Books	1. "Presumptive design: Design provocations for innovation", by Leo Frishberg and Charles Lambdin., 2016, ISBN: 978-0-12-803086-8 2. "Systems thinking: Managing chaos and complexity: A platform for designing business architecture.", "Chapter Seven: Design Thinking", by JamshidGharajedaghi, 2011, ISBN 978-0-12-385915-0
Web. URLs	1. https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond

Course Designed by	**Verified by Chairman**
Ms. M. Nandhini	Dr. S. Jayapriya

Course Code	Title	
22U4VBOE03	Value Based Open Elective Course :Disaster Management	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To learn knowledge about disaster and risk and apply the same in the time of any disaster.
Course Category	Crosscutting Issue : Environment And Sustainability
Development Needs	National
Course Description	This course is designed to provide students with a comprehensive understanding of the concepts, theories, and practices of disaster and risk management. Students will learn how to identify and assess risks, develop emergency plans, and mitigate the impact of disasters on communities and organizations.

	Course Outcomes	Teaching Methods
CO 1	Understand different types of disasters and their impact on individuals and communities.	Lecture/ Demonstration
CO 2	Analyze the disaster management scenario in India, the policy framework, and the role of different stakeholders in reducing disaster risk and building resilience	Lecture/ Case Studies
CO 3	Understand the concepts of risk and vulnerability in disaster management and analyze the different approaches to disaster risk reduction.	Lectures / Video Lessons
CO 4	Analyzethe concept and nature of disaster preparedness, different components of a disaster preparedness plan	Tutorial / Case Studies
CO 5	Narrate the emergency responses to be taken by the national disaster management force and the practical training process on disaster management	Lecture / Class Projects

Course Content	**Instructional Hours / Week:2**

Unit	Description	Text Book	Chapters
I	**Introduction on Disaster** Definitions and Terminologies used in Disaster Management, Basic concepts in Disaster Management, Types of Disaster: Natural Disaster: Flood, Cyclone, Earthquakes, Landslides, epidemic or Pandemic etc. (Case studies of each), Man-made Disaster: Fire, Industrial Pollution, Nuclear Disaster, Biological Disasters, Accidents (Air, Sea, Rail & Road), Structural failures (Building and Bridge), War & Terrorism etc. (Case studies of each).	1	1
	Instructional Hours		**6**
Suggested Learning Methods:Power Point Presentation			
II	**Disaster management in India** Hazard and Vulnerability Profile India, Disaster Management Indian scenario, India's vulnerability profile, Disaster Management Act 2005 and Policy guidelines, National Institute of Disaster Management, National Disaster Response Force (NDRF),	1	2

	National Disaster Management Authority, States Disaster Management Authority, District Disaster Management Authority and Cases Studies.		
		Instructional Hours	**6**
Suggested Learning Methods: PPT and Video Lecture			
III	**Risk and Vulnerability** Analysis Risk: Assessing Disaster Risk, Disaster Risk Reduction, Vulnerability: Its concept and analysis, Strategic Development for Vulnerability Reduction, Climate Variability & Disaster Risk, Industrial hazard and Risk Management	1	3
		Instructional Hours	**6**
Suggested Learning Methods: Video Lecture			
IV	**Disaster Preparedness** Concept and Nature, Disaster Preparedness Plan, Prediction, Early Warnings and Safety Measures of Disaster, Role of Information, Education, Communication, and Training, Role of Government, International and NGO Bodies.	1	4
		Instructional Hours	**6**
Suggested Learning Methods: PPT and Group Activity			
V	**Response and 3Rs** Emergency Response: Introduction, Crisis Response Plan (CRP), Communication, Participation, and Activation of Emergency Preparedness Plan, Search, Rescue, Evacuation and Logistic Management, Role of Government, International and NGO Bodies, Psychological relief and recovery, Relief operation and Recovery, Post Disaster Public Health Management, 3R - Rehabilitation, Reconstruction and Recovery, Reconstruction and Rehabilitation as a Means of Development, Damage Assessment, Post Disaster effects and Remedial Measures, Role of Educational Institutions in Disaster management.	1	5
		Instructional Hours	**6**
Suggested Learning Methods: Laboratory Practice			
		Total Hours	**30**

Text Books	1. Disaster and Risk Management (2023), Notes Compiled by the Department of Criminology, Nehru Arts and Science College, Coimbatore
Reference Books	1. J. P. Singhal, "Disaster Management", Laxmi Publications, 2003. 2. M C Gupta, "Manual on Natural Disaster Management in India", NIDM, New Delhi, 2013 3. R K Bhandani, "An Overview on Natural &Man-made Disasters and their Reduction", CSIR, New Delhi, 2000 4. Dr. Mrinalini Pandey, "Disaster Management", Wiley India Pvt. Ltd, 2014. 5. National Disaster Management Authority Publications-Guidelines & Templates for Disaster Management

Course Designed by	**Verified by Chairman**
Dr. Reneesh K. Rajan	Dr. Reneesh K. Rajan

Course Code	Title	
22U4VBOE04	Value Based Open Elective Course : Environmental Pollution and Waste Management	
Semester: IV	Credits : 2	ESE : 50 Marks

Course Objective	To acquire deeper knowledge about Environmental Management Systems
Course Category	Crosscutting Issue : Environment And Sustainability
Development Needs	Global
Course Description	Environmental Pollution and waste Management involves studying the management of any unnecessary resource use or release of substances into the water, land or air that could harm human health or the environment

Course Outcomes		Teaching Methods
CO 1	Understand the types of environmental pollutants	Lecture / Group Learning
CO 2	Describe, develop and interpret methods of the Environmental Management Systems.	Lecture/ Online Tutorial
CO 3	Critically evaluate methods and possibilities within Environmental Management Systems from asystems perspective.	Lecture/ Online Tutorial
CO 4	Understand the effective management of environmental pollutants	Lecture/ Online Tutorial
CO 5	Learn Environmental Auditing for various Industries/Projects.	Lecture/ Online Tutorial

Course Content		Instructional Hours / Week : 2	
Unit	**Description**	**Text Book**	**Chapters**
I	Introduction to Environmental pollutants,Types of pollutants, Biodegradable pollutants, Non-biodegradable pollutants; Air pollution, Water Pollution, Soil Pollution	1	1,2
		Instructional Hours	**6**
Suggested Learning Methods: Industrial Visit			
II	Introduction to Environmental Management System basic definitions and terms, Framework for Environmental Management Systems, Approach for developing an Environmental Management System.	2	2, 4
		Instructional Hours	**6**
Suggested Learning Methods :Web search			
III	The introduction and implementation of ISO 14001: environmental policy, planning, implementation and operation, checking, management review.Applications EMS in terms of Process flow chart, effluent Generation, composition and treatment of effluents from following industries – sugar, pulp and paper, electroplating, dairy, oil refineries, etc.	2	5
		Instructional Hours	**6**
Suggested Learning Methods : Online tutorial			

IV	Introduction to Environmental Auditing, Category "A" & "B" types of projects. Procedures and Guidelines to conduct Environmental Audit. Plastic Pollution: Causes, impacts, and reduction strategies -Global issue of plastic pollution and innovative solutions	3	7
		Instructional Hours	**6**
Suggested Learning Methods : Online tutorial			
V	Municipal Solid Waste Management: Collection, transportation, and disposal of solid waste - Examination of waste treatment technologies and waste-to-energy processes. E-waste Management: Challenges and recycling techniques for electronic waste - Discussion on the environmental and health hazards associated with improper e-waste disposal.	1	8
		Instructional Hours	**6**
Suggested Learning Methods : Online tutorial			
		Total Hours	**30**

Text Books	1. ISO 14001 Certification - Environmental Management Systems: A Practical Guide for Preparing Effective Environmental Management Systems Textbook Binding – Import, 10 Aug 1995 by W. Lee Kuhre (Author) 2. M. N Rao, "Waste Water Treatment" Oxford and IBH publishing Co. Pvt Ltd, 2007 3. Peavy, H.S, D.R. Rowe &T.George, "Environmental Engineering", New York: McGraw Hill, 1987
Reference Books	1. Christopher Sheldon and Mark Yoxon, "Installing Environmental management Systems – a step by step guide" Earthscan Publications Ltd, London, 1999.
Web. URLs	1. https://www.anits.edu.in/online_tutorials/es/Unit%203.pdf

Course Designed by	**Verified by Chairman**
Dr. O. S. Nimmi	Dr. N. Saranya

Course Code	Title	
22U4VB0E05	Value Based Open Elective Course : History of Ancient India	
Semester: IV	Credits: 2	ESE : 50 Marks

Course Objective	To explore the rich and diverse history of ancient India, examining its civilizations, political systems and cultural achievements.
Course Category	Employability
Development Needs	Global
Course Description	This course gives an in depth analysis of the Ancient Indian History marking the beginning of urban civilization in the Indian subcontinent.

Course Outcomes		Teaching Methods
CO 1	Understand the salient features of Indus valley civilization	Lecture
CO 2	Evaluate the features Civilizations	Tutorial
CO 3	Evaluate the rise of new movements	Lecture
CO 4	Visualize the administration of Mauryas and the art and architecture of Mauryas	Tutorial
CO 5	Identify the administration of Guptas and their contribution to University	Lecture

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	Definitions - Nature and Scope of History - History and Its Relationship with other Social Sciences - Geographical Features of India Sources of Indian History: Pre- History Paleolithic, Mesolithic, Neolithic, Chalcolithic and Megalithic Cultures.	1 &4	1-5
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
II	Indus Valley Civilization - Its Features & Decline; Early Vedic and Later Vedic Civilizations Vedic Literature Society Economy - Polity Religion.	2	2-4
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
III	Rise of New Religious Movements Charvakas, Lokayathas, Jainism and Buddhism; Mahajanapadas - Rise of Magadha; Impact.	3	3
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			

IV	Foundation of the Mauryan Dynasty; Ashoka and His Dharma Polity Administration - Society Economy Religion Literature - Art and Architecture; Disintegration of the Mauryan Empire; Post-Mauryan Kingdoms - Indo-Greeks - Kushanas and Kanishka - Society Economy Literature Art and Architecture; The Satavahanas; Sangam Age Literary Development.	4	4 &5
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
V	Gupta Empire: A Brief Political Survey - Polity and Administration, Social and Economic Conditions, Agriculture and Land Grants - Feudalism, Caste System, Position of Women, Education, Literature, Science and Technology, Art and Architecture - Harshavardana and His Achievements.	4	5
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
		Total Hours	**30**

Text Books	1. E.H. Carr, What is History? Penguin Books, England, 1990. 2. Majumdar, R.C., History and Culture of the Indian People, Vols. I, II & & III. 3. Romila Thapar, Asoka and the Decline of the Mauryas, OUP, New Delhi, 1995. 4. Romila Thapar, Early India (From the earliest to AD 1300).
Reference Books	1. Poonam Dalal : Ancient and Medival India for UPSC & State Level Exam

Course Designed by	**Verified by Chairman**
Ms. S. Kavitha	Dr. R. Malathi

Course Code	Title	
22U4VBOE06	Value Based Open Elective Course : Indian Knowledge System	
Semester : IV	Credits : 2	ESE : 50 Marks

Course Objective	To make the students understand the knowledge system in India and apply it to their day to day life
Course Category	Value Education
Development Needs	National
Course Description	This course will actively engage for spreading the rich heritage of our country and traditional knowledge in the field of Arts and literature, Agriculture, Basic Sciences, Engineering & Technology, Architecture, Management, Economics, etc

Course Outcomes		Teaching Methods
CO 1	Understand the History and an overview of Indian knowledge System.	Flipped Classroom
CO 2	Interpret the Importance of Vedic Corpus and Philosophical System	Student Centric
CO 3	Analyse the Foundational Concepts like Linguistics and and Number Systems.	Blended Mode
CO 4	Interpret the concepts of Astronomy and Town Planning Architecture.	Flipped Classroom
CO 5	Describe the Importance of Health, Wellness, Psychology and Administrative Governance	Case-Base

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	**Indian Knowledge System** : An Introduction: Importance of Ancient Knowledge-Defining Indian Knowledge System –The Indian Knowledge System Corpus-A Classification Framework-History of Indian Knowledge System.	1	1
	Instructional Hours		**06**
Suggested Learning Methods : Cooperative Learning			
II	**The Vedic Corpus**: Introduction to Vedas-The four Vedas. **Philosophical System**: Indian Philosophical System – Development and Unique Features-Vedic schools of Philosophy.	1	2 & 3
	Instructional Hours		**06**
Suggested Learning Methods : Peer Learning			

III	**Linguistics:** Component of a Language-Role of Sanskrit in Natural Language Processing. **Mathematics:** Unique Aspects of Indian Mathematics-Great Mathematicians and their Contributions-Arithmetic Calculations.	1	5 & 8
		Instructional Hours	**06**
Suggested Learning Methods : Group Learning			
IV	**Astronomy:** Unique aspects of Indian Astronomy-Historical Development of Astronomy in India-Elements of the Indian Calendar **Town Planning Architecture:** Indian Architecture- A Historical Perspective –Town Planning-Unitary Building –Temple Architecture	1	9 & 12
		Instructional Hours	**06**
Suggested Learning Methods : Mind Mapping			
V	**Health, Wellness and Psychology:** Ayurveda -Definition of Health-Tridosas-Relationships to Health-Disease-Disease Management-Yoga way of Life-Indian Approach to Psychology. **Governance and Public Administration:** Arthasastra Governance and Administration.	1	13 & 14
		Instructional Hours	**06**
Suggested Learning Methods : Case Studies			
		Total Hours	**30**

Text Books	1. B.Mahadevan,Vinayak Rajat Bhat,Nagendra Pavana R.N , Introduction to Indian Knowledge System: Concepts and Applications, PHI Learning Private Limited,Delhi, 2022.
Reference Books	1. Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002. 2. Traditional Knowledge System in India, by Amit Jha, 2009.
Web. URLs	1. https://www.youtube.com/watch?v=LZP1StpYEPM 2. http://nptel.ac.in/courses/121106003/

Course Designed by	**Verified by Chairman**
Dr. N. Saranya	Dr. K. Raja Rajeswari

Course Code	Title	
22U4VBOE07	Value Based Open Elective Course : Principles of Intellectual Property Rights	
Semester : IV	Credits : 2	ESE : 50 Marks

Course Objective	To make the students to recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights. To learn the procedure of obtaining Patents, Copyrights, Trade Marks &Industrial Design
Course Category	Entrepreneurship
Development Needs	Global
Course Description	The course is designed to provide comprehensive knowledge to students regarding the general principles of IPR, Concepts and Theories, Criticisms of Intellectual Property Rights, the registration process, and the International Regime Relating to IPR.

Course Outcomes		Teaching Methods
CO 1	Understand Intellectual Property Rights (IPR), its significance in promoting innovation and creativity, and the different types of IPRs.	Lecture
CO 2	Equip with the knowledge to navigate the patent filing process effectively.	Tutorial
CO 3	Comprehend the fundamentals of copyrights, their types, registration procedures, terms and remedies	Lecture
CO 4	Narrate the trademarks, their rights, types, purpose, registration process, and the trademark landscape in India	Tutorial
CO 5	Analyze the significance of geographical indications (GI) and the need for their protection, the relevant laws and regulations in India	Lecture

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	**Introduction to Intellectual Property Rights (IPR):**Definition of IPR, Importance of IPR, Kinds of Intellectual property rights: Copy Rights, Patent, Trade Mark, Trade Secret and trade dress, Design, Layout Design, Geographical Indication, Plant Varieties and Traditional Knowledge, IPR in India and the world, IPR and WTO.	1	1,2
		Instruction Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
II	**Patent:** Introduction to Patent, Patent Act 1970 and its amendments, Patentable and non-Patentable inventions, legal requirements for obtaining Patent, Registration Procedure of Patent, The role of Patentees and Different layers of the international patent system: National and International Patent filing procedures.	1	4
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
III	**Copyright**: Introduction to Copyrights, Origin, and Definition & Types of Copyrights, Registration procedure, Assignment & license, Terms of Copyright, Piracy, Infringement, Remedies, Copyrights with special reference to software, Copyrights in India.	1	
		Instructional Hours	**6**

Suggested Learning Methods : Lecture/Tutorial			
IV	**Trademarks:** Introduction to trademarks, Rights of trademark, Types of trademark, purpose, and function of a trademark, trademark protection, and trademark registration process, trademarks in India.	1	9
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
V	**Design:** Introduction to Design, Registration of Design, Cancellation of Registration, International Convention on Design, functions of Design, **Geo Graphical Indication:** Introduction to Geo Graphical Indication, Why and how GI needs protection and GI laws, Indian GI act.	1	7,10
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
		Total Hours	**30**

Text Book	**1.** Intellectual Property Rights, Asha Vijay DurafeDhanashree K. Toradmalle, Wiley Publisher, 2022
Reference Book	1. B.L. Wadera, Patents, trademarks, copyright, Designs and Geographical Judications.
Web. URLs	1. https://dst.gov.in/sites/default/files/E-BOOK%20IPR.pdf

Course Designed by	**Verified by Chairman**
Dr. K. Prathapchandran	Dr. K. Selvavinayaki

Course Code	Title	
22U4VBOE08	Value Based Open Elective Course : Science, Society and Culture	
Semester : IV	Credits : 2	ESE : 50 Marks

Course Objective	To create awareness on Science, Indian Society and cultural heritage of our Country
Course Category	Skill Development
Development Needs	Global
Course Description	Facilitate the awareness on Science in everyday life, Indian Society and Social empowerment, Democracy and Freedom of our Country.Ancient Civilization, cultural heritage and perceptions of Indian Culture

Course Outcomes		Teaching Methods
CO 1	Know the concepts of Science in our daily life and awareness about Scientific community	Lecture / Video Lessons/ Model
CO 2	Gain knowledge on Indian society and development of modern society	Lecture / Video Lessons
CO 3	Learn about Indian social issues and awareness on our social laws	Lectures / Case study
CO 4	Understand the Indian culture, diversity of culture and Traditional customs	Tutorial / Group Discussion
CO 5	Comparison of ancient heritage and civilization of our country and follow them in our life	Lecture / Tutorial

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Common Science**-Developments and their applications- effects in day to day Life - Achievements of Indians in Science and Technology. Awareness in the fields of IT, Space, Computers, Robotics, Nanotechnology and Biotechnology. Scientists of Ancient India, Science and Scientists of Medieval India, Scientists of Modern India. India's Policy in the Field of the Science, Policies and Reports related to Science-Innovative Technology Vision.	1	1
		Instructional Hours	**6**
Suggested Learning Methods: Video Lectures			
II	**Social Behaviour** -Salient features of our Society-Social diversity of India-Impact of globalization on Indian society. Social empowerment, Democracy and Freedom-Role of women and women's organization in the development of healthy society.	2	1
		Instructional Hours	**6**
Suggested Learning Methods : Video Tutorials			
III	**National Integration**– Communalism-Regionalism and Secularism – Problems relating to development and management of Social Sector-Services relating to Health, Education and Human Resources. Welfare schemes for vulnerable sections of the people-Performance of Centre and States schemes-Mechanisms-Laws,	2	1 & 2

	Institutions and Bodies constituted for the protection and development of vulnerable sections.		
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
IV	**South Asian Cultures**-Indian culture-combination of several cultures-Indian philosophy-Religious culture-Family structure and marriage-Wedding rituals-Indian greetings-Indian foods- Festivals-Traditional clothing. Epics of India-Indian Arts and Music-Indian architecture and Sculptures-Indian Languages and Literature-Perceptions of Indian culture.	3	1
		Instructional Hours	**6**
Suggested Learning Methods : Video Tutorials			
V	**Ancient Civilization**-Indus Valley Civilization-Harappa and Mohenjo-Daro civilization-Evolutions of early Buddhist Architecture-Advent in China-Ellora caves civilization-King Gupta's period of civilization-Vijayanagara inscriptions-Mohall's period of civilization-British culture.	4	2
		Instructional Hours	**6**
Suggested Learning Methods : Online Tutorial			
		Total Hours	**30**

Text Books	1. Science, Culture and Society: Understanding Science in the 21st Centuryby Mark Erickson, Paperback – Illustrated, 2015. 2. Khanna, Indian Social order and Laws, Universities Press. 3. Choudhary, Social Protection Law Provisions and Procedure. 4. Indian Heritage systems-Universal Law Publishing Company. 5. Ancient Civilization of Indian sub-continent- Ancient Books.
Reference Books	1. National integration and Secularism: Issues and Challenges, Regal Publications. 2. Ancient Culture of India: Issues and Concerns.
Web. URLs	1. https://www.amazon.in/Science-Culture-Society-Understanding-Century-dp-0745662250/dp/0745662250/ref=dp_ob_title_bk. 2. https://iasscore.in/upsc-syllabus/indian-society/indian-society-mains. 3. https://www.worldhistory.org/india/

Course Designed by	**Verified by Chairman**
Dr. K. Narayanasamy	Dr. M. Thangavel

Course Code	Title	
22U4VBOE09	Value Based Open Elective Course: Community Engagement	
Semester : IV	Credits : 2	ESE : 50 Marks

Course Objective	This course serves as an introduction to community engagement, helping learners to explore methods of community involvement, change making process, and professionalism within the community.
Course Category	Skill Development
Development Needs	National
Course Description	Apply the principles of communication for outreach to the diverse public, decision makers, and stakeholder groups.

Course Outcomes		Teaching Methods
CO 1	Apply professional behavior when working with community organizations	Lecture/ Case Study
CO 2	Investigate the complexity of problems related to community needs	Lecture/ Role Play
CO 3	Design and conduct the phases of a community engagement process, using consensus building and relating to formal planning procedures.	Lecture/ Case Study
CO 4	Recognize community interests, power dynamics, and conflict, and facilitate empowerment of excluded groups and negotiation	Lecture/ / Role Play
CO 5	Direct cross-jurisdictional, inter-agency, inter-disciplinary, and multi-stakeholder collaboration.	Lecture/ Case Study

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	Concept, Ethics and Spectrum of Community engagement, Local community, Rural culture and Practice of community engagement	3	2
		Instructional Hours	**6**
Suggested Learning Methods: Seminar			
II	Rural Development Programs and Rural institutions,Local Administration and Community Involvement	2	3
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			
III	Stages, Components and Principles of community development, Utility of public resources. Social contribution of community networking, Various government schemes.	1	3
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			

IV	Community Engaged Research and Ethics in Community Engaged Research. PRA, Programmes of community engagement and their evaluation.	1	2
		Instructional Hours	**6**
Suggested Learning Methods : Creative Art Assignments			
V	Rural Distress, Rural Poverty, Impact of Disasters on Migrant Laborers, Mitigation of Disaster.	2	1
		Instructional Hours	**6**
Suggested Learning Methods : CommunityParticipation Program			
		Total Hours	**30**

Text Books	1. Participatory Rural Appraisal, PRA Application in Rural Development Planning, R Ramesh 2. Introduction to Community Development, Theory, Practice, and Service-Learning, Gary Paul Green, Jerry W. Robinson, Jr, 2011, SAGE Publications
Reference Books	1. Community-based participatory research: a capacity-building approach for policy advocacy aimed at eliminating health disparities. Am J Public Health. 2010 2. Achieving successful community engagement: A rapid realist review. BMC Health Services Research.
Web. URLs	1. https://unnatbharatabhiyan.gov.in › presentations 2. https://www.wellawareworld.org/

Course Designed by	**Verified by Chairman**
Dr. T. Lidya	Dr. P. Nathiya

Course Code	Title	
22U4VBOE10	Value Based Open Elective Course : Emotional Intelligence	
Semester : IV	Credits : 2	ESE : 50 Marks

Course Objective	To enable the Students to understand the concepts of Emotional Intelligence, its models and components
Course Category	Employability & Skill Development
Development Needs	National & Global
Course Description	Understanding the importance of Emotional Intelligence and build effective relationships

Course Outcomes		**Teaching Methods**
CO 1	Understand the Self-Awareness, Self-Management, Social Awareness and Relationship Management	Lecture/ Video Lectures
CO 2	Discover personal competence and techniques of building emotional intelligence.	Lecture/ Role Play
CO 3	Narrate the insights into establishing positive relationships	Lecture/ Peer Teaching
CO 4	Understand the emotional intelligence and its importance	Lecture/ Role Play
CO 5	Summarize the Self-Management Techniques	Lecture/ Group Discussion

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Fundamentals of Emotional Intelligence**: Meaning Definition Nature and Significance Models of Emotional Intelligence-: Ability, Trait and Mixed Building blocks of emotional intelligence: Self-awareness, Self-Management, Social Awareness, and Relationship Management	1	1&2
	Instructional Hours		**6**
Suggested Learning Methods: Video lectures			
II	**Personal Competence:** Meaning Definition Self Awareness: Observing and recognizing one's own feelings, Knowing one's strengths and areas of development. Self-Management: Managing emotions, anxiety, fear, and anger.	1	5&6
	Instructional Hours		**6**
Suggested Learning Methods: Role Play			
III	**Social Competence**: Social Awareness: Others' Perspectives, Empathy and Compassion Relationship Management: Effective communication, Collaboration, Teamwork and Conflict Management	2	1&2
	Instructional Hours		**6**
Suggested Learning Methods: Peer Teaching			

IV	**Emotional Intelligence:** Measurement and Development - Meaning Definition, Importance Measures of emotional intelligence Strategies to develop and enhance Emotional Intelligence	2	4&5
		Instructional Hours	**6**
Suggested Learning Methods: Role Play			
V	**Self-Management Techniques**: Meaning Definition Techniques to regulate emotions such as Mindfulness, Conditioned relaxation response and Boundary setting Techniques of Relationship Management: Display of empathy, Effective Communication , Teamwork , Conflict resolution	2	6&7
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
		Total Hours	**30**

Text Books	1. Bar-On, R., & Parker, J.D.A.(Eds.) (2000). The handbook of emotional intelligence. San Francisco, California: Jossey Bros. 2. Goleman, D. (2005). Emotional Intelligence. New York: Bantam Book. 3. Sternberg, R. J. (Ed.). (2000). Handbook of intelligence. Cambridge University Press.
Reference Books	1. HBR's 10 Must Reads on Emotional Intelligence (2015) 2. HBR's 10 Must Reads on Managing Yourself (2011) 3. Self-Discipline: Life Management, Kindle Edition, Daniel Johnson.

Course Designed by	**Verified by Chairman**
Dr. R .A. Ayyapparajan	Dr. R. A. Ayyapparajan

Course Code	Title	
22U4VBOE11	Value Based Open Elective Course : Fundamentals of Tourism	
Semester : IV	Credits : 2	ESE : 50 Marks

Course Objective	To impart Knowledge on Tourism and its development in the economic growth and also to identify the tourist needs.
Course Category	Employability
Development Needs	Global
Course Description	To enhance the students to get part in the tourism industry and to know about concepts of tourism.

Course Outcomes		Teaching Methods
CO 1	Understand tourism and its development	Direct Instruction
CO 2	Analyse the Factors influencing the Travel Motivations.	Direct Instruction
CO 3	Comprehend the Tourist Transport	Video Lessons
CO 4	Understand the Tourist Accommodations	Direct Instruction
CO 5	Apply the Travel Agency Operations	Video Lessons

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**The Tourism Phenomenon:** Definition – Tourism; Tour; Tourist; Visitor; Excursionist; Domestic; International; Inbound; Outbound; Destination. Growth of Tourism / Evolution / History of Tourism & Present status of tourism in India. Thomas Cook – Grand Circular Tour.	1	9, Key Terms
		Instructional Hours	**6**
Suggested Learning Methods: Lecture Based Learning			
II	**Travel Motivations:*Categories of Motivations:*** Physical Motivators, Cultural Motivators, Interpersonal Motivators, Status and prestige Motivators. ***Types of Tourism:*** Pleasure, relaxation, Rest and recreation, Health, Participation in Sports, Curiosity and Culture, Ethnic and Family, Spiritual and Religious, Professional or Business.	1	3
		Instructional Hours	**6**
Suggested Learning Methods : Group Learning Method			
III	**Tourist Transport:** Role of Transport in Tourism, Modes of Transport, Road Transport, Air Transport, Rail Transport, Sea Transport.	2	15
		Instructional Hours	**6**
Suggested Learning Methods : Group Learning Method			
IV	**Tourist Accommodation:** Definition, Types of Hotels, International Hotels, Resort Hotels, Commercial Hotels, Residential Hotels, Floating Hotels. **Supplementary Accommodation:** Motel, Youth Hostel, Camping Sites, Pension, Bed and Breakfast Establishment, Tourist Holiday Villages, Time and Resort Condominiums.	1	8
		Instructional Hours	**6**
Suggested Learning Methods: Group Learning Method			

V	**Travel Agency:** Products of Travel Agency, Classification of Travel Agency, Functions, Travel Related Business, International Travel Requirements, Travel Agency Operations.	3	2,3
		Instructional Hours	**6**
Suggested Learning Methods: Lecture Based Learning			
		Total Hours	**30**
Text Books	1. A.K. Bhatia, Tourism Development: Principles & Practices, Sterling Publishers Pvt 2007. 2. A.K. Bhatia, International Tourism Management, Sterling Publishers Pvt 2012. 3. Jagmohan Negi, Travel Agency Operations Concepts and Principles, Kanishka Publishers and Distributors, 2003.		
Reference Books	1. Biswanth Gosh, Tourism & travel management, Vikas Publishing House, Second Edition, 2008. 2. Christopher Holloway, Business of tourism, Elsevier Publisher, Second Edition, 2006.		

Course Designed by	**Verified by Chairman**
Mr. B. Tamilselvan	Mr. T. R. Rajesh Pandian

Course Code	Title	
22U4VBOE12	Value Based Open Elective : Health Education	
Semester : IV	Credits : 2	ESE: 5 0Marks

Course Objective	1. Acquire knowledge on different dimensions of health. 2. Inbuilt healthy life style practices
Course Category	Value education
Development Needs	Local
Course Description	It provides knowledge on values and practices for healthy living

Course Outcomes		Teaching Methods
CO1	Recall the importance of health education	Interactivesession
CO2	Enlist the right choice of foods and dietary pattern	Interactivesession
CO3	Identify methods to manage mental health issues	Activitybased teaching
CO4	Practice effective personal health habits	Interactivesession
CO5	Summarize the importance of environmental health for mankind	Interactivesession

Course Content **Instructional Hours/Week:2**

Unit	Description	Text Book	Chapters
I	**Health Education:** Concept of health, Components of wellness,spectrum and determinants of health - Definition of health-health education-Aim, objective and principles of health education - Health services, Related Activity -Measuring the health attitudes of students	1	1
	Instructional Hours		**6**
Suggested Learning Methods: Group Activity			
II	**Food and Health** Basic 4, 5and7 food groups; functional food groups-energy yielding, body building and protective foods (only sources and functions), food pyramid, meal planning pattern, healthy eating pattern.Related Activity -Assessing dietary adequacy of students	3,4	1 & 1, 2
	Instructional Hours		**6**
Suggested Learning Methods: Peer learning			
III	**Mental Health** Meaning of mental health –importance of mental health-characteristics of emotionally healthy-Self esteem-Values and patterns in decision making- Mental health problem of adolescences –depression & stress -causes and managementRelated activity-Stress level assessment in students	1	6
	Instructional Hours		**6**
Suggested Learning Methods: Role play			

IV	**Personal Health** Definition of personal health- under nutrition and over nutrition -prevalence of life style disease-healthy lifestyle practices- personal hygiene-Importance of physical activities& exercise Related Activity -Analyzing the physical activity pattern of students	1	8
		Instructional Hours	**6**
Suggested Learning Methods: Assignment			
V	**Environment and Health** Definition of environmental health, Biodiversity, climate change and biodiversity, environmental pollution-causes and consequences of air, water and soil pollution-Food contamination and consequences Related Activity-Group discussion on case studies	2	5,8
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
		Total hours	**30**

Text Books	1. Anspaugh (2001), Teaching Today's Health, Library of Congress Cataloging, 6th Edition, US 2. Tyler Miller (2006), Environmental Science, Cengage learning India private ltd 3. Srilakshmi (2010), Dietetics, New age International private limited, New Delhi 4. Srilakshmi (2010), Food Science, New age International private limited, New Delhi
ReferenceBooks	1. Howley& Don Franus(B) (2003) Health Fitness Instructor's Handbook. Human Kinetics publication. 2. Ramachandran. L. Dharmalingam. T (1993) Health Education India. Vikas publishing House Private Limited
Journals	1. Health education

Course Designed by	**Verified by Chairman**
Dr. A. Swarnalatha	Dr. A. Swarnalatha

Course Code	Title	
22U4VBOE13	Value Based Open Elective Course : Media and Politics	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To Impart knowledge of understanding the media and politics
Course Category	Skill Development
Development Needs	Global
Course Description	This course examines how media and political institutions interact to shape public thinking and debates around social problems.

	Course Outcomes	Teaching Methods
CO 1	Understand the basic idea of media and Politics	Lecture and Demonstration
CO 2	Summarize the political stance of media.	Lecture
CO 3	Apply the Skills on writing political news.	Lecture and Demonstration
CO 4	Evaluate the various characteristics of media Organization.	Video Lectures
CO 5	Apply the mass media influences as individuals, groups, and society in political contexts	Discussion

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	Media –- Meaning and importance. Role of media in Society Political Communication – Mass Media politics and Society- Cinema and political manifestation. Social media and Political narration	1	1
		Instructional Hours	**06**
Suggested Learning Methods: Learning by Teaching			
II	Characteristics of Modern Mass Media: Print and Electronic Media – Political economy and Ownership	2	2
		Instructional Hours	**06**
Suggested Learning Methods : Active Learning			
III	Political Economy - State ownership versus private ownership of mass media – Consequences of private and public- Media ownership pattern Government Regulation – Monopoly- Media content and its Censorship.	1	2
		Instructional Hours	**06**
Suggested Learning Methods : Group Learning			
IV	Public Opinion- The relationship between the mass media and public sphere- Political manipulation of media content- the impact of mass media on global political processes.	3	3
		Instructional Hours	**06**
Suggested Learning Methods: Visual Learning			

V	Political effects of Mass Media: Individual- group- and Society Public- making public opinion- Setting of Political agenda- Political Socialization- Political mobilization	2	4
		Instructional Hours	**06**
Suggested Learning Methods : Case study based Learning			
		Total Hours	**30**

Text Books	1. Lowe, L. (2016). The Definitive Guide to Creative Writing and Media Productions. United States: Xlibris UK. 2. Marshall, C. (2018). Writing for Social Media. United Kingdom: BCS Learning & Development Limited. 3. Cain, S., Batty, C. (2016). Media Writing: A Practical Introduction. United Kingdom: Palgrave Macmillan.
Reference Books	1. Mencher, Melvin."Basic News Writing" Universal Bookstall, New Delhi.1993. 2. Sreenivas Rao. Academic Book Centre, Ahmedabad. 1981. 3. Barnard, J. (2019). The Multimodal Writer: Creative Writing Across Genres and Media. United Kingdom: Bloomsbury Academic. 4. Kuehn, S. A., Lingwall, J. A. (2016). The Basics of Media Writing: A Strategic Approach. United States: SAGE Publications.
Web. URLs	1. https://www.bing.com/videos/

Course Designed by	**Verified by Chairman**
Dr. Baiju Paul	Dr. Paul Benzier

Course Code	Title	
22U4VBOE14	Value Based Open Elective : Positive Psychology and Work Life	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To bring an experience marked by predominance of positive emotions and informing them about emerging paradigm of Positive Psychology
Course Category	Skill Development
Development Needs	National
Course Description	Build relevant competencies for experiencing and sharing happiness as lived experience and its implications

Course Outcomes		**Teaching Methods**
CO 1	Understand the realities of Psychology and Work life	Lecture/ Case Study
CO 2	Insight on origin and development of Positive Psychology	Lecture/ Role Play
CO 3	Reveal the knowledge about phases of Positive Psychology	Lecture/ Case Study
CO 4	Perceptiveness about Happiness in Psychology and its Traits	Lecture/ Role Play
CO 5	Furnish the specific skills and techniques for working with Trust and Companionship	Lecture/ / Role Play

Course Content	**Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	Introduction to Positive Psychology : Positive Psychology: Concept, History, Nature, Dimension and scope of Positive Psychology Seligman's PERMA	3	1
	Instructional Hours		**6**
Suggested Learning Methods: Seminar			
II	Positive Emotional States and Processes, Positive Emotions and well being: Hope & Optimism, Love, The Positive Psychology of Emotional Intelligence, Influence of Positive Emotions	2	3
	Instructional Hours		**6**
Suggested Learning Methods : Role Play			
III	Strengths and Virtues : Character Strengths and Virtues Resilience in the phase of challenge & Loss, Empathy and Altruism	1	3
	Instructional Hours		**6**
Suggested Learning Methods : Role Play			
IV	Happiness : Introduction to Psychology of happiness, well being and scope, Types of happiness- Eudaimonic and Hedonic History of Happiness, Theories, Measures and Positive correlates of happiness, Traits associated with Happiness, Setting Goals for Life and Happiness	3	2
	Instructional Hours		**6**
Suggested Learning Methods : Creative Art Assignments			

V	**Forgiveness and Gratitude** : Forgiveness and Gratitude , Personal transformation and Role of suffering , Trust and Compassion	1	3
		Instructional Hours	**6**
Suggested Learning Methods : Community Participation Program			
		Total Hours	**30**
Text Books	1. Argyle, M. 1987. *The psychology of happiness.* London: Methuen. 2. Carr, Alan (2007). Positive Psychology: The science of human happiness and human strengths. Routledge, Taylor and Francis Group-London. Csikzentmihalyi, Mihaly (1990) Flow: The Psychology of Optimal Experience, Harper Perennial. 3. Garcia,Hector., &Mirrales. Francesc.(2017) IKIGAI-The Japanese Secret to a Long and Happy Life, Hutchinson London.		
Reference Books	1. Frankl, Viktor E. (1988). The Will to Meaning: Foundations and Applications of Logotherapy.Meridian/Plume 2. Frankl, Viktor E. (2000) Man's Search for Ultimate Meaning, Basic Books. 3. Snyder, C. R., & Lopez, S. J., &Pedrotti, J. T (2011) Positive Psychology: The Scientific and Practical Explorations of Human Strengths, Sage Publications India Pvt Ltd.		

Course Designed by	**Verified by Chairman**
Ms. Merlin Jenefer	Dr. P. Nathiya

Course Code	Title	
22U4VBOE15	Value Based Open Elective Course : Professional Ethics	
Semester : IV	Credits : 2	ESE : 50 Marks

Course Objective	Students will understand the importance of Values and Ethics in their personal lives and Professional careers
Course Category	Employability & Skill Development
Development Needs	National & Global
Course Description	Understanding the importance of maintaining Professional Ethics and build effective career.

Course Outcomes		**Teaching Methods**
CO 1	Understand the basic purpose of Profession	Lecture
CO 2	Summarize the Professional Rights And Responsibilities	Lecture/Peer Teaching
CO 3	Apply thevarious Roles in Applying Ethical Principles at Various Professional Levels	Lecture/Case Study
CO 4	Professional Ethical Values and Contemporary Issues	Lecture/Role Play
CO 5	Excelling in Competitive and Challenging Environment to Contribute to Industrial Growth.	Lecture/Group Discussion
Course Content		**Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Introduction to Professional Ethics: Meaning Definition Basic Concepts** Governing Ethics, Personal & Professional Ethics, Life Skills, Emotional Intelligence Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.	1	1&2
		Instructional Hours	**6**
Suggested Learning Methods: Video lectures			
II	**Basic Theories:** Basic Ethical Principles, Moral Developments, Deontology Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy	1	5&6
		Instructional Hours	**6**
Suggested Learning Methods: Mini Case Analysis			

III	**Professional Practices:** Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.	2	1&2
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
IV	Ethics in changing domains of Research: The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct The emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.	2	4&5
		Instructional Hours	**6**
Suggested Learning Methods: Role Play			
V	Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights	2	6&7
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
		Total Hours	**30**

Text Books	1. Professional Ethics: R. Subramanian, Oxford University Press, 2015. 2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press, 2015
Reference Books	1. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008

Course Designed by	**Verified by Chairman**
Dr. R .A. Ayyapparajan	Dr. R .A. Ayyapparajan

Course Code	Title	
22U4VBOE16	Value Based Open Elective Course : The Science of Happiness	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To explore the key elements of happiness at work and strategies to cultivate joy, well-being, and productivity in the workplace, relationship between happiness and various work-related factors, such as efficiency, creativity, innovation, work-life balance, and making a difference for others.
Course Category	Skill Development
Development Needs	Global
Course Description	To create a positive work environment and promote happiness for themselves and others.

Course Outcomes		Teaching Methods
CO 1	Understand the Happiness as a Scientific Construct	Lecture Method
CO 2	Apply the Theories and Models of Well-being	Flipped Teaching
CO 3	Demonstrate the Individual Factors and Happiness	Lecture Method
CO 4	Analyze the Social and Environmental Factors in Happiness	Lecture Method
CO 5	Apply Happiness and Work Efficiency	Flipped Teaching

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Introduction to Happiness as a Scientific Construct** Defining happiness and its importance in individual and societal well-being, Overview of subjective well-being and its components - life satisfaction, positive emotions, and negative emotions, Exploration of cultural variations in happiness and its measurement	1	1
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
II	**Theories and Models of Well-being** Prominent theories of well-being - hedonic well-being, eudemonic well-being, PERMA model. Role of factors - autonomy, meaning, and engagement in happiness. Strengths and limitations of different well-being models	1	2
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
III	**Individual Factors and Happiness** Personality traits - optimism, resilience and their influence on happiness. Role of genetics and biological factors in determining happiness levels. Examination of personal values, goals, and self-esteem and their impact on subjective well-being	1	3
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			

IV	**Social and Environmental Factors in Happiness** Importance of social relationships and social support in promoting happiness. Influence of social comparison, social norms, and cultural factors on well-being. Impact of environmental factors - access to nature, quality of living conditions on happiness.	1	4
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
V	**Happiness and Work Efficiency** Impact of happiness on work efficiency and productivity, strategies for managing daily hassles and reducing stress in the workplace, link between happiness and creativity in the workplace, Strategies for fostering a creative and innovative work environment	1	5
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
		Total Hours	**30**

Text Books	1. Susan A. David, IlonaBOni well, and Amanda Conley Ayers; The Oxford Hand book of Happiness.
Reference Books	1. Achor, S. (2010). The happiness advantage: The seven principles of positive psychology that fuel success and performance at work. Random House. 2. Lyubomirsky, S. (2008). The how of happiness: A scientific approach to getting the life you want. Penguin. 3. Diener, E., & Seligman, M. E. P. (2002). Very happy people. Psychological Science, 13(1), 81-84.
Web. URLs	1. https://onlinecourses.nptel.ac.in/noc23_hs06/preview

Course Designed by	**Verified by Chairman**
Dr. S. Balaji	Dr. K. Rajarajeswari

Course Code	Title		
23U3ETC513	Core Paper XIII : Industrial Internet of Things		
Semester: V	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To make students well-versed in the application of the Internet of Things in industries.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to introduce the concepts of IoT used for industrial revolution.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Familiar with the basic features of Industry 4.0 and the Industrial Internet of Things	Lecture	Group Discussion
CO 2	Acquire knowledge of various aspects of IIoT, including design considerations of the Industrial Internet and its impact.	Lecture	Quiz
CO 3	Gain insights into various reference architectures of IIoT.	Tutorial / Video Lessons	Seminar
CO 4	Develop a basic understanding of the key aspects of recent advances in computing in industries.	Tutorial / Video Lessons	Seminar
CO 5	Familiarize with applications, security, and case studies related to IIoT.	Tutorial / Video Lessons	Assignment

Offered by : **Internet of Things**

Course Content — **Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**Overview of Industry 4.0 and IIoT** Introduction - Evolution of Industry 4.0 - Environmental impacts - Industrial Internet - Applications of Industry 4.0 - Prerequisites of IIoT - Basics of CPS - CPS and IIoT	1	2
	Instructional Hours		**18**
Suggested Learning Methods : Tutorial			
II	**IIoT :** Introduction - Industrial Internet Consortium- Industrial Internet Systems : Design , Impact, Benefits - Industrial sensing - Industrial Processes : Features - Industrial plant – The future architecture - Viewpoint - Digital Enterprise - Applications	1	4
	Instructional Hours		**18**
Suggested Learning Methods : Group Discussion			
III	**Business Models and Architecture of IIoT :** Definition - Business models of IIoT - Primary units of a business model - Reference architecture of IIoT - IIRA - IIRA framework - Key Performance Indicators - Industrial data Acquisition and Transmission	1	5-11

		Instructional Hours	**18**
Suggested Learning Methods : Group Discussion			
IV	**Key Technologies** Cloud Computing - Augmented Reality - Virtual Reality - Big Data and Advanced Analytics - Machine Learning and Data Science	1	6,7,13
		Instructional Hours	**18**
Suggested Learning Methods : Video Presentation			
V	**Applications :** Healthcare - Inventory Management **Security :** Software security - Network security **Case Studies :** Manufacturing Industry - Automotive Industry	1	14-17
		Instructional Hours	**18**
Suggested Learning Methods : Video Presentation			
		Total Hours	**90**

Text Book	1. S. Misra, C. Roy, and A. Mukherjee, 2020. Introduction to Industrial Internet of Things and Industry 4.0. CRC Press
Reference Book	1. S. Misra, A. Mukherjee, and A. Roy, 2020. Introduction to IoT, Cambridge University Press.
Web. URLs	1. https://onlinecourses.nptel.ac.in/noc17_cs22/course

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	M	M	H	H	M	M
CO2	H	H	H	M	H	M	M	M	H	H	H	M	H
CO3	H	H	M	H	M	M	M	H	M	H	H	M	M
CO4	M	H	M	M	M	M	H	M	H	M	H	H	M
CO5	H	H	H	H	H	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETC514	Core Paper XIV : Embedded System Design with Arduino		
Semester: V	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
Course Objective	Understand the concept of embedded systems and fundamental Arduino programming for IoT applications.		
Course Category	Employability		
Development Needs	Global / National		
Course Description	This course is designed to make students familiar with the concepts of embedded systems and the usage of Arduino boards in IoT applications.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate an understanding of real-time embedded systems and their components.	Lecture	Group Discussion
CO 2	Exhibit proficiency in comprehending the building blocks of the ARM core processor for embedded systems.	Lecture	Quiz
CO 3	Exhibit proficiency in comprehending the building blocks of the ATmega8 processor for embedded systems.	Tutorial / Video Lessons	Seminar
CO 4	Gain a comprehensive understanding of the function and specifications of Arduino boards.	Tutorial / Video Lessons	Seminar
CO 5	Demonstrate the ability to differentiate the features and pin descriptions of various Arduino boards.	Tutorial / Video Lessons	Assignment

Offered by	Internet of Things

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**Introduction to Embedded System:** Definition and classification – CISC AND RISC Architecture – Hardware units in embedded system – software unit in embedded system	1	1
		Instructional Hours	**15**
Suggested Learning Methods : Tutorial			
II	**ARM Processor :** ARM core dataflow model – Registers – Current Program Status Registers – Pipeline – Exception, Interrupts and Vector Table – Core Extensions – Architecture Revision – Instruction Set	2	2
		Instructional Hours	**15**
Suggested Learning Methods : Group Discussion			
III	**ATmega8 Processor :** Features – Pin configuration – Architectural Overview – Memories – Interrupts – I/O ports – Timer/Counter – Analog Comparator – Analog to Digital Converter.	3	1–7
		Instructional Hours	**15**

Suggested Learning Methods : Group Discussion			
IV	**Introduction to Arduino :** Install the software and the Integrated Development Environment (IDE) – Inputs – Sounds – Sensors – IF and ELSE statement – WHILE and FOR statement.	4	1–4
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
V	**Arduino Boards:** Features and pin description of Arduino Nano 33 IoT board – Features and pin description of Arduino Uno R3 board – Features and pin description of Arduino Pro Mini board – Features and pin description of Arduino MKR 1000 WiFi board– Features and schematics of NodeMcu ESP8266	5	1–4
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
		Total Hours	**75**

Text Books	1. Rajkamal, Embedded system Architecture, Programming and design, Tata McGRawHill, Ist Edition, 2003. 2. ARM system developers guide: Designing and optimizing system software by Andew, Elsevier 2004. 3. Data Sheet ATmega8 Processor by Microchip 4. Introduction to Arduino, by Alan G. Smith September 30, 2011 5. Datasheet available from online
Reference Books	1. Arduino Cookbook by Michael Margolis
Web. URLs	1. https://www.youtube.com/watch?v=zJ-LqeX_fLU

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	M	M	H	H	M	M
CO2	H	H	H	M	H	M	M	M	H	H	H	M	H
CO3	H	H	M	H	M	M	M	H	M	H	H	M	M
CO4	M	H	M	M	M	M	H	M	H	M	H	H	M
CO5	H	H	H	H	H	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETP515	Core Paper XV : Arduino Programming Practical		
Semester: V	Credits : 4	CIA: 40 Marks	ESE: 60 Marks

Course Objective	This course is typically aim to provide students with hands-on experience and practical skills in programming and working with Arduino microcontrollers.
Course Category	Entrepreneurship
Development Needs	Global / National
Course Description	This hands-on practical course is designed to provide students with in-depth knowledge and practical experience in programming and working with Arduino microcontrollers.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate the ability to design Arduino components using the Arduino Integrated Development Environment (IDE).	Circuit Demonstration	Program Creativity
CO 2	Exhibit proficiency in identifying various types of sensors suitable for Arduino boards.	Circuit Demonstration	Program Development
CO 3	Demonstrate competence in developing interfacing circuits for Arduino boards.	Circuit Demonstration	Program Development
CO 4	Proficiently interface various actuators with Arduino boards.	Circuit Demonstration	Program Development
CO 5	Develop a real-time project using Arduino boards that showcases the application of acquired knowledge and skills.	Circuit Demonstration	Program Development

Offered by	**Internet of Things**
Course Content	**Instructional Hours / Week : 5**

Program List
(Any 8 Program and use any one of the Arduino board)

1. Study the installation of the Arduino IDE and test the blinking LED using Arduino board
2. Design the strobe LED light with adjustable speed settings
3. Design the project to detect and indicate the moisture levels
4. Develop the weather station to measure and indicate the temperature and humidity levels
5. Interface gas sensor and evaluate the operations
6. Build a motion sensing alarm using a passive infrared sensor
7. Design wireless ID card entry system using RFID
8. Interface ultrasonic sensor to detect an intruder
9. Build a decibel meter by using sound sensor
10. Interface servo motor and evaluate the rotating operations

11. Interface and control RGB LED Matrix display	
12. Interface and evaluate the operations Membrane Keypad	
Total Hours	**75**

Tools for Assessment (40 Marks)

Laboratory Performance I	Laboratory Performance II	Laboratory Performance III	Test 1	Test 2	Observation Note Book	Total
5	5	5	10	10	5	40

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	H	H	H	H	M	M
CO2	M	H	H	M	H	M	M	H	H	H	H	M	M
CO3	H	H	H	M	H	H	M	H	H	H	H	H	H
CO4	H	H	H	M	H	H	M	H	H	H	H	H	H
CO5	H	H	H	M	H	H	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETC516	Core Paper XVI : Android Programming		
Semester : V	Credits : 4	CIA : 25 Marks	ESE : 75 Marks

Course Objective	The course focuses on developing problem-solving skills to address computer-based problems to meet global needs.
Course Category	Entrepreneurship
Development Needs	Global
Course Description	The course aims to provide an understanding of the architecture, platform, and tools required for Android programming, enabling students to develop real-time mobile applications

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate a foundational understanding of Android and its importance in the context of user interface components and application design.	Lecture / Class Projects	Assignment
CO 2	Design applications that incorporate user interface components to meet specific requirements.	Lecture / Class Projects	Seminar
CO 3	Develop applications that feature user menus for enhanced functionality.	Lecture / Class Projects	Quiz
CO 4	Gain proficiency in using various drawing shapes in Android programming.	Tutorial / Case Studies	Program Execution
CO 5	Create real-world mobile applications using the Android platform.	Lecture / Class Projects	Program Execution

Offered by Internet of Things

Course Content — **Instructional Hours / Week: 5**

Unit	Description	Text book	Chapters
I	**Introduction**-Getting Started-Downloading and installing Android Studio-Creating an Application-Running the Application on the Emulator – The Application Structure – Debugging Your Application-The Android SDK Manager- Creating an Android Virtual Device. Activities - An Activities Lifecycle - Activity Demo Example - Changing the Application Icon - Using Android Resources - Starting Another Activity – Activity related Intents.	1	1-2
		Instructional Hours	**15**
Suggested Learning Methods: **Video lectures**			
II	**UI Components**–Overview-Using the Android studio UI Tool-Using Basic Components – Toast - Alter Dialog - Notifications. Layouts – overview - Linear Layout - Relative Layout– Frame Layout-Table Layout–Grid Layout- Creating a Layout Programmatically. Listeners-Overview - Using the on click Attribute - Implementing a Listener.	1	3-5
		Instructional Hours	**15**
Suggested Learning Methods: Practice using Flow Charts			

III	**The Action Bar:** Adding Action Items – Adding Dropdown Navigation – Going Backup. Menus : Overview – The Menu File The option Menu – The Context Menu – The Popup Menu. ListView **:** Overview - Creating a List Adapter – Using A List View- Extending List Activity and Writing A Custom Adapter – Styling The Selected Item.	1	6-8
		Instructional Hours	15
Suggested Learning Methods : Develop small programmes using Menus			
IV	**Grid View –** Styles and Themes –Bitmap Processing.Graphics and Custom Views - Over View - Hardware Acceleration -Creating a Custom View – Drawing Basic Shapes – Drawing Text– Transparency – Shades – Clipping -Using Paths - The Canvas Demo Application - Fragments.	1	9-13
		Instructional Hours	15
Suggested Learning Methods : Apply the programs in the Android Software			
V	**Multi Pane Layouts – Animation:** Overview – Property Animation - An Animation project – Preferences - Working with Files – Overview – Creating a Notes Application -Accessing the Public Storage – Working with Database.	1	14-18
		Instructional Hours	15
Suggested Learning Methods : Laboratory practice			
		Total Hours	**75**

Text Book	1. Budi Kurniawan, A Beginner's Tutorial, Android Application Development, Brainy Software , 2015
Reference Books	1. Charlie Collins, Michael Galpin, Matthias Kappler, Android in Practice, Manning, 2011 2. Anubhav Pradhan, Anil V. Deshpande, Composing Mobile apps: Learn, Explore, Apply using Android, Wiley, Publications, 2014. 3. Jeff Mcwherter, Scott Gowell, Professional Mobile Application development ,Wrox Publisher, 2012
Web. URL	1. https://www.javatpoint.com/android-tutorial

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	M	M	H	H	M	M
CO2	H	H	H	M	H	M	M	M	H	H	H	M	H
CO3	H	H	M	H	M	M	M	H	M	H	H	M	M
CO4	M	H	M	M	M	M	H	M	H	M	H	H	M
CO5	H	H	H	H	H	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE501	Discipline Specific Elective I A : Cloud Storage and Computing		
Semester : V	Credits : 4	CIA : 25 Marks	ESE : 75 Marks

Course Objective	Develop the concepts related to the analysis, design, and implementation of computation and storage clouds.
Course Category	Employability
Development Needs	Global / National
Course Description	Gain a comprehensive understanding of cloud computing concepts, including cloud service models (IaaS, PaaS, SaaS), deployment models (public, private, hybrid), and the benefits of cloud technology.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Define cloud computing and evaluate its value proposition, considering its benefits and drawbacks.	Interactive Lecture	Poster Presentation
CO 2	Demonstrate an understanding of cloud architecture, distinguishing between various cloud services and applications by type.	Tutorial	Assignment
CO 3	Gain proficiency in comprehending the principles of abstraction and virtualization in cloud computing.	Lectures / Video Lessons	Seminar
CO 4	Utilize Google and Amazon Web Services effectively for practical applications and real-world scenarios.	Tutorial / CaseStudies	Case Study
CO 5	Use Microsoft cloud services and develop an understanding of cloud security considerations and best practices.	Lecture / Class Projects	Case Study

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week: 5

Unit	Description	Text Book	Chapters
I	**Defining Cloud Computing:** Defining Cloud Computing - Cloud Types - Examining the Characteristics of Cloud Computing - Disadvantages of cloud computing - Assessing the Role of Open Standards. **Assessing the Value Proposition:** Measuring the Cloud's Value : The laws of cloudonomics - Cloud computing obstacles - Behavioral factors relating to cloud adoption.	1	1,2
		Instructional Hours	**15**
Suggested Learning Methods: **Flipped Classroom**			
II	**Understanding Cloud Architecture :** Exploring the Cloud Computing Stack - Connecting to the Cloud. **Understanding Services and Applications by Type :** Defining Infrastructure as a Service (IaaS) - Defining Platform as a Service (PaaS) - Defining Software as a Service (SaaS) - Defining Identity as a Service (IDaaS) - Defining Compliance as a Service (CaaS).	1	3,4

		Instructional Hours	**15**
Suggested Learning Methods: Practice using Models			
III	**Understanding Abstraction and Virtualization :** Using Virtualization Technologies - Load Balancing and Virtualization - Understanding Hypervisors - Understanding Machine Imaging - Porting Applications. **Exploring Platform as a Service:** Defining Services - Using PaaS Application Frameworks.	1	5,7
		Instructional Hours	15
Suggested Learning Methods : Video Lectures			
IV	**Using Google Web Services:** Exploring Google Applications - Surveying the Google Application Portfolio - Exploring the Google Toolkit - Working with the Google App Engine. **Using Amazon Web Services :** Understanding Amazon Web Services - Amazon Web Service Components and Services - Working with the Elastic Compute Cloud (EC2) - Working with Amazon Storage Systems - Understanding Amazon Database Services.	1	8,9
		Instructional Hours	15
Suggested Learning Methods : Tutorial			
V	**Using Microsoft :** Cloud Services - Exploring Microsoft Cloud Services - Defining the Windows Azure Platform - Using Windows Live. **Understanding Cloud Security** : Securing the Cloud - SecuringData - Establishing Identity and Presence**.**	1	10,12
		Instructional Hours	15
Suggested Learning Methods : Group Discussion			
		Total Hours	**75**

Text Book	1. Barrie Sosinsky,**"**Cloud Computing Bible",Wiley Publishing ,Inc., 2011.
Reference Books	1. Ray J Rafaels, "Cloud Computing: From Beginning to End", 2015. 2. Arshdeep, Bahga and VijaiMadisetti, "Cloud Computing: A Hands-on Approach", 2014.
Web. URL	1. https://www.google.com/aclk?sa=l&ai=DChcSEwjs9YzgzM39AhURGysKHSKeD80YABAAGgJzZg&sig=AOD64_34L3BK3sqlRPOzXJBGvRJkfq3cnQ&q&adurl&ved=2ahUKEwiNoIfgzM39AhXF8DgGHWa0C8AQ0Qx6BAgEEAE

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	M	H	H	H	M	M	L	L	L	M
CO2	M	M	H	H	H	H	M	M	H	M	L	M	M
CO3	M	H	H	H	H	M	H	M	H	H	M	H	M
CO4	M	H	M	H	H	M	H	M	H	H	M	L	M
CO5	M	M	H	H	H	M	M	H	H	H	M	M	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE502	Discipline Specific Elective I B: Industrial and Power Electronics		
Semester: V	Credits: 4	CIA: 25 Marks	ESE:75 Marks

Course Objective	Develop knowledge of circuit design in industrial and power electronics.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to facilitate understanding of circuit design in industrial and power electronics.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate proficiency in the principles and applications of inverters in industrial settings.	Lecture	Group Discussion
CO 2	Apply knowledge and skills related to welding and heating processes used in industrial contexts.	Lecture	Quiz
CO 3	Exhibit the ability to generate ultrasonic waves and understand their practical uses.	Video Lessons	Seminar
CO 4	Understand the fundamentals of basic control systems employed in industrial processes.	Tutorial / Video Lessons	Seminar
CO 5	Demonstrate knowledge of industrial robotic systems and their functions within manufacturing and automation environments.	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**Inverters:** Principles of single phase inverter – converter – Cyclo Converters - DC chopper – UPS - Static AC and DC switches - thyristor protection circuits: over current protection – over voltage protection – gate protection	1,2	1-10 1-13 1-11 1-26 2-12
		Instructional Hours	**15**
Suggested Learning Methods: Tutorial			
II	**Welding and Heating**: Resistance Welding – Types of Resistance Welding – Electronic Control in Resistance Welding: Ignitron Contactor – Heat Control – Non Synchronous Timer – Synchronous Weld Timer – Sequence Timer – Energy Storage Welding Systems - Induction Heating – Applications of Induction - Heating – Dielectric Heating – Application of Dielectric Heating	1	1-22 1-23
		Instructional Hours	**15**
Suggested Learning Methods: Group Discussion			

III	**Generation of ultrasonic waves:** Generation – Applications of Ultrasonic Production of X Rays – Applications - Non Electrical Quantities: Pressure Measurements – Displacement Measurements – Level Measurements – Flow Measurements – Measurement of Thickness	1	1-21 1-26 1-25
		Instructional Hours	**15**
Suggested Learning Methods : Group Discussion			
IV	**Basic control system:** Examples of Open Loop Control Systems - Examples of Closed Loop Control System - Servo Mechanisms - Stability - Frequency Response	3	3-1 3-5 3-4
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
V	**Industrial Robotic Systems:** Parts of Robotic Systems – Classifications of Robotic Systems – Robotic System configurations – Pneumatics And Mechanics – Programming Robotic Systems – Motions Of Robotic systems – Sensor For Robotic Systems	1	1-27
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
		Total Hours	**75**

Text Books	1. Harish C Rai, Industrial and Power Electronics,10th edition, Umesh publications 2002 2. Muhammad Rashid, Power Electronics Circuits, Devices and Applications, PHI Learning Private Limited, II Edition, 1999. 3. NagoorKani, Control Systems,2 nd Edition, RBA Publications,2013
Reference Books	1. Timothy J Maloni, Industrial Solid State Electronic Devices and Circuits, 2nd edition 1986. 2. Harish C Rai, Industrial and Power Electronics,10th edition, Umesh publications 2002
Web. URLs	1. https://nptel.ac.in/courses/108105066

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	M	H	H	H	M	M	L	L	L	M
CO2	M	M	H	H	H	H	M	M	H	M	L	M	M
CO3	M	H	H	H	H	M	H	M	H	H	M	H	M
CO4	M	H	M	H	H	M	H	M	H	H	M	L	M
CO5	M	M	H	H	H	M	M	H	H	H	M	M	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE503	Discipline Specific Elective I C : Artificial Intelligence		
Semester : V	Credits : 4	CIA : 25 Marks	ESE : 75 Marks

Course Objective	To comprehend the application of Artificial Intelligence as a problem-solving technique in real-world scenarios.
Course Category	Employability
Development Needs	Global / National
Course Description	This course is designed to impart knowledge about networks, algorithms, and programming skills to create algorithms capable of human-like solutions.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Gain a solid understanding of the fundamentals of Artificial Intelligence (AI).	Flipped Classroom	Class Participation
CO 2	Apply problem-solving techniques through search algorithms to address complex AI-related challenges.	Tutorial	Assignment
CO 3	Acquire knowledge and reasoning skills essential for AI decision-making processes.	Video Lectures	Seminar
CO 4	Develop expertise in AI planning strategies for creating intelligent systems.	Tutorial	Assignment
CO 5	Demonstrate proficiency in AI learning methodologies and their practical applications.	Group Discussion	Seminar

Offered by | **Internet of Things**

Course Content | **Instructional Hours / Week: 5**

Unit	Description	Text book	Chapters
I	**Introduction:** What is AI? - The foundation of AI – AI Problems. Intelligent Agent: Introduction-How Agent should act-Structure of Intelligent Agent	1, 2	1,2
		Instructional Hours	**15**
Suggested Learning Methods: Flipped Classroom			
II	**Problem Solving by searching:** Problem Solving Agents-Formulating Problems-Examples: 8 queens problem. Search Strategies- Game Playing: Minim ax-Alpha-Beta Pruning.	1	3,5
		Instructional Hours	**15**
Suggested Learning Methods: Tutorial			
III	**Knowledge and Reasoning:** A Knowledge based agent-Representation, Reasoning and Logic. Propositional Logic-Very simple Logic- Introduction to First Order Logic.	1	6,7
		Instructional Hours	15
Suggested Learning Methods : Video Lectures			

IV	**Planning:** A simple planning agent – From Problem solving to Planning – Basic Representation of Planning– A partial Order Planning Algorithm- Example**.**	1	11
		Instructional Hours	15
Suggested Learning Methods : Tutorial			
V	**Learning:** A General model of Learning Agent – Inductive Learning – Learning from Decision Trees.	1	18
		Instructional Hours	15
Suggested Learning Methods : Group Discussion			
		Total Hours	**75**

Text Books	1. Stuart J.Russell, Peter Norvig, Artificial Intelligence – A Modern Approach, Prentice Hall Incorporation. 2. Elaine Rich, Kevin Knight, Shivasankar B. Nair, Artificial Intelligence,3rd Edition, Tata-McGraw, 2009.
Reference Books	1. Deepak Khemani, A First course in Artificial Intelligence, McGraw Hill Education Pvt Ltd,2013.
Web. URLs	2. https://www.javatpoint.com/artificial-intelligence-ai

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	M	M	H	H	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	H	M	H	M	M	H	H	M	H	H	M	M
CO4	M	H	H	M	H	H	M	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	M	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U4ETZ503	Skill Based Paper III : Android Programming Practical		
Semester: V	Credits: 3	CIA: 30 Marks	ESE: 45 Marks

Course Objective	To acquire fundamental knowledge for mobile app development using Android.
Course Category	Skill Development
Development Needs	Global / National
Course Description	To develop a skill set in mobile app development and apply the concepts to create applications that meet local and global needs.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate the ability to design Android applications using the fundamentals of Android programming.	Program Demonstration	Program Creativity
CO 2	Develop Android applications that incorporate graphics and animations for enhanced user experience.	Program Demonstration	Debugging
CO 3	Proficiently create Android applications that implement various types of dialog boxes for user interaction.	Program Demonstration	Application of Logic
CO 4	Develop Android applications that utilize different functions of login for data storage and retrieval.	Program Demonstration	Program Development
CO 5	Create Android applications that feature various types of notifications to enhance user engagement and communication.	Program Demonstration	Program Development

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week: 4

Unit	List of Practical
1	Create “HelloWorld” application. Display in the middle of the screen in red color with white Background
2	Develop an application that uses GUI components, Font and Colors
3	Develop an application that uses Layout Managers and event listeners.
4	Write an android program to change the image displayed on the screen
5	Design an application representing a simple calculator
6	Create a simple application with login

7	Develop an application for working with Menus and Screen Navigation
8	Develop an Application for working with Notifications
Total Hours	**60**

Suggested Learning Methods:
Solving Case studies, Program development, Code Review and Peer Coding

Tools for assessment (30 Marks)

Application of Logic	e-Program Creativity	e- Program Debugging	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	30

Mapping

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	M	M	H	H	M	M
CO2	H	H	H	M	H	M	M	M	H	H	H	M	H
CO3	H	H	M	H	M	M	M	H	M	H	H	M	M
CO4	M	H	M	M	M	M	H	M	H	M	H	H	M
CO5	H	H	H	H	H	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U3ETC617	Core Paper XVII : Implementing Internet of Things with Raspberry Pi		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To acquire knowledge about the essentials of Raspberry Pi specifically required for Internet of Things technology.
Course Category	Entrepreneurship
Development Needs	Global / National
Course Description	To develop knowledge and skills in designing Internet of Things applications using the Raspberry Pi platform.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Develop familiarity with computing using the Raspberry Pi platform.	Lecture	Group Discussion
CO 2	Acquire understanding of various Modules, Library and Files of Raspbian OS.	Tutorial	Quiz
CO 3	Demonstrate the ability to build a prototype using Raspberry Pi for an IoT application.	Video Lessons	Seminar
CO 4	Gain a comprehensive understanding of web servers in the context of IoT.	Demonstration	Seminar
CO 5	Design an IoT application that interacts effectively with the Raspberry Pi platform.	Video Lessons	Assignment

Offered by | **Internet of Things**

Course Content | **Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**Getting Started with Raspberry Pi :** Understanding General Features and Provisions of Raspberry Pi - Hardware Specification – Specification and Features of Raspberry Pi Model A and B - Tools Required to Setup - Installing Raspbian OS.	1	1-2
	Instructional Hours		**18**
Suggested Learning Methods: Video Lectures			
II	**Modules, Library and Files :** Module and Specifications of a Computer Module - Features of Matplotlib and Requests Library - Features of Theano and Pillow Library - Features of Keras and Fire Library - Natural Language Toolkit, Scipy and Arrow Library - Features of FlashText and TensorFlow Library – Step-By-Step Method of Accessing a File.	1	3-5
	Instructional Hours		**18**
Suggested Learning Methods: Seminar			
III	**Configuration :** The raspi config Tool - The raspi config Command Line Interface – Configuring Networking – Setting up a Headless Raspberry Pi –	2	3

	Setting up a Routed Wireless Access Point – Setting up a Bridged Wireless Access Point – Using a Proxy Server – HDMI Configuration – External Storage Configuration – Changing the default pin configuration – Securing your Raspberry Pi		
		Instructional Hours	**18**
Suggested Learning Methods : Quiz			
IV	**Remote Access :** Introduction – Setting up an SSH Server – Secure Shell from Linux and Windows – Password less SSH Access – Using Secure Copy and sync – Network File System (NFS) – Samba (SMB/CIFS) – Virtual Network Computing (VNC) – Setting up an Apache Web Server – Network boot your Raspberry Pi –Network booting using IPv6	2	4
		Instructional Hours	**18**
Suggested Learning Methods : Seminar			
V	**Interfacing with Raspberry Pi :** Interfacing Temperature Sensors – Interfacing Relay Module – Interfacing LCD – Interfacing Actuators – Interfacing Pi Camera Module – Interfacing Ultrasonic Sensors – Interfacing PIR Sensors.	3	1–4
		Instructional Hours	**18**
Suggested Learning Methods : Laboratory practice			
		Total Hours	**90**

Text Books	1. Raspberry Pi An Easy Guide to Programming, Developing, and Setup of Raspberry PI Projects for Beginners by Alexis Rodríguez 2. https://www.raspberrypi.com/documentation/computers/configuration.html#raspi-config 3. https://circuitdigest.com/simple-raspberry-pi-projects-for-beginners
Reference Books	1. Eben Upton and Gareth Halfacree, "Raspberry Pi User Guide", August 2016, 4th edition, John Wiley & Sons 2. Alex Bradbury and Ben Everard, "Learning Python with Raspberry Pi", Feb 2014, JohnWiley & Sons
Web. URLs	1. https://www.raspberrypi.com/documentation/

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	H	M	M	M	M	M	M	H	H	M	M
CO2	H	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	M	M	H	M	M	H	H	M	H	H	M	M
CO4	H	H	H	M	M	H	H	M	H	M	H	H	M
CO5	H	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETV601	Project and Viva Voce		
Semester: VI	Credits : 4	CIA: 40 Marks	ESE: 60 Marks

Course Objective	Provide students with opportunities to apply theoretical knowledge gained in the course to real-world situations.
Course Category	Entrepreneurship
Development Needs	Global / National
Course Description	Equip students with the skills necessary to plan, execute, and control projects effectively, covering aspects such as scope definition, resource allocation, timeline management, and risk assessment.

Course Outcomes

CO 1	Apply project management principles to initiate, plan, execute, monitor, and close projects.
CO 2	Demonstrate proficiency in applying the technical knowledge and skills relevant to the project.
CO 3	Learn to work collaboratively in a team environment, demonstrating effective communication, conflict resolution, and the ability to contribute positively to group goals.
CO 4	Develop and apply critical thinking skills to identify and solve problems that may arise during the project.
CO 5	Produce a tangible final deliverable relevant output and effectively communicate the results and findings of the project.

Course Content	**Instructional Hours / Week : 6**

A Guide has been allotted to each student by the department. Student can select any topic in discussion with the supervisor. Students should maintain a work diary were in weekly work carried out has to be written. Guide should review the work every week and put his/her signature. The work diary along with project report should be submitted at the time of viva voce.

A minimum of two reviews have to be done, one at the time finalizing the questionnaire/identifying the primary data and the second review at the time of commencement of report writing. They should be asked to present the work done to the respective guide in the two reviews. The guide will give the marks for CIA as per the norms stated below:

Tools for Internal Assessment (40 Marks)

Review I	Review II	Review III	Document, Preparation and Implementation	Total
10	10	10	10	40

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	M	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	H	H	H	H	H	H	H	H
CO3	H	H	H	H	H	H	H	H	H	H	H	H	H
CO4	H	H	H	H	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE604	Discipline Specific Elective Paper II A : Machine Learning Techniques		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To understand a range of machine learning algorithms along with their strengths and weaknesses. Apply machine learning algorithms to solve problems of moderate complexity.
Course Category	Entrepreneurship
Development Needs	Global / National
Course Description	This course introduces principles, algorithms, and applications of machine learning from the point of view of modeling and prediction.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Comprehend the fundamental concepts and techniques of machine learning.	Lecture / Demonstration	Assignment
CO 2	Explanations for regression, classification, and clustering methods.	Lecture / Demonstration	Seminar
CO 3	Develop an understanding of tree and probabilistic models	Lecture / Demonstration	Quiz
CO 4	Demonstrate proficiency in dimensionality reduction techniques.	Tutorial / Case Studies	Program Execution
CO 5	Apply graphical models to address various scenarios, including Markov methods and hidden Markov models	Lecture / Demonstration	Program Execution

Offered by Internet of Things

Course Content **Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	Introduction – Types of Machine Learning – Supervised Learning – The Brain and the Neuron –Design a Learning System – Perspectives and Issues in Machine Learning – Concept Learning Task –Concept Learning as Search- Finding a Maximally Specific Hypothesis – Version Spaces and the Candidate Elimination Algorithm – Linear Discriminants Perceptron – Linear Separability –Linear Regression.	1	1,2
		Instructional Hours	**18**
Suggested Learning Methods: Video lectures about the basics Machine Learning			
II	Linear Models–Multi Layer Perception–Going Forwards–Going Backwards: Back Propagation Error–Multilayer Preceptor in Practice–Examples of using the MLP–Overview–Deriving Back - Propagation–Radial Basis Functions and Spines–Concepts–RBF Network–Curse of Dimensionality–Interpolations and Basis Functions– Support Vector Machines	1	2,3
		Instructional Hours	18
Suggested Learning Methods: Video Lecture			
III	Tree and Probabilistic Models – Learning with Trees – Decision Trees – Constructing Decision Trees – Classification and Regression Trees – Ensemble Learning – Boosting – Bagging –	1	4,5

	Different ways to Combine Classifiers - Probability and Learning – Data into Probabilities – Basic Statistics – Gaussian Mixture Models – Nearest Neighbor Methods – Unsupervised Learning – K means Algorithms – Vector Quantization – Self Organizing Feature Map.		
		Instructional Hours	18
Suggested Learning Methods: Video Lectures			
IV	Dimensionality Reduction and Evolutionary Models Dimensionality Reduction – Linear Discriminate Analysis –Locally Linear Embedding – Isomap – Least Squares Optimization – Evolutionary Learning – Genetic Algorithms – Genetic Off spring– Genetic Operators – Using Genetic Algorithms –Reinforcements Learning – Overview – Getting Lost Example – Markov Decision Process.	1	6,7
		Instructional Hours	18
Suggested Learning Methods: Video Lectures			
V	Graphical Models – Markov Chain Monte Carlo Methods – Sampling – Proposal Distribution – Markov Chain Monte Carlo – Graphical Models – Bayesian Networks – Markov Random Fields – Hidden Markov Models – Tracking Methods.	1	8,9
		Instructional Hours	18
Suggested Learning Methods: Video Lectures			
		Total Hours	**90**

Text Book	1. Ethem Alpaydin, Introduction to Machine Learning Adaptive Computation and Machine Learning Series), Third Edition, MIT Press,2014.
Reference Books	2. Jason Bell, Machine Learning –and son for Developers and Technical professionals, First Edition,Wiley, 2014. 3. Peter Flach, Machine Learning: The Artand Science of Algorithms that Make Sense of Data, First Edition, Cambridge University Press, 2012.
Web. URLs	1. https://www.geeksforgeeks.org/machine-learning/ 2. https://www.dgp.toronto.edu/~hertzman/411notes.pdf

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H	H	M	H	H	M	M	H	M
CO2	H	H	H	H	H	H	M	H	H	H	H	M	H
CO3	H	M	M	M	H	H	M	H	H	M	H	H	H
CO4	H	H	H	H	M	M	M	H	M	H	M	M	M
CO5	H	H	H	H	M	M	M	H	M	M	M	M	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE605	Discipline Specific Elective II B : Robotics and Automation		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To familiarize students with the concepts of robotics, robot design, and the applications of robots.
Course Category	Entrepreneurship
Development Needs	Global / National
Course Description	This course is designed to help you understand the design of robots and their applications.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the fundamentals of robots, including their components and core principles.	Lecture	Group Discussion
CO 2	Illustrate proficiency in sensors and vision systems used in robotics, showing the ability to select and apply them appropriately.	Lecture	Quiz
CO 3	Apply programming techniques effectively for automating robotic systems, demonstrating the capacity to program robots for various tasks.	Video Lessons	Seminar
CO 4	Develop proficiency in programmable logic controllers, enabling the configuration and operation of automation systems.	Tutorial / Video Lessons	Seminar
CO 5	Analyze and understand the functionality of Computer Numerical Control (CNC) systems, allowing for the operation and optimization of automated machining processes.	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content — **Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**Classification of Robotic Systems:** Basic Structure of a Robot - **Classification of Robots:** Cartesian - Cylindrical - Spherical - Articulated -. Accuracy, Resolution and Repeatability of Robots - **Robot Application in Manufacturing:** Material Transfers - Machine Loading and Unloading – Processing Operations Assembly and Inspection. **Drives and Control Systems: Hydraulic and Pneumatic Systems:** Cylinders, Control Valves, Hydro Moto -Robot End Effectors	1	1-1
	Instructional Hours		**18**
Suggested Learning Methods: Tutorial			
II	**Sensors and Vision Systems : Types of Sensors:** Tactile Sensors - Proximity Sensors - Speed Sensors – Encoder, Resolvers. **Vision Systems:** Image Processing And Analysis – Segmentation - Feature Extraction - Object Recognition	1	1-3
	Instructional Hours		**18**
Suggested Learning Methods: Group Discussion			

III	**Robot Programming & Automation:** Lead through Programming - Textual Programming - Programming Examples – Social and Economic Aspects of Robots - **Typical Layouts of Robots in Industries. Automation:** Advantages of Automation - Building Blocks of Automation - Automatic Feeding Lines - Material-Handling Devices – ASRS - Transfer Lines - Automatic Inspection - Intelligent Automation.	1	1-4 1-5
		Instructional Hours	**18**
Suggested Learning Methods : Group Discussion			
IV	**Programmable Logic Controllers (PLC):** Basics of PLC - Architecture of PLC – Advantages - Types of PLC - Types of Programming Simple Process Control Program's Using Relay Ladder Logic - Introduction to PLC Networking - Introduction to HMI - DCs and SCADA Systems	2	2-4
		Instructional Hours	**18**
Suggested Learning Methods : Video Presentation			
V	**Computer Numerical Control (CNC) :** Block Diagram of ACNC Control System – Advantages - Power Supply – CPU - CNC and PLC Interfacing - Control Loops - Feedback Devices in CNC Machine - Analog and Digital CNC Systems - Introduction to FMS	2	2-5
		Instructional Hours	**18**
Suggested Learning Methods : Video Presentation			
		Total Hours	**90**

Text Books	1. MikellP.Groover, "Automation Production Systems and Computer Integrated Manufacturing", Prentice-Hall India, New Delhi, 1987. / Pearson Education, New Delhi 2. K.S. Fu, R.C. Gonzalez and C S G Lee, "Robotics: Control, Sensing, Vision And Intelligence", McGraw Hill,New Delhi, 1987
Reference Books	1. W. Bolton, "Mechatronics", Pearson Education Asia, 2002. 2. Mikell P. Groover, "Industrial Robotics - Technology, Programming And Applications", McGraw Hill,New Delhi, 1986
Web. URLs	1. HTTPS://NPTEL.AC.IN/COURSES/112/101/112101098/ROBOTICS

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	H	H	H	H	M	M
CO2	M	H	H	M	H	M	M	H	H	H	H	M	M
CO3	H	H	H	M	H	H	M	H	H	H	H	H	H
CO4	H	H	H	M	H	H	M	H	H	H	H	H	H
CO5	H	H	H	M	H	H	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE606	Discipline Specific Elective Paper II C : Cyber Security		
Semester: VI	Credits : 4	CIA : 25 Marks	ESE : 75 Marks

Course Objective	To make the students to understand Cryptography, Cyber crime and its significance in current scenario of IT and information security.
Course Category	Entrepreneurship
Development Needs	Global / National
Course Description	This course provides the technical knowledge and skills needed to protect and define computer systems and networks

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate a deep understanding of information and its various forms of representation.	Smart Board	Assignment
CO 2	Develop a comprehensive understanding of computer networks and the structure and function of the internet.	Video Lessons	Seminar
CO 3	Acquire knowledge about information storage and communication techniques, facilitating efficient data management and transfer.	Smart Board	Seminar
CO 4	Become proficient in the principles and implementation of cryptography systems for secure data transmission.	Case study Assignments	Group Discussion
CO 5	Understand the importance of information security frameworks and their role in protecting sensitive data and information.	Fishbowl Techniques	Assignment

Offered by | **Internet of Things**

Course Content	Instructional Hours / Week : 6

Unit	Description	Text Book	Chapters
I	**Information and its Representation:** What is information – Quality - of Information - Value of Information - Information Processing - Information Processing cycle in computers - information - Representation and codes - Number Representation - Binary - Representation of Positive integers - Signed Binary Integers - Positive Binary Fractions - signed Binary Fractions - Representing Fractions in Binary - Representation of Alphanumeric - Data - Current Trends in Information Technology – semiconductor - Technology - Information storage - Networking - Applications of - IT - IT Applications in Business - Modeling and simulation	1	1
		Instructional Hours	**18**
Suggested Learning Methods: Report Presentation			
II	**Computer Networks and Internet:** An overview - What is – computer Network – Basic networking components - what is Internet - Internet Protocols - Internet protocol types - OSI Reference versus TCP/IP Model - OSI model layers - TCP/IP	1	2
		Instructional Hours	**18**

Suggested Learning Methods: Report Presentation			
III	**Information storage and communication:** Information storage - purpose of storage - Types of storage Devices - File organization - Internal file structure - External file structure and file extension - Data communication - an overview - what is data communication - signals - Basic - Data Communication Model - Modulation Techniques.	1	3
		Instructional Hours	**18**
Suggested Learning Methods: Group Discussion			
IV	**Cryptography Systems**: Introduction-Cryptography Systems Types - Symmetric Cryptography - Asymmetic or Public Key, Cryptography - Hash Functions - Why three Encryption Techniques? – Public key Algorithms – RSA Public Key Algorithm – Digital Signature – Diffie – Hellman – ElGamal – EDCSA - XTR. **Cyber Law and Ethics**: Introduction to cybercrime - Prevention - preventive steps for Individuals - preventive steps for organizations and government - How to protect the computer against threats.	1	5 & 6
		Instructional Hours	**18**
Suggested Learning Methods: Group Discussion			
V	Information security Framework - Information security and privacy - security Framework - Information systems security Framework – Framework for Network security access. Access control Techniques- Computer Security and Access Control-Access control Techniques-Biometric Authentication-Authentication Tokens-Token types and usage-Digital signature-Embodiments and vendors-Related Authentication Technologies.	1	8 & 9
		Instructional Hours	**18**
Suggested Learning Methods: Video Presentation			
		Total Hours	**90**

Text Books	1. Pankaj Agarwal, "Information Security & Cyber Laws", Acme Learning Private Limited, First Edition,2010
Reference Books	1. Lawrence C. Miller, "Cyber Security for Dummies", John Wiley Sons, Inc
Web. URLs	1. https://www.W3schools.com/cybersecurity

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	M	M	M	M	M	M	H	H	H	M
CO2	H	H	H	M	M	M	H	H	H	H	H	H	M
CO3	H	H	H	H	H	H	H	H	H	H	H	H	H
CO4	H	H	H	H	M	M	M	M	M	H	H	H	H
CO5	H	H	M	M	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE607	Discipline Specific Elective Paper III A : Software Engineering and Testing		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To gain knowledge about basic concepts of Software Engineering and Testing.
Course Category	Skill Development
Development Needs	Global / National
Course Description	Software Engineering Facilitating the students to understand the Software Engineering Concepts, Software Development, Designing and Processing.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Able to understand the nature of the software and different types of process models	Lecture / Flipped Classroom	Assignment
CO 2	Gains knowledge about the requirements stage development of the software	Lecture / Flipped Classroom	Seminar
CO 3	Analyse the different types of architectural designs of the software	Demonstration / Video Lessons	Quiz
CO 4	Setting the context on Software Development and Evaluates different testing strategies of the software	Demonstration / Case Studies	Real Time Software Comparison
CO 5	Comprehend various testing types and the principles of test automation.	Demonstration / Class Projects	Case Studies

Offered by | **Internet of Things**

Course Content | **Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**Introduction to Software Engineering:** Evolving role of software – Software - The changing nature of Software - Software Myths. A Generic view of Process - A Layered Technology **Software Process Models:** Prescriptive models- The Waterfall Model - Incremental Process Models- Evolutionary Process Models.	1	1,3
		Instructional Hours	18
Suggested Learning Methods: Video lectures about the basics of Models			
II	**Requirements Engineering:** Requirements Engineering Tasks - Initiating the Requirements Engineering Process - Eliciting Requirements - Building the Analysis Model. **Building the Analysis Model:** Scenario - Based Modelling - Flow Oriented Modelling.	1	7,6
		Instructional Hours	18
Suggested Learning Methods: Practice using Various Models			
III	**Design Engineering:** Design Concepts - The design model. **Creating an Architectural Design:** Representing the System in Context - Defining Archetypes - Refining the Architecture into Components - Describing Instantiations of the System. **Modelling Component-Level Design:** What is a Component – Designing Class - Based Components. **User Interface Design:** User Interface Analysis and Design-Interface Design steps.	1	9,10,11,12

		Instructional Hours	**18**
Suggested Learning Methods: Design One Module and analyse			
IV	**Software Development Life Cycle models:** Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation**. White-Box Testing-** Static Testing – Structural Testing. **Black-Box Testing-** Black-Box Testing procedures.	2	2,3,4
		Instructional Hours	**18**
Suggested Learning Methods: Use various testing in Simple Module			
V	**Integration Testing**: Integration Testing as Type of Testing – Integration Testing as a Phase f Testing – Scenario Testing – Defect Bash. **System and Acceptance Testing**: system Testing Overview — Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing. **Performance Testing**: Methodology of Performance Testing – tools for Performance Testing **Regression Testing**: Regression Testing overview – Types of Regression Testing - Test Automation.	2	5,6,7,8,16
		Instructional Hours	**18**
Suggested Learning Methods: Case Studies			
		Total Hours	**90**

Text Books	1. Roger S Pressman, "Software Engineering a Practitioner's Approach", Sixth Edition, McGraw Hill, International Edition, 2013 2. Srinivasan Desikan, Gopalaswamy Ramesh, "Software Testing Principles and Practices", Pearson, 2006.
Reference Books	1. Richard Fairley, "Software Engineering Concepts", Tata McGraw-Hill Publishing Company Limited, 2010. 2. Waman S. Jawadekar, "Software Engineering – Principles and Practice", Tata McGraw Hill Publishing Company Limited, 2011.
Web. URLs	1. https://tutorialpoints/software engineering

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	H	H	H	H	M	M
CO2	M	H	H	M	H	M	M	H	H	H	H	M	M
CO3	H	H	H	M	H	H	M	H	H	H	H	H	H
CO4	H	H	H	M	H	H	M	H	H	H	H	H	H
CO5	H	H	H	M	H	H	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE608	Discipline Specific Elective Paper III B : Automotive Electronics		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To understand the concepts of Automotive Electronics and various automotive control systems
Course Category	Skill Development
Development Needs	Global / National
Course Description	This course is designed for students to understand the understand sensors and sensor monitoring mechanisms aligned to automotive Systems, different signal conditioning techniques, interfacing techniques and actuator

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Obtain an overview of automotive components and subsystems.	Lecture	Group Discussion
CO 2	Demonstrate a comprehensive understanding of ignition systems and their functioning.	Lecture	Quiz
CO 3	Exhibit proficiency in the knowledge and practical application of instrumentation systems.	Video Lessons	Seminar
CO 4	Gain proficiency in electronic control systems for braking and traction	Tutorial / Video Lessons	Seminar
CO 5	Analyze and diagnose engine management system issues for improved engine performance.	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week : 6

Unit	Description	Text Book	Chapters
I	**INTRODUCTION:** Automotive Component - Operation - Electrical Wiring Terminals and Switching - Multiplexed Wiring Systems - Circuit Diagrams and Symbols. **Charging Systems and Starting Systems:** Charging Systems Principles - Alternations and Charging Circuits - New Developments - Requirements of the Starting System - Basic Starting Circuit	1	1-1
		Instructional Hours	**18**
Suggested Learning Methods: Tutorial			
II	**IGNITION SYSTEMS:** Ignition Fundamental - Electronic Ignition Systems - Programmed Ignition - Distribution Less Ignition - Direct Ignition - Spark Plugs. **Electronic Fuel Control:** Basics of Combustion - Engine Fuelling and Exhaust Emissions - Electronic Control of Carburetion Petrol Fuel Injection - Diesel Fuel Injection	1	1-3
		Instructional Hours	**18**

Suggested Learning Methods: Group Discussion			
III	**INSTRUMENTATION SYSTEMS:** Introduction to Instrumentation Systems - Various Sensors Used for Different Parameters - Sensing Driver Instrumentation Systems - Vehicle Condition Monitoring Trip Computer - Different Types of Visual Display	1	1-5 1-6
		Instructional Hours	**18**
Suggested Learning Methods : Group Discussion			
IV	**ELECTRONIC CONTROL OF BRAKING AND TRACTION:** Introduction and Description Control Elements and Control Methodology - **Electronic Control of Automatic Transmission:** Introduction and Description Control Of Gear Shift and Torque Converter Lockup - Electric Power Steering - Electronic Clutch	1	1-9
		Instructional Hours	**18**
Suggested Learning Methods : Video Presentation			
V	**ENGINE MANAGEMENT SYSTEMS:** Combined Ignition And Fuel Management Systems - Exhaust Emission Control - Digital Control Techniques - Complete Vehicle Control Systems - Artificial Intelligence and Engine Management - Automotive Microprocessor Uses. **Lighting and Security Systems:** Vehicles Lighting Circuits - Signaling Circuit - Central Locking and Electric Windows Security Systems - Airbags and Seat Belt Tensioners - Miscellaneous Safety and Comfort Systems	1	1-11
		Instructional Hours	**18**
Suggested Learning Methods : Video Presentation			
		Total Hours	**90**

Text Books	1. Tom Denton, Automobile Electrical and Electronic Systems, Edward Arnold pb., 1995
Reference Books	1. WILLIAM, T.M., Automotive Electronic Systems, Heiemann Ltd., London, 1978. 2. Ronald K Jurgen, Automotive Electronics Handbook, McGraw Hill, Inc, 1999.
Web. URLs	1. https://nptel.ac.in/courses/107/103/107103084/

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H	H	M	H	H	H	H	H	H
CO2	H	H	H	H	H	H	M	H	H	H	H	H	H
CO3	H	H	H	H	M	H	H	H	M	H	H	M	M
CO4	H	H	M	H	H	H	H	H	H	M	M	H	M
CO5	H	M	M	H	H	H	H	H	H	M	M	H	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title		
23U3ETE609	Discipline Specific Elective Paper III C : Natural Language Processing		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To Understand the fundamental concepts of Natural Language Processing (NLP) and its significance in the field of artificial intelligence and linguistics.
Course Category	Skill Development
Development Needs	Global / National
Course Description	This course covers concepts like statistical machine translation and neural models, deep semantic similarity models neural knowledge base embedding and deep reinforcement learning techniques.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the principles, applications, and significance of Natural Language Processing (NLP) in various domains.	Lecture	Group Discussion
CO 2	Implement lexical processing techniques for tasks like keyword extraction and entity recognition.	Lecture	Quiz
CO 3	Apply syntactic analysis methods to parse and understand sentence structures in text.	Video Lessons	Seminar
CO 4	Utilize semantic analysis techniques for tasks such as sentiment analysis and word sense disambiguation.	Tutorial / Video Lessons	Seminar
CO 5	Recognize the role of pragmatics in language, including context, speech acts, and discourse analysis.	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week : 6

Unit	Description	Text Book	Chapters
I	**Introduction to NLP:** Introduction: - Application of NLP techniques and key issues - MT Grammar Checkers – Dictation - Document generation - NL interfaces - Natural language processing key issues - **The different analysis levels used for NLP:** Morpho – Lexical – Syntactic – Semantic – Pragmatic - Markup (TEI, UNICODE) - Finite state automata - Recursive and augmented transition networks - Open problems	1	1-2
	Instructional Hours		**18**
Suggested Learning Methods: Tutorial			
II	**Lexical Level:** Error tolerant lexical processing (spelling error correction) - Transducers for the design of morphologic analyzers features - Towards syntax: part-of-speech tagging (BRILL, HMM) - Efficient representations for linguistic resources (lexical and grammars) tries and finite state automata.	1	5,11
	Instructional Hours		**18**

Suggested Learning Methods: Group Discussion			
III	**Syntactic Level:** Grammars (eg. formal/Chomsky hierarchy, DCSGs, systematic case, unification, stochastic) - Parsing (top-down, bottom up), char (early algorithm), CYK algorithm- Automated estimation of probabilistic model parameters (inside-outside algorithm) - Data oriented parsing - Grammar formalisms and tree banks - Efficient parsing for context free grammars (CFGs)- Statistical parsing and Probabilistic CFGs(PCFGs)- Lexicalized PCFGse.	1	12-14
		Instructional Hours	**18**
Suggested Learning Methods : Group Discussion			
IV	**Semantic Level:** Logical forms- Ambiguity resolution - Semantic network and parsers - Procedural semantics - Montague semantics- Vector space approaches - Distributional semantics - Lexical semantics and word sense disambiguation - Compositional semantics - Semantic role labeling and Semantic parsing	1	17-20
		Instructional Hours	**18**
Suggested Learning Methods : Video Presentation			
V	**Pragmatic Level:** Knowledge representation - Reasoning- Plan/goal recognition – Speech acts/intentions – Belief models- Discourse - Reference. **Natural language generation:** Content determination – Sentence planning- Surface realization, Subjectivity and Sentiment analysis: Information Extraction – Automatic summarization - Information retrieval and question answering – Named entity recognition and relation extraction.	1	21-23,25
		Instructional Hours	**18**
Suggested Learning Methods : Video Presentation			
		Total Hours	**90**

Text Book	1. Daniel J and James H. Martin, Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics & Speech Recognition, Prentice Hall,2009.
Reference Book	1. Ela Kumar, Natural Language Processing, I K International Publishing House Pvt. Ltd, 2013
Web. URL	1. https://www.javatpoint.com/nlp

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H	H	M	H	H	H	H	H	H
CO2	H	H	H	H	H	H	M	H	H	H	H	H	H
CO3	H	H	H	H	M	H	H	H	M	H	H	M	M
CO4	H	H	M	H	H	H	H	H	H	M	M	H	M
CO5	H	M	M	H	H	H	H	H	H	M	M	H	M

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar

Course Code	Title		
23U4ETZ604	Skill Based Paper IV : Raspberry Pi Programming Practical		
Semester: VI	Credits : 3	CIA: 30 Marks	ESE: 45 Marks

Course Objective	To equip students with the practical skills and knowledge required to work with Raspberry Pi and create innovative projects
Course Category	Skill Development
Development Needs	Global / National
Course Description	This course typically focus on providing students with hands-on experience and practical skills in programming and working with Raspberry Pi, a versatile single-board computer.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate the ability to install the Raspbian OS on an SD card for Raspberry Pi.	Circuit Demonstration	Program Creativity
CO 2	Exhibit proficiency in identifying various types of sensors suitable for Raspberry Pi projects.	Circuit Demonstration	Program Development
CO 3	Demonstrate competence in developing interfacing circuits for Raspberry Pi.	Circuit Demonstration	Program Development
CO 4	Proficiently interface various actuators with Raspberry Pi.	Circuit Demonstration	Program Development
CO 5	Develop a real-time project using Raspberry Pi that showcases the application of acquired knowledge and skills.	Circuit Demonstration	Program Development

Offered by	**Internet of Things**

Course Content	Instructional Hours / Week : 6

Program List
(Any 7 Program and use any one of the Raspberry Pi board)

1. Getting start with Raspberry Pi and install Raspian on SD card
2. Design the Flashing LED using Raspberry Pi
3. Interface Temperature and Moisture Sensor using Raspberry Pi
4. Build a Object Identifier using a passive infrared sensor
5. Interface ultrasonic sensor with Raspberry Pi
6. Control the relay module with Raspberry Pi
7. Measure output Voltage using Analog Sensor
8. Interface Fingerprint Sensor with Raspberry Pi.
9. Interface Heartbeat / Pulse Sensor with Raspberry Pi
10. Interface servo motor and evaluate the rotating operations using Raspberry Pi

11. Interface GPS module with Raspberry Pi	
12. Interface Pi camera module with Raspberry Pi.	
Total Hours	**90**

Tools for Assessment (30 Marks)

Laboratory Performance I	Laboratory Performance II	Laboratory Performance III	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	30

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	H	H	H	H	M	M
CO2	M	H	H	M	H	M	M	H	H	H	H	M	M
CO3	H	H	H	M	H	H	M	H	H	H	H	H	H
CO4	H	H	H	M	H	H	M	H	H	H	H	H	H
CO5	H	H	H	M	H	H	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title	
23UETSS01	Self Study Paper I : Virtual Instrumentation	
Semester: II - V	Credits: 2	ESE: 75 Marks

Course Objective	Understand the concepts of virtual instruments and enhance programming skills in LabVIEW simulation software.
Course Category	Skill Development
Development Needs	Global / National
Course Description	This course is designed for students to understand the concepts of virtual instruments and LabVIEW.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate the ability to analyze the concepts of virtual instrumentation.	Lecture	Group Discussion
CO 2	Develop programming skills using LabVIEW effectively.	Lecture	Quiz
CO 3	Understand the concepts of data acquisition, signal processing, and data manipulation.	Video Lessons	Seminar
CO 4	Proficiently identify the architecture of PC hardware using LabVIEW.	Tutorial / Video Lessons	Seminar
CO 5	Implement real-time applications using LabVIEW.	Video Lessons	Assignment

Offered by | **Internet of Things**

Course Content

Unit	Description	Text Book	Chapters
I	**Introduction :** General functional description of a digital instrument -Block diagram of a Virtual Instrument -Physical quantities and Analog interfaces - Hardware and Software -User interfaces -Advantages of Virtual instruments over conventional instruments - Architecture of a Virtual instrument and its relation to the operating system	1	1
		Instructional Hours	**15**
Suggested Learning Methods:Tutorial			
II	**Software Overview:** Lab VIEW - Graphical user interfaces -Controls and Indicators -'G' programming - Labels and Text -Shape, Size and Color - Owned and free labels -Data type, Format, Precision and representation	1	3
		Instructional Hours	**15**
Suggested Learning Methods:Group Discussion			
III	**Programming Structure:** FOR loops, WHILE loops, CASE structure, formula nodes, Sequence structures - Arrays and Clusters -Array operations - Bundle - Bundle/Unbundle by name, graphs and charts.	1	4

		Instructional Hours	**15**
Suggested Learning Methods :Group Discussion			
IV	**Hardware Aspects:** Installing hardware, Installing drivers -Configuring the hardware - Addressing the hardware in Lab VIEW -Digital and Analog I/O function -Data Acquisition -Buffered I/O -Real time Data Acquisition.	2	4
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
V	**Labview Applications:** IMAQ -Motion Control: General Applications -Feedback devices, Motor Drives –Instrument Connectivity -GPIB, Serial Communication -General, GPIB Hardware & Software specifications -PX1 / PC1: Controller and Chassis Configuration and Installation	2	3
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
		Total Hours	**75**

Text Books	1. Garry M Johnson, Labview Graphical Programming, Tata McGraw Hill, II Edition, 1996. 2. Robert H.Bishop, Learning with Lab-View, Prentice Hall, 2003.
Reference Books	1. Lisa K Wells, Labview for Everyone, Prentice Hall of India, New Delhi, 1996. 2. Barry Paron, Sensor, Transducers and Labview, Prentice Hall, New Delhi, 2000. 3. Labview : Basics I & II Manual, National Instruments, 2005
Web. URLs	1. https://nptel.ac.in/courses/108105064

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	M	M	H	L	L	M	M	L	L	L	M
CO2	H	L	H	H	H	L	M	M	H	M	L	M	M
CO3	H	M	H	H	H	M	H	M	H	H	M	H	M
CO4	H	M	M	H	H	M	L	M	H	H	M	L	M
CO5	H	M	H	H	H	M	M	H	H	H	M	M	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. M. Sathishkumar	Dr. M. Sathishkumar

Course Code	Title	
23UETSS02	Self Study Paper II : Libre Office	
Semester: II - V	Credits: 2	ESE: 50 Marks

Course Objective	Introduces the basic features of LibreOffice Writer, Calc, and Impress.
Course Category	Skill Development
Development Needs	Global / National
Course Description	This course is designed to provide students with a comprehensive understanding of LibreOffice, a powerful and open-source office suite.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Demonstrate an understanding of the purpose and features of LibreOffice as a free and open-source office suite.	Lecture	Group Discussion
CO 2	Achieve proficiency in using LibreOffice Writer for various word processing tasks.	Lecture	Quiz
CO 3	Effectively create and edit spreadsheets, including data entry and label management, using LibreOffice Calc.	Video Lessons	Seminar
CO 4	Attain proficiency in using LibreOffice Impress to create dynamic and engaging presentations.	Tutorial / Video Lessons	Seminar
CO 5	Utilize various drawing tools within LibreOffice to create shapes and lines for graphical content.	Video Lessons	Assignment

Offered by	**Internet of Things**

Course Content

Unit	Description	Text Book	Chapters
I	**Introducing Libre Office –** What is Libre Office – Advantages – Minimum Requirement – How to get and Install the Software – Extensions and Add-Ons – How to get Help – Starting Libre Office – Parts of Main Window – Starting a New Document – Opening - Saving – Renaming and Deleting – Navigator – Undoing and Redoing – Closing a Document and Libre Office -	1	1
		Instructional Hours	**15**
Suggested Learning Methods:Tutorial			
II	**Getting Started with Writer** – Introducing – Setting Up – Working – Formatting – Introduction to Styles – Working with Graphics – Working with Tables – Working with Templates in Writer – Using Mail Merge – Creating Tables – Working with Master Documents – Working with Fields – Using Forms in Writer – Customizing Writer	1	4

		Instructional Hours	**15**
Suggested Learning Methods:Group Discussion			
III	**Getting Started with Calc –** Introducing – Entering, Editing, Formatting – Using Charts and Graphs – Using Styles and Templates – Using Graphics in Calc – Printing, Exporting and E-mailing – Formulas and Functions – Using the Datapilot – Data Analysis – Linking Calc Data – Sharing and Reviewing – Calc Marcos – Calc as a simple DataBase	1	5
		Instructional Hours	**15**
Suggested Learning Methods :Group Discussion			
IV	**Getting Started with Impress** – Introducing – Using Slide Masters – Adding and Formatting text – Pictures – Managing and Formatting Graphic Objects – Including Spread Sheets, Charts and Other Objects – Adding and Formatting Slides, Notes, and Handouts – Slideshows – Printing, E-mailing, Exporting and Saving Slide Shows	1	6
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
V	**Getting Started with Draw –** Introducing Draw – Drawing Basic Shapes – Working with Objects and Object Points – Changing Object Attributes – Combining Multiple Objects – Editing Pictures – Working with 3D Objects – Tips and Tricks - Organization Charts – Flow Diagrams – Advanced Draw Technique	1	7
		Instructional Hours	**15**
Suggested Learning Methods : Video Presentation			
		Total Hours	**75**

Text Books	1. Libre Office – Getting Started Guide, 2017
Reference Books	1. http://www.open-of-course.org/courses/course/view.php?id=86.
Web. URLs	1. https://documentation.libreoffice.org/assets/Uploads/Documentation/en/GS7.0/GS70-GettingStarted.pdf

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	M	M	H	L	L	M	M	L	L	L	M
CO2	H	L	H	H	H	L	M	M	H	M	L	M	M
CO3	H	M	H	H	H	M	H	M	H	H	M	H	M
CO4	H	M	M	H	H	M	L	M	H	H	M	L	M
CO5	H	M	H	H	H	M	M	H	H	H	M	M	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. N. Saranya	Dr. M. Sathishkumar