KG COLLEGE OF ARTS AND SCIENCE
Autonomous Institution | Affiliated to Bharathiar University
Accredited with A++ Grade by NAAC
ISO 9001:2015 Certified Institution
KGiSL Campus, Saravanampatti, Coimbatore – 641 035

Choice Based Credit System
&
Outcome Based Education Syllabus

Batch 2026 - 29

Programme: B.Sc. Electronics and Communication Systems
Programme Code: BEC

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Regulations 2026 - 27 for Undergraduate Programme

Learning Outcomes Based Curriculum Framework- (LOCF) model with Choice Based Credit System (CBCS)

Programme: B.Sc. Electronics and Communication Systems (B.Sc. ECS)
Programme Code: BEC

(Applicable for the Students Admitted During the Academic Year 2026 - 27 Onwards)

Eligibility

The Student should have passed Higher Secondary Examination and wherever the students have not studied Mathematics knowledge be imparted through Residential/Bridge Course.(As per the eligibility condition given Ref. BU/R/B3-B4/Eligibility Condition/2026/7425 dated 15/05/2026).

Program Learning Outcomes (PLOs)

The successful completion of the B.Sc. Electronics and Communication Systems programme shall enable the students to

PLO1	Develop a strong foundation in electronics and communication, preparing graduates to become technical engineers in the ever-evolving technological landscape.
PLO2	Demonstrate proficiency in software development methodologies, tools, and languages relevant to the IT field, enabling them to pursue career as software developers.
PLO3	Innovate novel solutions to existing problems in areas like Healthcare , R & D and industrial settings applying wireless communication and embedded systems.
PLO4	Gain knowledge with digital fluency to integrate with the related disciplines.
PLO5	Promote lifelong learning, uphold ethical and professional responsibilities to ensure sustainability in society and the environment.

B.Sc. Electronics and Communication Systems

Distribution of Credits and Hours for all the Semesters

Part	Course Category	No. of Courses	Hours		Credits		Total Credits	Semester
I	Language –I	4	4 X 4	16	4 X 3	12	12	1,2,3,4
II	Language-II	4	4 X 4	16	4 X 3	12	12	1,2,3,4
III	Core Theory (4 Hours / Week)	2	2 X 4	8	2 X 4	8	100	1
	Core Theory (5 Hours / Week)	5	5 X 5	25	5 X 4	20		2,5
	Core Theory (6 Hours / Week)	5	5 X 6	30	5 X 4	20		3,4,6
	Core Lab (3 Hours / Week)	2	2 X 3	6	2 X 2	4		1
	Core Lab (4 Hours / Week)	1	1 X 4	4	1 X 3	3		2
	Core Lab (4 Hours / Week)	2	2 X 4	8	2 X 2	4		3,4
	Core Lab (5 Hours / Week)	3	3 X 5	15	3 X 3	9		5,6
	Allied (4 Hours / Week)	4	4 X 4	16	4 X 3	12		1,2,3,4
	Allied Lab (4 Hours / Week)	1	1 X 4	4	1 X 2	2		4
	Electives	2	2 X 5	10	2 X 3	6		5,6
	Core : Project Work	1	1 X 6	6	1 X 4	4		6
	SEC : Internship	1	-	-	1 X 2	2		5
	Skill Enhancement Courses (SEC)	3	3 X 2	6	3 X 2	6		3,4, 6
IV	Foundation Course (FC)	2	2 X 2	4	2 X 2	4	14	1 – 2
	Foundation Course (FC)	1	-	-	1 X 2	2		3
	Ability Enhancement Compulsory Course (AECC)	3	3 X 2	6	3 X 2	6		1, 2, 4
	Ability Enhancement Compulsory Course (AECC) – Online Course – MOOC	1	-	-	1 X 2	2		3
V	Liberal Arts – Extra Curricular & Co- Curricular	1	-	-	1 X 2	2	2	4
Total		**48**		**180**		**140**	**140**	

Consolidated Semester wise and Component wise Hours and Credits Distribution

Semester	Part I		Part II		Part III		Part IV		Part V		Total	
	Hrs.	Credits	Hrs.	Credits	Hrs.	Credits	Hrs.	Credits	Hrs.	Credits	**Hours**	**Credits**
1	4	3	4	3	18	15	4	4	-	-	**30**	**25**
2	4	3		3	18	14	4	4	-	-	**30**	**24**
3	4	3	4	3	22	15	-	4	-	-	**30**	**25**
4	4	3	4	3	20	13	2	2	-	2	**30**	**23**
5	-	-	-	-	30	23	-	-	-	-	**30**	**23**
6	-	-	-	-	30	20	-	-	-	-	**30**	**20**
Total	**16**	**12**	**16**	**12**	**138**	**100**	**10**	**14**	**-**	**2**	**180**	**140**

Curriculum
B.Sc. Electronics and Communication Systems

Semester – 1									
Course Code	**Part**	**Course Category**	**Course Name**	**Hours /Week**	**Examination**				**Credits**
					Duration in Hours	**Max Marks**			
						CIA	**ESE**	**Total**	
26TAM11L	I	Language - I	Tamil – I	4	3	25	75	100	3
26HIN11L	I		Hindi – I						
26MAL11L	I		Malayalam – I						
26FRE11L	I		French – I						
26ENG12L	II	Language - II	English – I	4	3	25	75	100	3
26BEC13C	III	Core - I	Basic Electronics	4	3	25	75	100	4
26BEC14C	III	Core - II	Semiconductor Devices	4	3	25	75	100	4
26BEC15P	III	Core Lab - I	Basic Electronics Lab	3	3	40	60	100	2
26BEC16P	III	Core Lab - II	Semiconductor Devices Lab	3	3	40	60	100	2
26BMA1DA	III	Allied - I	Mathematics – I	4	3	25	75	100	3
26ENV1FC	IV	FC – I	Environmental Studies	2	2	50	-	50	2
26SOF1AE	IV	AECC - I	Soft Skills	2	2	-	50	50	2
Total				**30**				**800**	**25**

Semester – 2									
Course Code	**Part**	**Course Category**	**Course Name**	**Hours / Week**	**Examination**				**Credits**
					Duration in Hours	**Max Marks**			
						CIA	**ESE**	**Total**	
26TAM21L	I	Language – II	Tamil – II	4	3	25	75	100	3
26HIN21L	I		Hindi – II						
26MAL21L	I		Malayalam – II						
26FRE21L	I		French – II						
26ENG22L	II	English – II	English – II	4	3	25	75	100	3
26BEC23C	III	Core – III	Digital Principles and Applications	5	3	25	75	100	4
26BEC24C	III	Core – IV	Electronic Circuits	5	3	25	75	100	4
26BEC25P	III	Core Lab– III	Digital Electronics Lab	4	3	40	60	100	3
26BMA2BA	III	Allied – II	Mathematics – II	4	3	25	75	100	3
26HUM2FC/	IV	FC – II	**Human Rights /**	2	2	50	-	50	2
26DIM2FC			Disaster Management						
26IDT2AE/	IV	AECC – II	Innovation and Design Thinking/	2	2	-	50	50	2
26IPR2AE/			Intellectual Property Rights /						
26END2AE			**Entrepreneurship Development**						
Total				**30**				**700**	**24**

Semester – 3									
Course Code	**Part**	**Course Category**	**Course Name**	**Hours / Week**	**Examination**				**Credits**
					Duration in Hours	**Max Marks**			
						CIA	**ESE**	**Total**	
	I	Language – I	Tamil – III	4	3	25	75	100	3
	I		Hindi – III						
	I		Malayalam – III						
	I		French – III						
	II	Language – II	English – III	4	3	25	75	100	3
	III	Core – V	Analog and Digital Communication	6	3	25	75	100	4
	III	Core – VI	IC's and Instrumentation	6	3	25	75	100	4
	III	Core Lab– IV	Electronic Communication Lab	4	3	40	60	100	2
	III	Allied – III	Programming in C	4	3	25	75	100	3
	III	SEC – I	Arduino Programming Essentials Lab	2	3	40	60	100	2
	IV	FC – III	Basic Tamil /	-	2	50	-	50	2
			Advanced Tamil/						
			Indian Knowledge Systems (IKS)						
	IV	AECC – III	Online Course – MOOC	-	-	50	-	50	2
Total				**30**				**800**	**25**

Semester – 4									
Course Code	**Part**	**Course Category**	**Course Name**	**Hours/ Week**	**Examination**				**Credits**
					Duration in Hours	**Max Marks**			
						CIA	**ESE**	**Total**	
	I	Language - I	Tamil – IV	4	3	25	75	100	3
			Hindi – IV						
			Malayalam – IV						
			French – IV						
	II	Language - II	English – IV	4	3	25	75	100	3
	III	Core – VII	Microprocessor and Embedded Systems	6	3	25	75	100	4
	III	Core Lab – V	Microprocessor and Embedded Systems Lab	4	3	40	60	100	2
	III	Allied – IV	Python Programming	4	3	25	75	100	3
	III	Allied Lab – I	Python Programming Lab	4	3	40	60	100	2
	III	SEC – II	IC's and Instrumentation Lab	2	3	40	60	100	2
	IV	AECC - IV	Quantitative Aptitude	2	2	-	50	50	2
	V	Extra-curricular and Co-curricular	Liberal Arts	-	2	50	-	50	2
Total				**30**				**800**	**23**

Semester – 5									
Course Code	**Part**	**Course Category**	**Course Name**	**Hours / Week**	**Examination**				**Credits**
					Duration in Hours	**Max Marks**			
						CIA	**ESE**	**Total**	
	III	Core – IX	Industrial and Power Electronics	5	3	25	75	100	4
	III	Core – X	Internet of Things and Applications	5	3	25	75	100	4
	III	Core – XI	Programmable Logic Control	5	3	25	75	100	4
	III	Core Lab – VI	Industrial and Power Electronics Lab	5	3	40	60	100	3
	III	Core Lab - VII	Internet of Things and Applications Lab	5	3	40	60	100	3
	III	Elective - I:	Satellite and Network Communication **(Communication Systems)** Automotive Electronics **(Embedded Systems)** Virtual Instrumentation **(Electronic Systems)**	5	3	25	75	100	3
	III	SEC	SEC : Internship	-	2	50	-	50	2
Total				**30**				**650**	**23**

Semester – 6									
Course Code	**Part**	**Course Category**	**Course Name**	**Hours / Week**	**Examination**				**Credits**
					Duration in Hours	**Max Marks**			
						CIA	**ESE**	**Total**	
	III	Core – XII	Robotics and Automation	6	3	25	75	100	4
	III	Core - XIII	Embedded IoT Application Integrated with Cloud	6	3	25	75	100	4
	III	Core Lab - VIII	Embedded IoT Application Integrated with Cloud Lab	5	3	40	60	100	3
	III	Elective - II	Mobile Computing **(Communication Systems)** Medical Electronics **(Embedded Systems)** VLSI Design **(Electronic Systems)**	5	3	25	75	100	3
	III	SEC – III	Raspberry Pi Essentials Lab	2	3	40	60	100	2
	III	Core	Project Work	6	3	40	60	100	4
Total				**30**				**600**	**20**

Semester – 1

Semester – 1									
Course Code	Part	Course Category	Course Name	Hrs. / week	Examination				Credits
					Duration in hrs.	Max Marks			
						CIA	ESE	Total	
26TAM11L	I	Language - I	Tamil – I	4	3	25	75	100	3
26HIN11L	I		Hindi – I						
26MAL11L	I		Malayalam – I						
26FRE11L	I		French – I						
26ENG12L	II	Language - II	English – I	4	3	25	75	100	3
26BEC13C	III	Core - I	Basic Electronics	4	3	25	75	100	4
26BEC14C	III	Core - II	Semiconductor Devices	4	3	25	75	100	4
26BEC15P	III	Core Lab - I	Basic Electronics Lab	3	3	40	60	100	2
26BEC16P	III	Core Lab - II	Semiconductor Devices Lab	3	3	40	60	100	2
26BMA1DA	III	Allied - I	Mathematics – I	4	3	25	75	100	3
26ENV1FC	IV	FC – I	Environmental Studies	2	2	50	-	50	2
26SOF1AE	IV	AECC - I	Soft Skills	2	2	-	50	50	2
Total				**30**				**800**	**25**

Part – I : Language I – Tamil – I

(All the Undergraduate Programmes)

Course Code	Course Name	Category	Hours / Week	Credits
26TAM11L	Tamil - I	Language – I	4	3

Course Objectives

The Course intends to cover

- இலக்கியத்தின் வளர்ச்சி நிலைகளைக் கற்பித்தல்
- மொழியியல் அடிப்படையில் இலக்கணம் கற்பித்தல்
- திறனாய்வு முறையினை ஊக்குவித்தல்
- படைப்பாக்கத் திறன் பயிற்சி அளித்தல்

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	புதுக்கவிதையின் மூலம் வாழ்வியல் விழுமியங்களை உணர்ந்து கொள்வர்.	K1, K2
CLO2	சிறந்த மற்றும் வாழும் கவிஞர்களின் கவிதை வழியாக தர்மம், அன்பு, ஈகை போன்ற மனித மாண்புகளை அறிந்து கொள்வர்.	K2, K3
CLO3	சிறந்த படைப்பாளர்களின் சிறுகதைகள் மற்றும் குறுநாவலில் வெளிப்படும் சமூகச் சிந்தனைகளை அறிந்து ஒழுகுதல்.	K3
CLO4	தற்கால இலக்கியங்களான புதுக்கவிதை, சிறுகதை தோன்றி வளர்ந்த பின்புலத்தை அறிதல்.	K1, K3
CLO5	மொழித்திறனைக் கற்றலின் வாயிலாக நடைமுறை வாழ்வியலுக்குத் தேவையான சிறுகதை மற்றும் புதுக்கவிதைகளைப் படைத்தல்.	K2, K3
K1 - Remember; **K2** - Understand; **K3** – Apply		

Part – I: Language – I : தமிழ் – I

Unit	Content	No. of Hours
I	**நாட்டுப்பற்று** 1. பாரதியார - உலகத்தை நோக்கி வினவுதல் 2. பாரதிதாசன் - தமிழ்ப்பேறு 3. கவிமணி - ஒற்றுமையே உயிர்நிலை 4. தேவதேவன் - சாலையும் மரங்களும் செருப்பும், புதிய வீடு 5. அப்துல் ரகுமான் - போட்டி, பாதை 6. கவிஞர் வாலி - புத்தகச் சந்தை	14
II	**சமூகம்** 1. ஈரோடு தமிழன்பன் - எட்டாவது சீர்... 2. கவிஞர் தாமரை - தொலைந்து போனேன் 3. நா. காமராசன் - திருநங்கைகள் காகிதப் பூக்கள் 4. வைரமுத்து - மரங்களைப் பாடுவேன் 5. அமுத பாரதி - புள்ளிப் பூக்கள் (ஹைக்கூ) 6. நாட்டுப்புறப் பாடல்கள் (தாலாட்டுப் பாடல் , தெம்மாங்கு பாடல் , உழவுத்தொழில்)	14
III	**வாழ்வியல்** சிறுகதை 1. காஞ்சனை - புதுமைப்பித்தன் 2. சோற்றுக் கணக்கு - ஜெயமோகன் 3. மரத்தைக் கர்ப்பம் சுமந்தவள் - ஆண்டாள் பிரியதர்சினி குறுநாவல் • ஆயிஷா – இரா.நடராசன்	12
IV	**இலக்கிய வரலாறு** 1. மரபுக்கவிதையின் தோற்றமும் வளர்ச்சியும் 2. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் 3. ஹைக்கூ கவிதையின் தோற்றமும் வளர்ச்சியும் 4. சிறுகதையின் தோற்றமும் வளர்ச்சியும்	10
V	**இலக்கணம் மற்றும் படைப்பாற்றல்** 1. எழுத்துகள் (முதல் எழுத்துகள், சார்பெழுத்துகள்) 2. எழுத்துக்களின் பிறப்பு 3. மாத்திரைகள் படைப்பாற்றல் திறன்(சிறுகதை மற்றும் புதுக்கவிதைப் படைத்தல்)	10
	Total Hours	**60**

Reference Books	
1	பேரா. குருசாமி, ம.ரா.போ. (2014), பாரதி பாடல்கள், ஆய்வுப் பாதிப்பு, தமிழ்ப் பல்கலைக் கழகம், தஞ்சாவூர்.
2	அப்துல் ரகுமான்,(2000), ஆலாபனை, கவிக்கோ பதிப்பகம்.
3	தாமரை, (1995), ஒரு கதவும் கொஞ்சம் கள்ளிப்பாலும் கவிதை தொகுப்பு, காந்தளகம் பதிப்பகம், சென்னை.
4	வரதராசனார் மு, (2021), தமிழ் இலக்கிய வரலாறு, சாகித்ய அகாடமி பதிப்பு.
5	முனைவர் பஞ்சாங்கம் கா, (2017), தமிழ் இலக்கிய வரலாறு, காவ்யா பதிப்பகம்.
6	முனைவர் வேங்கடராமன் கா. கோ (2008), தமிழ் இலக்கிய வரலாறு, கலையக வெளியீடு.
7	ஜெயமோகன், (2024), அறம் (சிறுகதை), விஷ்ணுபுரம் பதிப்பகம்.
8	இரா.நடராசன், (2022) ஆயிஷா, பாரதி புத்தகாலயம்.
9	குமரன் கோ (2010), தமிழ் இலக்கணம் எளிய அறிமுகம் , சந்தியா பதிப்பகம்.
10	சக்திவேல் சு,(2012), நாட்டுப்புறவியல், மணிவாசகர் பதிப்பகம்.

Part – I : Language I – Hindi – I

Course Code	Course Name	Category	Hours / Week	Credits
26HIN11L	Hindi - I	Language - I	4	3

Course Objectives

The Course intends to Cover

- Improve grammatical knowledge
- Continue to read and learn about articles and think about them
- Read and understand short stories and understand the thoughts and life of the people of this country
- Provide translation knowledge and the ability to read and analyse a message are also gained

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Understand the text styles and grammatical elements.	K1
CLO2	Discuss the content of a reading passage.	K2
CLO3	Develop an interest in the appreciation of short stories.	K2, K3
CLO4	Comprehend the grammatical structures and sentence making.	K3
CLO5	Understand the language and developing English to Hindi translation skill.	K4
K1 - Remember; **K2** - Understand; **K3** – Apply; **K4**-Analyse		

Part – I: Language – I - Hindi – I

Unit	Content	No. of Hours
I	**Prose : Bharthi Gadya Sangrah** 1. Sanskurthi hai kya? (Lalith nibandh)- Ramdhari singh Dinkar 2. Voh cheeni Bhayi (Rekha chitra) – Mahadevi varma 3. Badthe shor ka gahratha sankat (pradoshan) - Rajendrakumr ray & Ravindra Varma 4. Ghar Loutthe huye – (Athma katha) – Harivamshraai Bacchan 5. Paramanu urja evam khadya padarth samrakshan (vaigyanik lek) - Parmaanu urja vibhag (Bharth sarkar) 6. Cinema (film) – Manmohan Chdda	14
II	**Non Detailed Text Short Stories: Aat Kahaniyan** 1. Vrath-bang - Jayashankar Prasad 2. Sath gathi - Premchand 3. parda - Yespal 4. Apna apna bhagya - Jaynendrakumar 5. Bhrammarakshas ka shishya - Mukthibhodh 6. Dana-bhusa - Markandeya	14
III	**Grammar : Shabdha Vichar only** (Noun, Pronoun, Adjective, Verb, Tense, Case Endings) Theoretical & Applied.	12
IV	**Translation : English – Hindi only** Anuvadh Abhyas – III (1-15 Lessons only)	10
V	**Comprehension**: 1 Passage From Anuvadh Abhyas–III (16-30)	10
	Total Hours	**60**

Text Books	
1	Bharathi gadya sangrah, editor: Madhudhavan, publisher: Vani prakashan, 4697/5,Daryaganch, New Delhi – 110002.
2	Aatt Kahaniyan, Editor : Dr. H.R. Mihir, Publisher : Jaya bharthi prakashan, 267 B, Maya press Road, Allahabad–211 003
Reference Book	
1	Naveenhindivyakaran, 2002,Dakshin Bharat Hindi Prachar, Sabha,Chennai–600017

Part – I: Language – I - Malayalam – I

Course Code	Course Name	Category	Hours / Week	Credits
26MAL11L	Malayalam - I	Language - I	4	3

Course Objectives

The Course intends to Cover

- Improve grammatical knowledge
- Read and learn about articles and think about them
- Read and understand short stories and understand the thoughts and life of the people of this state
- Provide translation knowledge and the ability to read and analyze a message

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Understand the text styles and grammatical elements	K1
CLO2	Discuss the content of a reading passage	K1
CLO3	Develop an interest in the appreciation of short stories	K2
CLO4	Comprehend the grammatical structures and sentence making	K3
CLO5	Understand the language and developing English to Malayalam translation skill	K4
K1 - Remember; **K2** - Understand; **K3** – Apply ; **K4**-Analyse.		

Part – I: Language – I - Malayalam – I

Unit	Content	No. of Hours
I	Novel – Njanabharam - E. Santhoshkumar	14
II	Novel – Njanabharam - E. Santhoshkumar	14
III	Short Story - Ente Priyapetta Kadhakal –Sara Joseph	12
IV	Short Story - Ente Priyapetta Kadhakal – Sara Joseph	10
V	Composition & Translation (English to Malayalam)	10
	Total Hours	**60**

Text Books

1.	Novel -Njanabharam - E. (2018) Santhoshkumar, Mathrubhumi Books, Kochi, Kerala.
2.	Short Story-Ente Priyappeta Kadhakal -Sara Joseph, (2005) D.C.Books,Kottayam, Kerala.
3.	Expansion of ideas, General Essay and Translation. (A Simple passage).

Reference Books

1.	Malayala Novel SahithyaCharitram-K.M.Tharakan (2018) (N.B.S.Kottayam)
2.	Cherukatha Innale Innu-M.Achuyuthan (2020) (D.C Books, Kottayam)
3.	Sahithya Charitram Prasthanangalilude- Dr.K.M George, (2017) (D.C.Books Kottayam)
4.	Malayala Sahithyavimarsam- Sukumar Azheekode (2022) (D.C.books)

Part – I : Language I – French - I

Course Code	Course Name	Category	Hours / Week	Credits
26FRE11L	French - I	Language - I	4	3

Course Objectives

The Course intends to cover

- Familiar everyday expressions and basic phrases aimed at the satisfaction of concrete needs.
- Key aspects and recognize of Francophone cultures such as greetings, etiquette, daily life, and basic geography of French-speaking countries.
- Short, simple texts such as postcards, emails, or short descriptions about themselves and their immediate environment.
- Construction of simple sentences using correct word order and basic vocabulary.
- The developing of sensitivity to cross-cultural differences in communication and social practices.
- The reading and understanding of short, simple texts such as personal messages, advertisements, menus, and schedules.

Course Outcomes

On the successful completion of the course, student will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Improve all the four French language skills (speaking, listening reading, and writing) (Effective communicators).	K1
CLO2	Comprehend French and other Francophone nations' cultures and civilizations.	K2
CLO3	Comprehend the fundamentals of language structure, vocabulary grammar, and phonetics (language skill).	K3
CLO4	The French DELF-A1 Certification is appreciated.	K4
K1 - Remember; **K2** - Understand; **K3** – Apply; **K4**-Analyse		

Part – I: Language – I French – I

Unit	Content	No. of Hours
I	Grammaire: pg (122-124) Bienvenue pg (10-17)	14
II	Contacts pg (18-28) Grammaire: pg (125-128)	14
III	Communication pg (29-33) Grammaire: pg (129-130)	12
IV	Qu'est-ce qu'il font pg (34-44) Grammaire: pg (131-136)	10
V	Communication pg (45-49) Grammaire: pg (137-139(	10
Semester I Portions from Textbook « Nouvelle Génération A1» :UNITÉ 1, UNITÉ 2(Pg 10-49). Cahier d'exercices (Pg122-139)		
	Total Hours	**60**

Reference Books	
1.	Luca Giachino, Carla Baracco, Romain Chrétien(DELF), (2022) Nouvelle Génération A1, Didier FLE.
2.	Nathalie Hirschsprung, Tony Tricot, 2017, Cosmopolite, Hachette.

Part – II: Language – II - English –I

(All the Undergraduate Programmes)

Course Code	Course Name	Category	Hours / Week	Credits
26ENG12L	English-I	Language-II	4	3

Course Objectives

The course intends to cover

- Textual analysis of poetry and short stories that explore themes of *nature* and *morality*.
- Vocabulary through contextual guessing, lexical relations and diverse word formation processes.
- Usage of Grammar and Communication

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Identify and interpret poetic elements in nature poetry to nurture aesthetic sensibility, creativity, and cultural awareness.	K1, K2
CLO2	Apply characterization and narrative techniques to appreciate literary qualities in short stories and to comprehend ethical responsibility through textual analysis.	K2,K3
CLO3	Employ grammatical proficiency in nouns, pronouns, and verbs to enhance clarity and correctness in academic and workplace communication.	K3, K4
CLO4	Apply vocabulary strategies to enhance clarity in diverse communicative situations.	K3
CLO5	Demonstrate effective communication skills that support professional growth and lifelong learning.	K3
K1 - Remember; **K2** - Understand; **K3** – Apply; **K4**-Analyse		

Language II : Part II - English-I

Unit	Content	No. of Hours
I	**Poetry** : **Nature** 1. I Wandered Lonely as a Cloud - William Wordsworth 2. The Bird Sanctuary - Sarojini Naidu 3. Stopping by Woods on a Snowy Evening – Robert Frost	12
II	**Short Stories: Morality** 1. The Necklace – Guy de Maupassant 2. The Taxi Driver – K.S. Duggal 3. The Monkey's Paw - W. W. Jacobs	12
III	**Grammar** 1. **Nouns:** Types, Singular vs. Plural forms, Case and Gender, Common errors with nouns 2. **Pronouns:** Types, Personal, Possessive, Reflexive, Intensive (Emphatic), Demonstrative, Relative, Interrogative, Indefinite, and Reciprocal pronouns, Common errors with pronouns 3. **Verbs:** Action verbs and linking verbs, Transitive and intransitive verbs, Auxiliary verbs and Modal verbs, Verb tenses, Common errors with verbs	12
IV	**Language Competency: Vocabulary** 1. **Vocabulary:** Synonyms, Antonyms, Guessing meaning from context, 2. **Word Formation**: Homonyms, Homophones, Homographs, Portmanteau words, Collocations, Compounding Words, Root Words, Prefixes and Suffixes, Clipping, Acronym, Abbreviations, Reduplication	12
V	**English for Communication** 1. Listening for General and Specific Information. 2. Self - Introduction, Introducing others, Greetings. 3. Intensive Reading - a prose passage, a poem and a short story 4. Descriptive writing – writing descriptive essays in two to three paragraphs.	12
	Total Hours	**60**

Reference Books

1.	Carter, R., McCarthy, M., Mark, G., & O'Keeffe, A. (2016). English Grammar Today. Cambridge University Press.
2.	Swan, M. (2021). Practical English Usage (4th ed.). Oxford University Press.
3.	McCarthy, M., & O'Dell, F. (2017). English Vocabulary in Use: Advanced (3rd ed.). Cambridge University Press.
4.	Ramazani, J., Ellmann, R., & O'Clair, R. (Eds.). (2003). The Norton Anthology of Modern and Contemporary Poetry (Vols. 1–2). W. W. Norton & Company.
5.	Wren, P. C., & Martin, H. (2015). High School English Grammar and Composition (50th ed.). S. Chand & Company.
6.	Jones, L. (2015). Cambridge English for Life Skills. Cambridge University Press.

Web Resources (Swayam/NPTEL)

1.	https://nptel.ac.in/courses/109105205

Course Code	Course Name	Category	Hours/ Week	Credits
26BEC13C	Basic Electronics	Core - I	4	4

Course Objectives

The course intends to cover

- Fundamentals of electronic components.
- Handling of common electronic components.
- Construction of electronic circuits to perform realistic tasks.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Recall the classification and characteristics of resistors and inductors.	K1
CLO2	Apply the knowledge to explain capacitor behavior and predict circuit effects.	K3
CLO3	Explore Kirchhoff's Current and Voltage Laws to analyze resistor behavior in series, parallel, and combined circuits.	K3
CLO4	Summarize various network theorems for simplifying complex DC circuits and solving for voltages and currents.	K2
CLO5	Apply the understanding of sinusoidal waves (RMS and average values) to analyze AC circuits containing resistors, inductors, and capacitors in series, parallel, and combined configurations, and calculate real power.	K3
K1 - Remember; **K2** - Understand; **K3** – Apply		

CLO – PLO Mapping

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	3	-	2	-	-
CLO2	3	2	1	-	-
CLO3	2	3	-	1	-
CLO4	3	3	1	-	1
CLO5	1	2	-	2	1
3 - Substantial (high)		**2** - Moderate (medium)		**1** - Slight (low)	

Core - I: Basic Electronics

Unit	Content	No. of Hours
I	**Resistors & Inductors:** Types of Resistors: Fixed, Variable - Brief mention of their Construction and Characteristics - Color Coding of Resistors - Connecting Resistors in Series and Parallel. Types of Inductors: Fixed, Variable-Self and Mutual Inductance-Faraday's Law and Lenz's Law of Electromagnetic Induction-Inductance in Series and Parallel - Testing of Resistance and Inductance using Multimeter.	12
II	**Capacitors**: Principles of Capacitance-Parallel Plate Capacitor-Permittivity-Definition of Dielectric Constant - Dielectric Strength-Energy Stored in a Capacitor-Types of Capacitors: Air, Paper, Mica, Teflon, Ceramic, Plastic and Electrolytic- Construction and Application- Connecting Capacitors in Series and Parallel.	12
III	**Electrical Elements and Circuits:** Potential Difference - Electric Current-Electromotive Force-Ohms Law- Kirchoff's Voltage Law- Kirchoff's Current Law-Analysis of Resistance in Series Circuits, Parallel Circuits and Series Parallel Circuits-Concept of Voltage Source and Current Source-Voltage Source in Series and Current Source in Parallel-Simple Problems in DC Circuits – Artificial Intelligence in Electronics	12
IV	**Network Theorems:** Superposition Theorem - Thevenin Theorem-Thevenizing a Circuit with Two Voltage Sources - Bridge Circuit - Norton's Theorem - Thevenin Norton Conversion - Conversion of Voltage and Current Sources-Millman's Theorem- Star and Delta Conversion - Maximum Power Transfer Theorem - Simple Problems in DC Circuits.	12
V	**AC Circuits:** Introduction to Sinusoidal Wave - RMS Value - Average Value - AC Circuits with Resistance-Circuits with XL Alone–Circuits with XC Alone-Series Reactance and Resistance - Parallel Reactance and Resistance - Series Parallel Reactance and Resistance - Real Power.	12
	Total Hours	**60**

Text Books	
1.	Sedha, R. S (2012) A Text Book of Applied Electronics. S. Chand & Company Ltd.
2.	Mehta, V. K., Rohit Mehta (2015) Principles of Electronics. S. Chand Publishing.
3.	Chakrabarti A (2018) Circuit Theory and Networks: Analysis and Synthesis. Hodder & Stoughton Publication.
Reference Books	
1.	Bernard Grob (2009) Basic Electronics -Tata McGraw-Hill Publishing Company Limited.
2.	Theraja, B. L (2009) Basic Electronics-Solid State Devices, S. Chand Company Ltd.
Web Resources (Swayam / NPTELs / Others)	
1.	https://nptel.ac.in/courses/108/104/108104139/
2.	https://nptel.ac.in/courses/108/101/108101091/
3.	https://www.tpointtech.com/artificial-intelligence-in-electronics-engineering

Course Code	Course Name	Category	Hours / Week	Credits
26BEC14C	Semiconductor Devices	Core - II	4	4

Course Objectives

The course intends to cover

- Operating principles, characteristics and applications of semiconductor devices such as diodes, bipolar junction transistors (BJTs) and field-effect transistors (FETs).
- Construction of electronic circuits incorporating semiconductor devices.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Define semiconductor material, energy band theory and diode.	K1
CLO2	Summarize various types of special-purpose diodes based on their characteristics and applications.	K2
CLO3	Apply the understanding of transistor construction and biasing to analyze the operation of Bipolar Junction Transistors (BJTs) and Field-Effect Transistors (FETs) in different configurations.	K3, K4
CLO4	Experiment the operation and applications of various thyristor devices based on their construction and electrical characteristics.	K3
CLO5	Apply the knowledge of optoelectronic devices to explain their operating principles and functions in various applications.	K3
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** – Analyze		

CLO – PLO Mapping

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	3	-	-	-	-
CLO2	3	2	1	-	-
CLO3	2	2	-	3	-
CLO4	3	2	1	-	1
CLO5	1	1	-	2	1
3 - Substantial (high)		**2** - Moderate (medium)		**1** - Slight (low)	

Core - II: Semiconductor Devices

Unit	Content	No. of Hours
I	**Semiconductor Theory:** Introduction - Structure of Semiconductor Materials – Energy Band Theory – Types of Semiconductor: Intrinsic and Extrinsic Semiconductor – Formation of PN Junction diode and characteristics - Application: Clipping and clamping Circuit	12
II	**Special Diodes:** Zener Diode - VI Characteristics – Zener diode as a voltage regulator - Backward Diode – Varactor Diode - Step Recovery Diode - Point Contact Diode – Schottky Diode - Tunnel Diode - Gunn Diode - IMPATT Diode - PIN Diode	12
III	**Transistor and FET Operation:** Introduction – Transistor Construction and Operation – CB, CE & CC Configurations –Transistor Comparison - Transistor Biasing: Self bias- feedback bias and voltage divider bias- **FET:** N – Channel JFET Construction, Operation and Characteristics - FET as a Voltage Variable Resistor – **MOSFET:** Depletion Type MOSFET - Enhancement Type MOSFET	12
IV	**Power Electronics:** Silicon Controlled Rectifier (SCR) – construction – SCR operation – VI characteristics of SCR – **DIAC:** construction – VI characteristics of DIAC. **TRIAC:** construction – VI characteristics of TRIAC – Applications of SCR, DIAC, TRIAC. **Unijunction Transistor (UJT):** construction – operation – VI characteristics of UJT – UJT Relaxation Oscillator.	12
V	**Optoelectronic Devices:** LDR – Photo Diode - Photo Transistor – Solar Cell – Photo Multiplexer – LED – LCD - Seven Segment Display - IR Emitter – Optocouplers - Industry 5.0 : AI – Based Smart Solar Energy Systems	12
	Total Hours	**60**

Text Books

1.	Mehta, V. K., Rohit Mehta (2015) Principles of Electronics. S. Chand Publishing.
2.	Salivahanan. S, Suresh Kumar. N, Vallavaraj. A (2018) Electronic devices and circuits, TMH publishing company Ltd.

Reference Books

1.	Sedha, R. S. (2012) A Text Book of Applied Electronics. S. Chand & Company Ltd.
2.	Robert L. Boylestad, Louis Nashelsky (2023) Electronic Devices and Circuit Theory, Pearson Prentice Hall.

Web Resources (Swayam / NPTEL / Others)

1.	https://onlinecourses.nptel.ac.in/noc24_ee02/preview
2.	https://onlinecourses.nptel.ac.in/noc24_ee27/preview
3.	https://sunifysolar.in/blog-detail/what-are-ai-solar-panels-the-future-of-smart-solar-energy

Course Code	Course Name	Category	Hours / Week	Credits
26BEC15P	Basic Electronics Lab	Core Lab - I	3	2

Basic Electronics Lab (Any 10 Practical's)

1. Introduction to Basic Electronics Lab
2. Measurement of Amplitude, Frequency & Phase Difference using CRO
3. Resistance in Series, Parallel and Series –Parallel
4. Capacitance in Series, Parallel and Series –Parallel
5. Voltage Sources in Series, Parallel and Series –Parallel
6. Voltage and Current Dividers
7. Verification of Ohm's Law
8. Verification of Kirchoff's Voltage Law and Current Law
9. Verification of Norton's Theorem
10. Verification of Thevenin's Theorem
11. Verification of Millman's Theorem
12. Verification of Superposition Theorem
13. Verification of Maximum Power Transfer Theorem
14. Filter Circuits

Total Hours	**45**

Text Books

1.	Sedha, R. S. (2012) A Text Book of Applied Electronics. S. Chand & Company Ltd.
2.	Mehta, V. K., Rohit Mehta (2015) Principles of Electronics. S. Chand Publishing.
3.	Chakrabarti A (2012) Circuit Theory and Networks: Analysis and Synthesis. Hodder & Stoughton Publication.

Reference Books

1.	Bernard Grob (2009) Basic Electronics -Tata McGraw-Hill Publishing Company Limited.
2.	Theraja, B. L (2009) Basic Electronics-Solid State Devices, S. Chand Company Ltd.

Web Resources (Swayam / NPTEL / Others)

1.	https://nptel.ac.in/courses/108/104/108104139/
2.	https://nptel.ac.in/courses/108/101/108101091/

Course Code	Course Name	Category	Hours / Week	Credits
26BEC16P	Semiconductor Devices Lab	Core Lab - II	3	2

Semiconductor Devices Lab (Any 10 Practical's)

1. Introduction to Semiconductor Devices Lab
2. V-I Characteristics of Junction Diode
3. Clipping and Clamping Circuits
4. V-I Characteristics of Zener Diode
5. Zener diode as a Voltage regulator
6. Transistor Characteristics of CE Configuration
7. Transistor Characteristics of CB Configuration
8. Stability Factor of Fixed Bias and Self bias
9. V-I Characteristics of JFET
10. V-I Characteristics of UJT
11. UJT as Relaxation Oscillator
12. Characteristics of SCR and TRIAC
13. Characteristics of LDR and Solar Cell
14. Study of LED and 7 Segment display

Total Hours	**45**

Text Books

1.	Mehta V. K., Rohit Mehta (2015) Principles of Electronics. S. Chand Publishing.
2.	Salivahanan. S, Suresh Kumar. N, Vallavaraj. A (2018) Electronic devices and circuits, TMH publishing company Ltd.

Reference Books

1.	Sedha, R. S (2012) A Text Book of Applied Electronics. S. Chand & Company Ltd.
2.	Robert L. Boylestad, Louis Nashelsky (2023) Electronic Devices and Circuit Theory, Pearson Prentice Hall.

Web Resources (Swayam / NPTEL / Others)

1.	https://onlinecourses.nptel.ac.in/noc24_ee02/preview
2.	https://onlinecourses.nptel.ac.in/noc24_ee27/preview

Course Code	Course Name	Category	Hours / Week	Credits
26BMA1DA	Mathematics - I	Allied - I	4	3

Course Objectives

The course intends to cover

- The fundamental tools to analyze and solve problems related to circuit and differential equations.
- The concept of fourier transforms and laplace transforms in detail

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Recall the concepts of the Matrix and its types.	K1
CLO2	Understand the concept of Gradient, Solenoidal, Curl.	K2
CLO3	Apply Laplace transforms in circuit problems.	K3
CLO4	Analyze Fourier Series in real time problems.	K4
CLO5	Apply and Analyze Fourier Transformation techniques to solve mathematical problem	K3 & K4
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze		

CLO – PLO Mapping

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	3	1	1	1	1
CLO2	3	2	1	1	1
CLO3	2	2	2	3	1
CLO4	3	2	1	2	1
CLO5	1	1	2	2	1
3 - Substantial (high)		**2** - Moderate (medium)		**1** - Slight (low)	

Allied - I: Mathematics – I

Unit	Content	No. of Hours
I	**Matrices:** Matrices – Types of Matrices - Operations of Matrix - Rank of Matrix - Characteristics Roots and Vectors- Inverse of Matrix -Matrices in Machine Learning	12
II	**Vector Calculus:** Introduction-Dot product - Cross product -Vector differentiation- Gradient, Divergence and Curl.	12
III	**Laplace Transforms:** Definition of Laplace Transform - Properties of Laplace Transform- Inverse Laplace Transform - Convolution Theorem.	12
IV	**Fourier Series:** Fourier Series – Change of Interval- Odd and Even Functions - Half Range Series.	12
V	**Fourier Transforms:** Fourier Transform Pair- Inverse Formula for Fourier Transform- Properties of Fourier Transform - Convolution Theorem- Fourier Sine and Cosine Transform.	12
	(Problems - 80% & Theory - 20%)Total Hours	**60**
Text Books		
1.	Navnithan. P.A.(2017), Lakshmi M.S.V, Business Mathematics and Statistics,Jai Publishers. Unit I: Chapter 5: P.No: 5.1 – 5.37, 5.50-5.75 Unit I: Chapter 4: P. No:180-182	
2.	Venkatraman M. K. (2012). Engineering Mathematics Vol II, The National Publishing Company. Unit II: Chapter 2: Section: 1.1 – 1.6 Chapter 2: Section 2.1-2.3,2,7 Chapter 2 Section: 3.1-3.3, 3.5-3.7, 3.9, 3.12,3.15	
3.	Venkatraman. M. K. (2000), Engineering Mathematics III A,The National Publishing Company. Unit III: Chapter 1: Section: 1 – 20	
4.	Balaji. G, (2021).Transforms and Partial Differential Equations, Balaji Publishers. Unit IV: Chapter 2: Section: 2.1 – 2.3 Unit V: Chapter 4: Section: 4.2 –4.3	
Reference Books		
1.	Balaji G (2019), Vector Calculus, Balaji Publishers.	
2.	Venkatraman M.K. (2010), Higher Mathematics for Engineering & Science. The National Publishing Company.	
Web Resources (Swayam / NPTEL / Others)		
1.	https://archive.nptel.ac.in/courses/111/105/111105122/	
2.	https://archive.nptel.ac.in/courses/111/101/111101164/	
3.	https://medium.com/@bibhutibora123/matrices-in-machine-learning-5a1dbec74dc9	

Part – IV : Foundation Course

(All the Undergraduate Programmes)

Course Code	Course Name	Category	Hours / Week	Credits
26ENV1FC	Environmental Studies	FC- I	2	2

Unit	Content
I	The Multidisciplinary nature of environmental studies Definition; Scope and importance, Need for public awareness.
II	**Natural Resources:** Renewable and non-renewable resources: Natural resources and associated problems. - Forest resources: Use and Over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people. - Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems. - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. - Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, Case studies. - Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.
III	**Ecosystems** - Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem. - Ecological succession. - Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of the following ecosystem: - a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit	Content
IV	**Biodiversity and its Conservation** - Introduction-Definition: genetic, species and ecosystem diversity. - Bio geographical classification of India. - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. - Biodiversity at global, National and local levels. - India as a mega-diversity nation. - Hot-spots of biodiversity. - Threats to biodiversity: habital loss, poaching of wildlife, man-wildlife conflicts. - Endangered and endemic species of India. - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
V	**Environmental Pollution Definition** - Causes, effects and control measures of: - a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards - Solid waste Management: Causes, effects and control measures of urban and industrial wastes. - Role of an individual in prevention of pollution. - Pollution case studies. - Disaster management: floods, earthquake, cyclone and landslides.
VI	**Social Issues and the Environment** - From Unsustainable to Sustainable development. - Urban problems related to energy. - Water conservation, rain water harvesting, watershed management. - Resettlement and rehabilitation of people; its problems and concerns. Case studies. - Environmental ethics: Issues and possible solutions. - Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies. - Wasteland reclamation. - Consumerism and waste products. - Environment Protection Act. - Air (Prevention and Control of Pollution) Act. - Water (Prevention and Control of Pollution) Act. - Wildlife Protection Act. - Forest Conservation Act. - Issues involved in enforcement of environmental legislation. - Public awareness.

Unit	Content
VII	**Human Population and the Environment** - Population growth, variation among nations. - Population explosion-Family welfare Programme. - Environment and human health. - Human Rights. - Value Education. - HIV/AIDS. - Women and Child Welfare. - Role of information Technology in Environment and human health. - Case Studies. **Biosafety and Biosecurity** The basic principles of biosafety. - Biological hazards and assess risk in laboratory settings. - Biosafety protocols to minimize risks associated with biological agents. - Role of biosafety in the protection of public health, environment, and nationalsecurity. The theoretical knowledge as well as practical applications to prepare learners for real-world biosafety challenges. 1. Introduction to Biosafety - Definition and importance of biosafety. - Historical perspective on biosafety incidents. - Biosafety vs. biosecurity: Key differences. 2. Biological Hazards and Risk Assessment - Classification of biological agents (e.g., bacteria, viruses, fungi, parasites). - Risk assessment methodology: Identifying hazards, evaluating risks, and control measures. 3. Biological Waste Management - Types of biological waste: Solid, liquid, sharps, etc. - Waste disposal techniques: Autoclaving, incineration, chemical disinfection. - Environmental impact and regulations surrounding waste management. 4. Standard Operating Procedures (SOPs) and Safety Practices - Developing and implementing SOPs for laboratory safety. - Practices for handling, storing, and disposing of biological materials.
VIII	**Field Work (Practical).** - Visit to a local area to document environmental assets-river/forest/grassland/ hill/mountain. - Visit to a local polluted site-Urban/Rural/Industrial/Agricultural. - Study of common plants, insects, birds. - Study of simple ecosystems-pond, river, hill slopes, etc.
	Total Hours **30**

Web Resources

1.	https://www.ugc.gov.in/oldpdf/modelcurriculum/env.pdf
2.	Biosafety in Microbiological and Biomedical Laboratories (CDC, NIH). (BMBL) 6th Edition
3.	Sateesh, M. K. (2010). Bioethics and Biosafety. New Delhi: I. K. International Pvt Ltd.
4.	Additional Readings:Relevant journal articles, government publications, and guidelines (e.g., WHO, CDC, European Union, etc.). https://www.iberdrola.com/innovation/what-is-biosafety

Part – IV : Ability Enhancement Compulsory Course(AECC)

(All the Undergraduate Programmes)

Course Code	Course Name	Category	Hours / Week	Credits
26SOF1AE	Soft Skills	AECC - I	2	2

Course Objectives

The course intends to cover

- The essential soft skills that is crucial for success in today's dynamic and interconnected workplace.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Understand the comprehensive skills to participate actively in conversation, writing short texts with expression	K1, K2, K3
CLO2	Infer the cohesive devices to describe and discuss any objects, pictures using compound, complex sentence forms.	K2, K3
CLO3	Comprehend the logic in the given situation to organize the ideas to write formal and informal letters.	K2, K3
CLO4	Understand the given material to organize it in a logical sequence to present a paragraph with main and supporting ideas with concluding sentences.	K3
CLO5	Present valuable ideas in conversation to emulate the main ideas and key points in short essays.	K3
K1 - Remember; **K2** - Understand; **K3** - Apply;		

Ability Enhancement Compulsory Course(AECC) - I : Soft Skills

Unit	Module	Details	No. of Hours
I		**Presentation Skills**	
	1	**Getting to Know You:** Grammar: Introduction to Tenses, Everyday English, Role-Play. Reading Activity: Different ways of communication. *Activities*: Fill in the blanks (Listening), Self Introduction (Speaking).	6
	2	**My Day:** Grammar: Present simple positive & negative/Adverbs of Frequency, Vocabulary & Speaking about Daily Activities. Listening: Observe and Answer/ Telling the time. *Activities:* Reading & Writing: Describe where you live.	
	3	**Your World:** Grammar: Possessive determiners. Listening: Positive & negative contractions. Reading & Writing: Personal profile. *Activities:* Talk about countries, nationalities (Vocabulary & Speaking).	
	4	**The World of Work:** Grammar: Yes/No & Wh Questions. Vocabulary & Speaking: Jobs. Listening: Recognize the schwa sound. *Activities:* Opening and closing an email (Reading & Writing).	
	5	**Places and Things:** Grammar: There is / there are, articles. Vocabulary & Speaking: Talk about rooms & furniture. Listening: Directions. Reading & Writing: Imperatives.	
	6	**24 Hours:** Grammar: Likes & Dislikes. Vocabulary & Speaking: Speak about hobbies and interests. Reading: Match the photos with descriptions. Writing: Write complete sentence using prompt. *Activities:* Observe & answer *(*Listening).	
		Practice: Listening & Speaking Presentations - Talking about how you learn – Understanding key information in a presentation – Writing sentences about you.	
II		**Confidence**	
	1	**Clothes and Shopping:** Grammar: Modal verbs/Adverbs of Frequency/Adjectives and Adverbs. Vocabulary & Speaking: Shopping. Reading & Writing: Product Review. *Activities:* Observe & answer *(*Listening).	6
	2	**Travel & Transport:** Grammar: Past simple questions. Vocabulary & Speaking: Talk about holidays. Listening: At the train station. *Activities:* Email - A perfect holiday (Reading & Writing).	
	3	**Health & Fitness:** Grammar: Past simple irregular verbs; Listening: Listen & Answer; Reading & Writing: Time sequencers; *Activities:* Talk about a healthy lifestyle (Vocabulary & Speaking)	
	4	**Music:** Grammar: Present perfect simple; Vocabulary & Speaking: Survey about music; Listening: Listen two people talk about music; *Activities:* Use adjectives and create sentences (Reading)	
	5	**Let's go shopping:** Vocabulary & Speaking: Town Survey; Listening: Listen and answer; Reading & Writing: Read and match; Activities: Countable & Uncountable **(**Grammar)	
		Practice: Writing a personal statement.	

Unit	Module	Details	No. of Hours
III	**Creativity**		
	1	**Cooking & Eating:** Grammar: Some & Any, Quantifiers. Vocabulary & Speaking about Food & Drink. *Activities* Kitchen conversation (Listening). Reading an article & answering.	6
	2	**Survival:** Grammar: Comparison of adjectives. *Activities* Describing people (Speaking and Vocabulary). Listening to an audio & Answering. Reading & Writing: Read and Answer.	
	3	**Working Together:** Grammar: Verb + Noun phrases. *Activities* Technology (Vocabulary & Speaking). Listening: Listen & Answer. Reading & Writing: Notice.	
	4	**Music:** Grammar: Present perfect simple. *Activities* Survey about music (Vocabulary & Speaking). Listen to two people talking about music (Listening). Reading: Use adjectives and create sentences.	
	5	**Culture and Arts:** Grammar: Present perfect.Vocabulary & Speaking activity: Speak on the phone. *Activities:* Listen and answer. Reading & Writing activity: Review.	
		Practice: Writing comparison sentences & paragraphs.	
IV	**Problem-Solving**		
	1	**Do's and Don'ts:** Grammar, Modal Verbs. *Activities* Roleplay (Speaking). Holidays in January (Listening). Reading an article & answering.	6
	2	**Body:** Grammar: First conditional. Vocabulary & Speaking about Personality & Appearance. *Activities* Conversations about personality (Listening), Reading & Writing: Read and Answer about your skills.	
	3	**Speed:** Grammar: Present simple passive. Vocabulary & Speaking about relationships. Listening: Listen & Answer. Reading and Error spotting.	
	4	**Work:** Grammar: Adverbs of manner. Vocabulary & Speaking about work advice. Listening: Observe & Answer; Reading: Read & check your ideas.	
		Practice: Writing argumentative and descriptive essays.	
V	**Critical Thinking**		
	1	**Influence:** Grammar: would / past habits. Listening: Sentence Correction. *Activities* Your inspiration (Speaking). Picture description (Reading).Rewrite the sentences (Writing).	6
	2	**Money:** Grammar: Second conditional. *Activities:* Radio programme (Listening). Talk about games (Speaking). Reading & Writing: Fill in the blanks.	
	3	**Things that changed the world:** Grammar: articles. *Activities* :Talk about chewing gum (Speaking & Listening). Reading & Writing: Read and write a book review.	
		Practice: Writing Emails, reports and proposals.	
		Total Hours	**30**

Components for Internal Assessment and Distribution of Marks for CIA and ESE (Theory)

Max Marks	Marks for		Components for CIA						
	CIA	ESE	CIA		Model		Attendance	Active Engagement	Total
100	25	75	Actual	Weightage	Actual	Weightage	5	5	25
			50	**5**	75	**10**			

Question Paper Pattern

Component	Duration in Hours	Section A			Section B			Section C			Total
		Type of Question	No. of Questions	Marks	Type of Question	No. of Questions	Marks	Type of Question	No. of Questions	Marks	
CIA	2	MCQ	8	8x1=8	Either or	3	3x6=18	Either or	3	3x8=24	50
Model Exam / **ESE**	3	MCQ	10	10x1=10	Either or	5	5x5=25	Either or	5	5x8=40	75

Components for Internal Assessment and Distribution of Marks for CIA (Lab)

Max Marks	Marks for		Components for CIA						
	CIA	ESE	Test		Model		Experiments / Programs	Observation	Total
100	40	60	Actual	Weightage	Actual	Weightage	Marks	5	40
			50	**10**	60	**15**	**10**		

Examination Pattern

Component	Duration in Hours	Marks			Weightage
		Practical Exam	Record	Total Marks	
Test	2	50	-	**50**	10
Model	3	60	-	**60**	15
Experiments Completed	-	-	-	**10**	10
Observation Not	-	-	-	**05**	05
				Total Marks - CIA	**40**
ESE	3	50	10	-	**60**

Components for Internal Assessment and Distribution of Marks for CIA (Foundation Course -Theory)

Max Marks	Marks for		Components for CIA				
50	CIA	ESE	CIA		Model		Total
	50	-	Actual	Weightage	Actual	Weightage	
			50	**25**	50	**25**	**50**

Question Paper Pattern

Duration in Hours	Mode of Exam	Type of Questions	No. of Questions	Marks
2	Offline	Open Choice	5 (Out of 8)	5 x 10=50

Components for and Distribution of Marks for ESE (Theory) Ability Enhancement Compulsory Courses (AECC) & Question Paper Pattern

Duration in Hours	Mode of Exam	Type of Questions	No. of Questions	Marks
2	Online	MCQ	50	50x1=50



Semester 2

Semester – 2									
Course Code	**Part**	**Course Category**	**Course Name**	**Hours / Week**	**Examination**				**Credits**
					Duration in Hours	**Max Marks**			
						CIA	**ESE**	**Total**	
26TAM21L	I	Language – II	Tamil – II	4	3	25	75	100	3
26HIN21L	I		Hindi – II						
26MAL21L	I		Malayalam – II						
26FRE21L	I		French – II						
26ENG22L	II	English – II	English – II	4	3	25	75	100	3
26BEC23C	III	Core – III	Digital Principles and Applications	5	3	25	75	100	4
26BEC24C	III	Core – IV	Electronic Circuits	5	3	25	75	100	4
26BEC25P	III	Core Lab– III	Digital Electronics Lab	4	3	40	60	100	3
26BMA2BA	III	Allied – II	Mathematics – II	4	3	25	75	100	3
26HUM2FC/	IV	FC – II	**Human Rights /**	2	2	50	-	50	2
26DIM2FC			Disaster Management						
26IDT2AE/	IV	AECC – II	Innovation and Design Thinking/	2	2	-	50	50	2
26IPR2AE/			Intellectual Property Rights /						
26END2AE			**Entrepreneurship Development**						
Total				**30**				**700**	**24**

Course Code	Course Name	Category	Hours/Week	Credits
26TAM21L	Tamil - II	Language - I	4	3

Course Objectives

The Course intends to cover

- சங்க இலக்கியங்கள் மற்றும் சிலப்பதிகாரம் வழியாகத் தமிழர்களின் வீரம், கொடை, வாழ்வியல் நெறிகள் மற்றும் நீதிநெறியை மாணவர்களுக்கு எடுத்துரைத்தல்.
- திருக்குறள், திருவருட்பா, சித்தர் மற்றும் கவிமணி, கண்ணதாசனின் படைப்புகள் வழியாக உழவின் சிறப்பு, ஆன்மீக ஒருமைப்பாடு, தத்துவச் சிந்தனைகள் மற்றும் வாழ்வியல் அறங்களை மாணவர்களுக்கு அறிமுகப்படுத்துதல்.
- உரைநடையின் வழியாக மாணவர்களிடம் அறநெறி, தமிழர் தொல்லியல் வரலாறு, நட்பு மற்றும் மனவளப் பண்புகளை உணர்த்துதல்.
- சங்க இலக்கியங்கள், காப்பியங்கள் மற்றும் உரைநடையின் தோற்றம், வரலாற்று பின்புலத்தை மாணவர்களுக்கு எடுத்துரைத்தல்.
- சொல்லின் வகைகள், வேற்றுமைத் தொகைகள் மற்றும் பகுபத உறுப்பிலக்கணம் ஆகியவற்றின் வழியாகத் தமிழ் இலக்கண விதிகளை அறிமுகப்படுத்தி, பிழையின்றி எழுதக் கற்றுக் கொடுத்தல்.

Course Learning Outcomes

On the successful completion of the course the students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	கரிகாலனின் கொடைத்திறனையும் கண்ணகியின் அறச்சீற்றத்தையும் அறிவதன் மூலம், மாணவர்கள் தமிழர் பண்பாட்டையும் நீதியின் வலிமையையும் அறிந்து கொள்வர்.	K1, K2
CLO2	பல்வேறு சமய மற்றும் தத்துவப் பாடல்களைக் கற்பதன் மூலம், சமூக நல்லிணக்கம், அறநெறி வாழ்க்கை, பகுத்தறிவு மற்றும் மனிதநேயப் பண்புகளை வளர்த்துக் கொள்வர்.	K2
CLO3	வரலாற்றுப் பெருமிதத்தை உணர்ந்து, மன ஒழுக்கத்துடனும் நேர்மறைச் சிந்தனையுடனும் மாணவர்கள் சமூகத்தில் சிறந்த குடிமக்களாக வாழும் தகுதியைப் பெறுவார்கள்.	K3
CLO4	தமிழ் இலக்கிய வடிவங்களின் கால மாற்றங்களை உணர்ந்து, இலக்கிய வரலாற்றுப் பின்புலத்தை தெளிவாகப் புரிந்து கொள்வர்.	K3
CLO5	சொற்களின் அமைப்பையும் உறுப்பிலக்கண விதிகளையும் அறிவதன் மூலம், மாணவர்கள் மொழிப்புலமையில் ஆளுமை மிக்கவர்களாகத் திகழ்வர்.	K3
K1 - Remember; **K2** - Understand; **K3** – Apply		

Part –I - Language – I : தமிழ் - II

Unit	Content	No. of Hours
I	**சமூகம் மற்றும் வாழ்வியல்** 1. புறநானூறு - பாடல் எண் – 182, 192 2. பொருநராற்றுப்படை – கரிகாலன் கொடைச்சிறப்பு (53-73, 129-177 அடிகள் மட்டும்) 3. சிலப்பதிகாரம் – வழக்குரைக்காதை	14
II	**அறம் மற்றும் பக்தி** 1. திருக்குறள் – உழவு 2. வள்ளலார் பாடல்கள்(திருவருட்பா – வள்ளலார் விண்ணப்பம்) 3. உமர்கயாம் பாடல்கள் (தனிப்பாடல்கள்) - கவிமணி தேசிக விநாயகம் பிள்ளை 4. இயேசுகாவியம் - மலைப்பொழிவு - கண்ணதாசன் 5. சித்தர் பாடல் - சிவவாக்கியார் பாடல்	14
III	**கலை மற்றும் பண்பாடு** **(IKS - Indian Knowledge System -** அலகு முழுவதும்) 1. அறம் எனப்படுவது - அமுதன் 2. கலைகள் - உ.வே.சாமிநாத ஐயர் 3. கீழடி - தொல்லியல் துறை, வெளியீடு 4. நட்பு நலம் - வேதாத்திரி மகரிஷி 5. மனம் எனும் சொர்க்கவாசல் – டாக்டர் எம்.எஸ்.உதயமூர்த்தி	12
IV	**இலக்கிய வரலாறு** 1. சங்க இலக்கிய வரலாறு 2. காப்பியங்களின் வரலாறு 3. உரைநடையின் தோற்றமும் வளர்ச்சியும்	10
V	**இலக்கணம்** 1. சொல்லின் வகைகள் 2. வேற்றுமைத் தொகைகள் 3. பகுபத உறுப்புகள்	10
	Total Hours	**60**

Unit Mapping with SDGs

Unit	Primary SDGs
Unit I - சமூகம் மற்றும் வாழ்வியல்	SDGs 2, 3, 16
Unit II - அறம் மற்றும் பக்தி	SDGs 2, 3, 10

Reference Books	
1	சுப்பிரமணியன் ச.வே, (2010, இரண்டாம் பதிப்பு), சங்க இலக்கியம் தொகுதி – 3, மணிவாசகர் பதிப்பகம்.
2	சுப்பிரமணியன் ச.வே, (2010, இரண்டாம் பதிப்பு), பத்துப்பாட்டு முழுவதும், மணிவாசகர் பதிப்பகம்.
3	புலியூர்க்கேசிகன் உரை, (2021,முதல் பதிப்பு), சிலப்பதிகாரம், குமரன் பதிப்பகம்.
4	பரிமேலழகர் உரை, (2005, முதற் பதிப்பு) திருக்குறள், ஸ்ரீ செண்பகா பதிப்பகம்.
5	முனைவர் பஞ்சாங்கம் கா. (2017, 4-ஆம் பதிப்பு), தமிழ் இலக்கிய வரலாறு, காவியா பதிப்பகம்.
6	வரதராசன் மு. (2021, 34-வது பதிப்பு), தமிழ் இலக்கிய வரலாறு, சாகித்திய அகாதமி பதிப்பு.
7	கவிஞர் கண்ணதாசன், (2006, 6-ஆம் பதிப்பு), இயேசு காவியம், கலைக்காவிரி பதிப்பகம்.
8	செல்வநாயகம் வி.(2003, முதல் பதிப்பு), தமிழ் உரைநடை வரலாறு, அடையாளம் பதிப்பகம்.
9	பேரா. முனைவர் பாக்கியமேரி, (2022, 6-ம் பதிப்பு), வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, நியூசெஞ்சுரி புக் ஹவுஸ்(பி). லிட்.
10	டாக்டர் உதயமூர்த்தி எம். எஸ்.(2016, முதல் பதிப்பு), எண்ணங்கள், வெளியீடு கங்கை புத்தக நிலையம்.
11	புலவர்.பொன்மணிமாறன், (2011, முதல் பதிப்பு) அடோன் தமிழ் இலக்கணத் தொகுப்பு, அருண் பப்ளிஷிங்.

Course Code	Course Name	Category	Hours / Week	Credits
26HIN21L	Hindi - II	Language - I	4	3

Course Objectives

The course intends to cover

- Contemporary poetry .
- The nature of drama and its nature and improving the knowledge of reading and understanding the nature of contemporary plays.
- Letter writing for personal and professional purposes.
- Simple Conversation in everyday situations.
- Translation from Hindi to English

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Understand the essence of the poem, its poetic expression and theme.	K1, K2
CLO2	Understand the moral and human values conveyed in the plays.	K2
CLO3	Draft formal and informal letters in Hindi for personal and professional purposes.	K3
CLO4	Apply Hindi dialogues in everyday social and professional situations.	K3
CLO5	Translate the prescribed lessons between Hindi and English using appropriate vocabulary and grammar.	K3
K1 - Remember; **K2** - Understand; **K3** – Draft, Apply, Translate		

Part – I: Language – I : Hindi – II

Unit	Content	No. of Hours
I	**Modern Poetry :** Panchvati By Mythli Sharan Gupt	14
II	**One Act Play:** Ekaniki Piyush 1. Owrangjeb ki aakirirath– Ramkumar varma 2. Ek din - Lakshminarayan Misra 3. Vapasi - Vishnuprabhakar 4. Badsurath rajkumari - Krishnachandra 5. Aakket - Harijeeth	14
III	**Letter Writing :** (Leave Letter, Job Application, Ordering Books, Letter to Publisher, Personal Letter)	12
IV	**Conversation:** (Doctor & Patient, Teacher & Student, Storekeeper & Buyer, Two Friends, Booking Clerk & Passenger at Railway Station, Auto rickshaw driver and Passenger)Ref : Bolchal Ki Hindi Aur Sanchar by Dr. Madhu Dhavan Vani Prakashan, New Delhi.	10
V	**Translation:** Hindi-English only Lessons – 1-15 only Anuvadh Abyas –III	10
	Total Hours	**60**

Text Book

1.	Luca Giachino, Carla Baracco, Romain Chrétien(DELF), (2022), Nouvelle Génération A1, Didier FLE.

Reference Books

1.	Kavya Parasar, Dr.Bolanath,(2018) Jawahar Pusthakalay, Sadar Bazaar,Mathura-U.P.281001
2.	Sone ki Varsha (2020) Dakshin Bharat Hindi Prachar Sabha, Chennai – 600 017

Course Code	Course Name	Category	Hours / Week	Credits
26MAL21L	Malayalam - II	Language - I	4	3

Course Objectives

The course intends to cover

- Genre of travel writing and its ability to convey cultural and experiential narrative.
- The descriptive techniques used to portray places and experiences.
- Autobiographical writing and its reflection of an individual's life and experiences.
- The inspirational aspects of the autobiography and their relevance to personal growth.
- Translation from Malayalam to English.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Understand and appreciate travel literature, focusing on descriptive language and personal reflections.	K1, K2
CLO2	Identify cultural differences	K2
CLO3	Reflect on social and cultural issues by interpreting the life experiences presented in Chirikku Pinnil	K3
CLO4	Explore the personal history and anecdotes shared by the author.	K3
CLO5	Translate English passages into Malayalam using appropriate vocabulary and grammar.	K3
K1 - Remember; **K2** – Understand, Identify; **K3** - Reflect, Explore, Translate		

Part – I: Language – I : Malayalam - II

Unit	Content	No. of Hours
I	Travelogue - Pravasiyude kurippukal - Babu Bharadwaj	14
II	Travelogue - Pravasiyude kurippukal - Babu Bharadwaj	14
III	Autobiography- Chirikku pinnil - Innocent	12
IV	Autobiography- Chirikku pinnil - Innocent	10
V	Translation (English to Malayalam)	10
	Total Hours	**60**

Text Books

1.	Pravasiyude Kurippukal, Babu Bharadwaj, (2019), Mathrubhumi Books, Kochi, Kerala.
2.	Chirikku Pinnil, (2016), Innocent, Mathrubhumi Books, Kochi, Kerala

Reference Books

1.	Dr.Vijayalam Jayakumar (2005),Athmakathasahithyam Malayalathil. (N.B.S.Kottayam)
2.	K.M.Tharakan (2011), Malayala Novel Sahithya Charitram (N.B.S.Kottayam)
3.	Dr.K.M George, (2009), Sahithya Charitram Prasthanangalilude, (D.C.Books Kottayam)
4.	Sukumar Azheekode (2016), Malayala Sahithyavimarsam . (D.C.books)

Course Code	Course Name	Category	Hours / Week	Credits
26FRE21L	French - II	Language - I	4	3

Course Objectives

The course intends to cover

- Everyday expressions and basic phrases aimed at the satisfaction of concrete needs.
- Francophone cultures such as greetings, etiquette, daily life, and basic geography of French-speaking countries.
- Short, simple texts such as postcards, emails, or short descriptions about themselves and their immediate environment.
- Constructing simple sentences using correct word order and basic vocabulary.
- Simple texts such as personal messages, advertisements, menus, and schedules.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Identify and use French vocabulary and grammatical structures	K1, K2
CLO2	Apply French communication skills in everyday conversations.	K3
CLO3	Recognise and use French vocabulary related to leisure activities.	K3
CLO4	Use French words and expressions in appropriate contexts.	K3
CLO5	Communicate effectively in French in everyday situations using appropriate vocabulary and grammatical structures.	K3
K1, **K2** - Identify; **K3** – Apply, Recognise, Use, Communicate		

Part – I: Language – I : French – II

Unit	Content	No. of Hours
I	Portraits(pg 50-60) Grammaire: pg(140-144)	14
II	Communication(pg 61-65) Grammaire: pg(145-146)	14
III	Temps Libre(pg 66-68) Grammaire: pg(147)	12
IV	Mots Et Expressions(pg 69-76) Grammaire: pg(148-151)	10
V	Communication(pg 77-81) Grammaire: pg(152-155)	10
	Total Hours	**60**

Text Book

1.	Luca Giachino, Carla Baracco, Romain Chrétien(DELF), (2022), Nouvelle Génération A1, Didier FLE

Reference Book

1.	Nathalie Hirschsprung, Tony Tricot, (2017) Cosmopolite, Hachette

Course Code	Course Name	Category	Hours / Week	Credits
26ENG22L	English - II	Language - II	4	3

Course Objectives

The course intends to cover

- The literary elements in poetry, fostering reflection on women's roles and motherhood values.
- Experience of Humour , satire and irony in different social contexts.
- The application of parts of speech in core grammatical structures for effective communication.
- Essential vocabulary rules, word relationships, and corporate terminology to enhance precision in professional communication.
- Interactive communication skills, public speaking, critical reading, and letter writing to develop comprehensive professional and personal expression.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Understand and respect gender dynamics and intergenerational relationships in the family.	K1, K2
CLO2	Understand how humor, satire, and irony are used in prose to appreciate social commentary and human nature.	K2
CLO3	Construct grammatically correct written and spoken sentences using appropriate parts of speech.	K3
CLO4	Draft relevant business communication by using general vocabulary mechanics and corporate terminology.	K3
CLO5	Demonstrate communication skills in meetings, speeches, and writing with contextual comprehension**.**	K3
K1 – Remember **; K2 -** Understand; **K3** – Construct, Draft, Demonstrate		

Language II : Part II : English II

Unit	Content	No. of Hours
I	**Poetry -** Motherhood 1.1 My Grand Mother's House – Kamala Das 1.2 Of Mothers,among other things – A.K Ramanujam 1.3 Night of the Scorpion – Nissim Ezekiel	12
II	**Prose -** Humour 2.1 With The Photographer – Stephen Leacock 2.2 Travel by Train – J.B.Priestley 2.3 On Forgetting – Robert Lynd	12
III	**Grammar:** 3.1 **Adjectives** -Types of adjectives, Degrees of comparison, Order of adjectives in a sentence, Common errors with adjectives 3.2 **Adverbs -** Types, Position of adverbs in sentences, Common errors with adverbs 3.3 **Prepositions –** Simple, Compound and Phrasal Prepositions**,** Correct usage in time and place expressions, Common errors with prepositions 3.4 **Conjunctions -** Coordinating conjunctions, Subordinating conjunctions, Correlative conjunctions, Common errors with Conjunctions 3.5 **Interjections -** Common interjections, Expressing emotions, Usage in formal vs. informal contexts	12
IV	**Language Competency -Vocabulary** 4.1 Spelling of words, Correct usage of words, One word substitution, Singular and plural (including Zero plural), Verbal Analogy 4.2 Business and Corporate Vocabulary - Marketing and Sales, Human Resource, Finance and Operation, Organization and Management, Office Procedures and Documents.	12
V	**English for Communication** 5.1. Listening with courtesy and adding ideas and giving opinions during the meeting and making concluding remarks 5.2. Participating in a meeting: face to face and online, Persuasive speaking, Making short speeches 5.3. Reading Comprehension – Unseen Passages (News Paper, Headlines, Editorials, Government related News) 5.4. Letter writing – Types of Letters (formal and informal)	12
	Total Hours	**60**

Unit Mapping with SDGs

Units	Primary SDG
Unit – I: Poetry	SDG 5
Unit – II: Prose	SDG 3

Reference Books	
1.	Aarti, V., & Bansal, R. K. (2019). Developing Communication Skills ,2nd ed., Macmillan Publishers.
2.	Bakshi, S. P., & Sharma, R. (2020). Descriptive English ,2nd ed., Arihant Publications India Ltd.
3.	Cameron, S., & Dempsey, L. (2019). The Reading Book: A Complete Guide to Teaching Reading. 1st ed., S & L Publishing.
4.	Hewings, M. (2013). Advanced Grammar in Use, 3rd ed., Cambridge University Press.
5.	Leacock, S. (1913). With the photographer. Behind the Beyond, and other Contributions to Human Knowledge, 1st ed., John Lane Company.
6.	Lynd, R. (1921). In the Pleasures of Ignorance , 1st ed, Methuen & Co.
7.	Narasimhaiah, C. D. (Ed.) (1990). An Anthology of Commonwealth Poetry, 1st ed, Macmillan India.
8.	Parthasarathy, R. (Ed.), (1976). Ten twentieth-century Indian Poets, 1st ed., Oxford University Press.
9.	Priestley, J. B. (1922). Travel by train. In Papers from Lilliput, 1st ed., Bowes & Bowes.
10.	Sherman, B. (2014). Skimming and Scanning Techniques, 1st ed., Liberty University Press.
Web Resources(Swayam / NPTEL)	
1.	https://nptel.ac.in/courses/109106116

Course Code	Course Name	Category	Hours / Week	Credits
26BEC23C	Digital Principles and Applications	Core – III	5	4

Course Objectives

The course intends to cover

- Basic concepts of number systems, codes and their conversions for digital system design.
- Simplification techniques for optimized digital circuit design.
- Combinational logic circuits for arithmetic operations, data routing, encoding and decoding.
- Sequential logic circuits for applications supporting sustainable and low-emission cities.
- Conversion techniques Digital-to-analog and analog-to-digital.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Interpret number conversions by identifying number systems and codes.	K1, K2
CLO2	Solve logic design problems using Boolean algebra and Karnaugh maps.	K3
CLO3	Construct combinational logic circuits and arithmetic circuits.	K3
CLO4	Manage smart traffic control systems integrating sequential logic circuits.	K3
CLO5	Categorize ADC and DAC techniques based on their operating principles and applications.	K4
K1 - Remember; **K2 –** Interpret; **K3 –** Solve, Construct, Manage; **K4 –** Categorize		

CLO – PLO Mapping

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	Primary SDG
CLO1	3	2	1	1	2	-
CLO2	3	2	2	1	1	-
CLO3	3	3	2	1	1	-
CLO4	3	3	2	1	3	SDG 11
CLO5	3	1	2	1	1	-
3 - Substantial (high)		**2** - Moderate (medium)		**1** - Slight (low)		

Core - III: Digital Principles and Applications

Unit	Content	No. of Hours
I	**Number Systems and Codes: Introduction -** Digital Vs Analog – Number Systems: Binary, Octal, Decimal and Hexa Decimal Numbers – Conversion – Binary Coded Decimal (BCD) – Excess Three – Grey Code – ASCII Codes.	15
II	**Logic Gates and Boolean Algebra:** AND, OR, NOT, NAND, NOR, EX-OR and EX-NOR gates – Boolean Algebra – Commutative, Associative and Distributive Laws – Duality Theorem – De-Morgans Theorem – Sum of Products and Products of Sums – Karnaugh map.	15
III	**Combinational Logic Circuits:** Binary Addition, Subtraction– Addition of 1's and 2's Complements - Half Adder – Full Adder – Half Subtractor – Full Subtractor – 4-bit Binary Adder / Subtractor – BCD adder – Multiplexer – Demultiplexer – Decoders – Encoders – Magnitude Comparators - AI-Assisted Digital Circuit Design and Optimization	15
IV	**Sequential Logic Circuits:** Flip Flops – RS, Clocked RS, JK, JK Master Slave, D and T Flip Flops – Shift Registers–Ring Counters–Synchronous Counter – Asynchronous Counter – Up Down counter – Mod-3, Mod-5 Counters – Decade Counter- Smart Traffic Control Systems	15
V	**Digital to Analog Converters:** Resistive Divider Type – Ladder Type – **Analog to Digital Converters:** Simultaneous Conversion – Counter Type – Successive Approximation Type – Single Slope Type – Dual Slope Type – Accuracy and Resolution.	15
	Total Hours	**75**

Unit Mapping with SDGs

Units	Primary SDG
Unit IV – Smart Traffic Control Systems	SDG 11

Text Books

1.	Morris Mano (2022) Computer System Architecture, Pearson Education.
2.	Albert Paul Malvino and Donald P. Leech (2019) Digital Principles and Applications, McGraw Hill Company.

Reference Books

1.	Puri V K (2017) Digital Electronics: Circuits and Systems, McGraw Hill Education.
2.	Salivahanan S (2012) Digital Circuits and Design, McGraw Hill Education.

Web Resources (Swayam / NPTELs / Others)

1.	https://nptel.ac.in/courses/108105132
2.	https://onlinecourses.swayam2.ac.in/cec24_cs09/preview
3.	https://miovision.com/blog/smart-city-traffic-optimization/
4.	https://resources.pcb.cadence.com/schematic-design/2022-everything-to-know-about-machine-learning-based-digital-circuit-design

Course Code	Course Name	Category	Hours / Week	Credits
26BEC24C	Electronic Circuits	Core – IV	5	4

Course Objectives

The course intends to cover

- Principles and applications of regulated DC power supplies in solar-powered off-grid systems.
- Construction of analog electronic circuits, including amplifiers, filters, oscillators, and power supplies.
- Fundamentals of different transistor amplifier configurations and their characteristics.
- Power amplifiers and the effects of negative feedback.
- Oscillators, multivibrators and AI in analog design.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Understand rectifier and regulator circuits, and their operating principles and characteristics.	K1, K2
CLO2	Design amplifier circuits by understanding characteristics and frequency response of transistors.	K3
CLO3	Determine the operating characteristics, maximum collector efficiency, and signal distortion of various power amplifiers.	K3
CLO4	Examine the effects of negative feedback topologies on amplifier parameters.	K4
CLO5	Analyze oscillator and multivibrator circuits based on their operating principles, types, and characteristics.	K4
K1 - Remember; **K2 –** Understand**; K3 –** Design, Determine**; K4 –** Examine, Analyze		

CLO – PLO Mapping

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	Primary SDG
CLO1	3	-	2	-	-	**SDG 7**
CLO2	1	2	1	-	-	-
CLO3	2	3	-	1	-	-
CLO4	-	3	1	-	1	-
CLO5	1	1	-	2	1	-
3 - Substantial (high)		**2** - Moderate (medium)		**1** - Slight (low)		

Core - IV: Electronic Circuits

Unit	Content	No. of Hours
I	**Rectifiers and Regulators:** Half-wave, Full-wave and Bridge Rectifiers – Calculation of RMS Value – Average Value - Ripple Factor – Efficiency – Transformer Utility Factor – Peak Inverse Voltage - Inductor Filter, Capacitor Filter, LC Filter and Pi Filter – Voltage Doubler – Voltage Regulator – Zener Diode Shunt Regulator – Transistor Shunt and Series Regulator – Overload Protection - Construction of DC Power Supply - Designing off-grid and Hybrid solar systems.	15
II	**Small Signal 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 - RC Coupled Amplifier – Gain Frequency Response – Bandwidth - Transformer Coupled Amplifier – Impedance Matching - FET Amplifier.	15
III	**Power Amplifiers:** Operation and Graphical Representation of Class A, Class B, Class C and Class AB Amplifiers – Maximum Collector Efficiency of Class A Power Amplifier – Collector Dissipation Curve – Harmonic Distortion – Class B Push Pull Amplifier – Crossover Distortion - Complementary Symmetry Push Pull Amplifier.	15
IV	**Feedback Amplifiers:** Basic concepts of Feedback – Positive feedback – Negative feedback – Effects of Negative feedback on Gain – Bandwidth – Distortion – Noise. Voltage Series Feedback – Voltage Shunt Feedback – Current Series Feedback – Current Shunt Feedback	15
V	**Oscillators and Multivibrators:** Barkhausen Criterion – Hartley oscillator – Colpitt's Oscillator– Phase Shift Oscillator – Wien Bridge Oscillator – Piezo Electric Crystal and its Effects - Crystal Oscillator. **Multivibrators:** Astable Multivibrator – Monostable Multivibrator – Bistable Multivibrator – Schmitt Trigger - AI in Analog Design.	15
	Total Hours	**75**

SDG Unit Mapping

Units	Primary SDG
Unit I - Designing off-grid and Hybrid solar systems	SDG 07

Text Books

1. Neamen, D. A. (2025), Microelectronics: Circuit Analysis and Design, McGraw Hill Education, 4th edition.,
2. Salivahanan, S., & Suresh Kumar, N. (2022), Electronic Devices and Circuits McGraw Hill Education, 5th edition.,
3. Sedra, A. S., Carusone, T. C., Smith, K. C., & Gaudet, V. (2020), Microelectronic Circuits, Oxford University Press, 8th edition.

Reference Books

1. Boylestad, R. L., & Nashelsky, L. (2013). Electronic Devices and Circuit Theory, Pearson Education, 11th edition.
2. Theraja, B. L (2009) Basic Electronics-Solid State Devices, S. Chand Company Ltd.

Web Resources (Swayam / NPTELs / Others)

1. https://onlinecourses.nptel.ac.in/noc24_ee12/preview
2. https://onlinecourses.swayam2.ac.in/nou24_ec04/preview
3. https://www.cleanenergyreviews.info/blog/designing-off-grid-hybrid-solar-systems
4. https://www.cadence.com/en_US/home/explore/ai-analog-design.html

Course Code	Course Name	Category	Hours / Week	Credits
26BEC25P	Digital Electronics Lab	Core Lab - III	4	3

Digital Electronics Lab (Any 10 Practical's)

1. Introduction to Digital Electronics Lab
2. Verification of Basic Gates and Realize Basic gates from universal gates
3. Verification of Demorgan's Theorem
4. 2-bit Comparator using Gates
5. Half Adder and Full Adder
6. Half Subtractor and Full Subtractor
7. 4-bit Binary Adder
8. Multiplexer and Demultiplexers
9. Encoder and Decoder
10. Study of Flip flops
11. Binary to Gray and Gray to Binary Conversion
12. Shift Registers and Ring Counter
13. Analog to Digital Converter
14. Digital to Analog Converter
15. Implementation of Basic Gates Using Universal Gates (NAND & NOR) in Simulation
16. Design and Simulation of Half Adder and Full Adder Circuits
17. Design and Simulation of Half Subtractor and Full Subtractor Circuits

Total Hours	**60**

Text Books

1.	Morris Mano (2022) Computer System Architecture, Pearson Education.
2.	Albert Paul Malvino and Donald P. Leech. (2019) Digital Principles and Applications, McGraw Hill Company.

Reference Books

1.	Puri V K (2017) Digital Electronics: Circuits and Systems, McGraw Hill Education.
2	Salivahanan S (2012) Digital Circuits and Design, McGraw Hill Education.

Web Resources (Swayam / NPTELs / Others)

1.	https://nptel.ac.in/courses/108105132
2.	https://onlinecourses.swayam2.ac.in/cec24_cs09/preview

Course Code	Course Name	Category	Hours / Week	Credits
26BMA2BA	Mathematics – II	Allied - II	4	3

Course Objectives

The course intends to cover

- Introduction of second order linear differential equations with constant coefficients, the complementary function and the particular integral.
- The Gauss Jordan, Seidel methods and definite integrals methods for solving simultaneous linear equations.
- The formation and solution of difference equations using Z-transforms.
- The Gamma and Beta functions, their properties and the relationship between them.
- Complex numbers, the Argand diagram, and rectangular and polar forms.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO	CLO Statements	Knowledge Level
CLO1	Recall the behavior of RL, RC and RLC circuits and the complementary function and particular integral of second-order linear differential equations using Laplace transforms.	K1
CLO2	Understand the numerical evaluation of definite integrals and the solution of simultaneous linear equations using Gauss methods and appropriate rules.	K2
CLO3	Construct discrete-time system models using Z-transforms and difference equations.	K3
CLO4	Apply integrals and model probability using Gamma and Beta functions	K3
CLO5	Investigate electrical networks using complex numbers in rectangular and polar forms.	K4
K1- Recall**; K2** – Understand; **K3** – Construct, Apply; **K4** – Investigate		

CLO – PLO Mapping

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	3	-	-	-	-
CLO2	3	2	1	-	-
CLO3	2	2	-	3	-
CLO4	3	2	1	-	1
CLO5	1	1	-	2	1
3 - Substantial (high)		**2** - Moderate (medium)		**1** - Slight (low)	

Allied - II: Mathematics – II

Unit	Content	No. of Hours
I	**Differential Equations:** Second order linear differential equation with constant coefficients- Laplace Equations - Application to electronic circuits RL, RC, RLC.	12
II	**Numerical Methods:** Solving simultaneous equation process—Gauss Jordan method-Gauss Seidel method -Numerical Integration - Trapezoidal Rule- Simpson's Rule.	12
III	**Z- Transforms:** Elementary properties - Inverse Z - transform (using partial fraction and residues) - Convolution theorem - Formation of difference equations -Solution of difference equations Using Z - transform.	12
IV	**Special Functions:** Beta and Gamma Functions- Definitions- Relationship between Beta and Gamma Functions - (only statements) - Properties of Gamma and Beta Functions. Beta Function in Statistics.	12
V	**Complex Numbers:** Definition of Complex numbers- Argand Diagram- Rectangular form- polar form- Conversion of rectangular form to polar and vice versa- addition, Subtraction- Multiplication and Division by using polar and rectangular forms - Demoivre's Theorem. Complex numbers in network analysis of electrical circuits.	12
	Total Hours	**60**

Text Books	
1.	Venkataraman.M.K (2012), Engineering Mathematics, The National Publishing Company. Unit I : Chapter 24: Section: 24.1 – 24.22 Unit IV: Chapter 21: Section: 21.1 – 21.11
2.	Venkataraman.M.K. (1999), Numerical Methods in Science and Engineering (1st ed.), The National Publishing Company. Unit II: Chapter 4: Section: 1 – 6
3.	Dr.Balaji.G., (2021), Transforms and Partial Differential Equations, Balaji Publishers. Unit III: Chapter 5: Section: 5.1 – 5.5
4.	Narayanan, S., & Pillay, M. T. K. (2009), Trigonometry, Viswanathan Printers & Publishers Pvt Ltd. Unit V: Chapter 2: Section: 1-4.
Reference Book	
1.	Dr. Venkataraman.M.K. (2010),Higher Mathematics for Engineering & Science, The National Publishing Company.
Web Resources (Swayam / NPTELs / Others)	
1.	https://nptel.ac.in/courses/108101174
2.	https://en.wikipedia.org/wiki/Beta_function#Applications
3.	https://en.wikipedia.org/wiki/Complex_number#Applications

Part – IV : Foundation Courses

(All the Undergraduate Programmes)

Course Code	Course Name	Category	Hours / Week	Credits
26HUM2FC	Human Rights	FC - II	2	2

Unit	Content
I	**Concept of Human Values, Value Education Towards Personal Development :** Aim of Education and Value Education; Evolution of Value Oriented Education; Concept of Human Values; Types of Values; Components of Value Education. **Personal Development:** Self-analysis and Introspection; Sensitization towards Gender Equality, Physically Challenged, Intellectually Challenged. Respect to - Age, Experience, Maturity, Family Members, Neighbors, Co-workers. Character Formation towards Positive Personality: Truthfulness, Constructively, Sacrifice, Sincerity, Self-Control, Altruism, Tolerance, Scientific Vision.
II	**Value Education Towards National and Global Development National and International Values:** Constitutional or National Values - Democracy, Socialism, Secularism, Equality, Justice, Liberty, Freedom, and Fraternity.Social Values - Pity and Probity, Self-Control, Universal Brotherhood. Professional Values - Knowledge Thirst, Sincerity in Profession, Regularity, Punctuality, and Faith. Religious Values - Tolerance, Wisdom, Character. Aesthetic Values - Love and Appreciation of Literature and Fine Arts and Respect for the Same. National Integration and International Understanding.
III	**Impact of Global Development on Ethics and Values :** Conflict of Cross-Cultural Influences, Mass Media, Cross-Border Education, Materialistic Values, Professional Challenges, and Compromise.Modern Challenges of Adolescent Emotions and Behavior; Sex and Spirituality: Comparison and Competition; Positive and Negative Thoughts. Adolescent Emotions, Arrogance, Anger, Sexual Instability, Selfishness, Defiance
IV	**Therapeutic Measures :** Control of the Mind through a. Simplified Physical Exercise b. Meditation – Objectives, Types, Effect on Body, Mind and Soul c. Yoga – Objectives, Types, Asanas d. Activities: (i) Moralisation of Desires (ii) Neutralisation of Anger (iii) Eradication of Worries (iv) Benefits of Blessings

Unit	Content
V	**Human Rights** 1. Concept of Human Rights – Indian and International Perspectives a. Evolution of Human Rights b. Definitions under Indian and International Documents 2. Broad Classification of Human Rights and Relevant Constitutional Provisions. a. Right to Life, Liberty and Dignity b. Right to Equality c. Right against Exploitation d. Cultural and Educational Rights e. Economic Rights f. Political Rights g. Social Rights 3. Human Rights of Women and Children a. Social Practice and Constitutional Safeguards (i) Female Feticide and Infanticide (ii) Physical Assault and harassment (iii) Domestic Violence (iv) Conditions of Working Women 4. Institutions for Implementation a. Human Rights Commission b. Judiciary 5. Violations and Redressal a. Violation by State b. Violation by Individuals c. Nuclear Weapons and terrorism d. Safeguards
Total Hours	**30**

Web Resources

1.	https://syllabus.b-u.ac.in/syl_college/ug_ve.pdf

Course Code	Course Name	Category	Hours / Week	Credits
26DIM2FC	Disaster Management	FC - II	2	2

Unit	Content
I	**Unit I : Introduction to Disasters** 1.1. Definition of Concepts 1.2. Difference between hazards and vulnerability 1.3. Types of Disasters 1.4. Natural Disasters 1.5. Human - Made Disasters
II	**Unit II : Disasters Management** 2.1. Disaster Management 2.2. Disaster Management Cycle 2.3. Key Phases of Disaster Management 2.4. Disaster and Development 2.5. Disaster Impacts on Differential Groups
III	**Unit III : Vulnerability Assessment and Reduction** 3.1. Vulnerability 3.2. Vulnerability Assessment 3.3. Early Warning System 3.4. Factors Contributing to Vulnerability 3.5. Vulnerability Reduction 3.6. Impact of Development Projects such as Dams, Embankments, Changes in Land-use etc. 3.7. Climate Change Adaptation
IV	**Unit IV: Disaster Risk Reduction** 4.1. Disaster Risk Reduction (DRR) 4.2. Knowledge Management in Disaster Risk Reduction 4.3. The Knowledge Management Cycle 4.4. Role of Information and Knowledge in Disaster Risk Reduction 4.5. Indigenous Knowledge and Disaster Risk Reduction 4.6. Indigenous Knowledge and Early Warning Indicators 4.7. Indigenous Knowledge and Coping Strategies 4.8. Sendai Framework for Disaster Risk Reduction 4.9. Intergovermental Panel on Climate Change (IPCC) 4.10. IPCC Scenario in the Context of India

Unit	Content	
V	**Unit V: Institutional Framework for Disaster Management** 5.1. National Policy on Disaster Management 2009 5.2. The National Disaster Management Authority (NDMA) 5.3. State Disaster Management Authority (SDMA) 5.4. District Disaster Management Authorities (DDMAs) 5.5. Community-Based Disaster Management (CBDM) 5.6. NGOs and Disaster Management 5.7. Other Related Policies, Plans, Programmes and Legislation	
	Total Hours	**30**

Reference Resources	
1.	Agrawal A. (1995), Dismantling the divide between Indigenous Knowledge and Scientific Knowledge. Development Change 26: 413 – 439.
2.	Mrinalini Pandey (2014), Text Book of Disaster Management, Wiley India Pvt Ltd.
3.	Pradeep K Goyal,Anil K Gupta, Disaster Management, All India Council for Technical Education Nelson Mandela Marg, Vasant Kunj, New Delhi, 110070
4.	Sharma S.C (2020), Disaster Management (1st ed.), Khanna Book Publishing Co. (P) Ltd, New Delhi.
5.	Srivastava A.K (2021), Text Book of Disaster Management, Scientific Publishers, Jodhpur.
6.	Subramanian, (2018), Disaster Management, Vikas Publishing House, Noida.
7.	Tushar Bhattacharya (2015), Text Book of Disaster Science and Management, McGraw Hill Education.
8.	United Nation (2015), Sendai Framework for Disaster Risk Reduction. 2015 – 2030. Geneva: UNISDR
9.	www.EasyEngineering.net

Ability Enhancement Compulsory Course (AECC)-II : Innovation and Design Thinking

Course Code	Course Name	Category	Hours / Week	Credits
26IDT2AE	Innovation and Design Thinking	AECC - II	2	2

Unit	Content	No. of Hours
I	**Principles of Design Thinking:** Usability, Human-centeredness, Empathy, Iteration.**Types of Innovation:** Product, Process, Business Model, Social Innovation.	6
II	**Empathy & Defining The Problem:** Understanding users - observation - ethnographic research - interviews - Empathy maps and personas - Identifying user pain points - Problem framing vs. problem solving.	6
III	**Ideation & Creativity Tools:** Divergent vs. Convergent Thinking - Brainstorming and mind mapping techniques – SCAMPER. Idea selection and prioritization frameworks.	6
IV	**Prototyping & Experimentation:** Low-fidelity vs. High-fidelity prototyping - Storyboarding, sketching, mock-ups, and role-playing - Rapid prototyping with simple materials.	6
V	**Testing & Feedback:** Testing prototypes with users - Iteration and learning from feedback.**Innovation Strategy & Implementation :** Scaling ideas into innovations - Measuring innovation impact - Barriers - Design Thinking for social change and sustainability.	6
	Total Hours	**30**
Text Books		
1.	Kelley, T., & Kelley, D. (2013). Creative confidence: Unleashing the Creative Potential within us all. Crown Business.	
2.	Dan Saffer, (2010) Designing for Interaction, New Riders Publications.	
Reference Books		
1.	Plattner, H., Meinel, C., & Leifer, L. Eds.. (2018). Design Thinking Research: Making Distinctions: Collaboration versus Cooperation. Springer.	
2.	Liedtka, J., & Ogilvie, T. (2011). Designing for Growth: A Design Thinking Tool kit for Managers. Columbia University Press.	
3.	Martin, R. (2009). The Design of Business: Why Design Thinking is the Next Competitive Advantage. Harvard Business Press.	
Web Resources (Swayam / NPTEL)		
1.	https://onlinecourses.nptel.ac.in/noc22_mg32/preview	
2.	https://onlinecourses.swayam2.ac.in/imb23_mg65/preview	
3.	https://onlinecourses.nptel.ac.in/noc20_hs08/preview	

Ability Enhancement Compulsory Course (AECC) -II: Intellectual Property Rights

Course Code	Course Name	Category	Hours / Week	Credits
26IPR2AE	Intellectual Property Rights	AECC - II	2	2

Unit	Content	No. of Hours
I	**Introduction to Intellectual Property:** Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.	6
II	**Trade Marks:** Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.	6
III	**Law of Copy Rights:** Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law**.**	6
IV	**Law of Patents, Trade Secrets:** Foundation of patent law, patent searching process, ownership rights and transfer. **Trade Secrets:** Trade secret law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.	6
V	**Protection of Plant Varieties and Farmers' Rights:** Introduction -Meaning and Definition - Registrable Varieties of Plants - Procedure for Registration - Plant Varieties Protection.	6
	Total Hours	**30**

Text Books	
1.	V K Ahuja(2017) , Law Relating to Intellectual Property Rights , Lexis Nexis, Third Edition .
2.	Elizabeth Verkey (2018) , Intellectual Property Law and Practice, Eastern Book Company.
3.	S R Myneni (2021), Law of Intellectual Property , Asia Law House.
Reference Books	
1.	B.L. Wadehra (2011), Law Relating to Intellectual Property , Universal Law Publishing House, New Delhi.
2.	Avtar Singh (2015), Intellectual Property Law , Eastern Book Company .
Web Resources (Swayam/NPTEL)	
1.	https://onlinecourses.nptel.ac.in/noc22_hs59/preview

Ability Enhancement Compulsory Course – II: Entrepreneurship Development

Course Code	Course Name	Category	Hours / Week	Credits
26END2AE	Entrepreneurship Development	AECC – II	2	2

Unit	Content	No. of Hours
I	**Entrepreneurship:** Meaning of Entrepreneurship - Characteristics, Functions and Types of entrepreneurs - Intrapreneur vs. Entrepreneur - Need for Entrepreneurship in economic development - Contribution to GDP, Employment, Innovation.	5
II	**Entrepreneurial Motivation:** Meaning - Need for Achievement Theory - Risk-taking Behaviour - Innovation and Entrepreneur – Economic & non-economic factors affecting entrepreneurial growth.	5
III	**Business Ideas:** Sources of Business Ideas & Opportunity Identification – Idea generation techniques (Brainstorming, Design Thinking). Business incubation - Technical Assistance for small business – Preparation of Feasibility Reports, Legal Formalities and Documentation	7
IV	**Business Plan:** Meaning and importance of Business Plan – Structure and components – Market Study.	7
V	**Entrepreneurial Finance:** Sources of finance (Bank, Angel investors, Venture Capital, Crowdfunding, Mudra Loans) - Institutional support to entrepreneurs (DIC, KVIC, EDII and MSME).	6
	Total Hours	**30**

Text Books	
1.	C.B. Gupta and N.P. Srinivasan (2020), Entrepreneurship Development, Sultan Chand and Sons.
2.	Dr. Vasant Desai and Dr. Kulveer Kaur (2026), Entrepreneurship Development and Management, Himalaya Publications.
Reference Books	
1.	Dr. Jayashree Suresh (2021), Entrepreneurial Publications, Margham Publications
2.	S S Khanka (2026), Entrepreneurial Development, Sultan Chand and Sons, New Delhi.
Web Resources (Swayam/NPTEL)	
1.	https://onlinecourses.nptel.ac.in/noc25_mg95/preview

Components of Assessment (CIA & ESE)

Components for Internal Assessment and Distribution of Marks for CIA and ESE (Theory)

Max Marks	Marks for		Components for CIA						
100	CIA	ESE	CIA		Model		Attendance	Active Engagement	Total
	25	75	Actual	Weightage	Actual	Weightage	5	5	25
			50	**5**	75	**10**			

Question Paper Pattern (CIA & ESE)

Component	Duration in Hours	Section A			Section B			Section C			Total
		Type of Question	No. of Questions	Marks	Type of Question	No. of Questions	Marks	Type of Question	No. of Questions	Marks	
CIA	2	MCQ	8	8x1=8	Either or	3	3x6=18	Either or	3	3x8=24	50
Model Exam / **ESE**	3	MCQ	10	10x1=10	Either or	5	5x5=25	Either or	5	5x8=40	75

Components for Internal Assessment and Distribution of Marks for CIA (Lab)

Max Marks	Marks for		Components for CIA						
	CIA	ESE	Test		Model		Experiments / Programs	Observation	Total
100	40	60	Actual	Weightage	Actual	Weightage	Marks	5	40
			50	**10**	60	**15**	**10**		

Examination Pattern

Component	Duration in Hours	Marks			Weightage
		Practical Exam	Record	Total Marks	
Test	2	50	-	**50**	10
Model	3	60	-	**60**	15
Experiments	-	-	-	**10**	10
Observation	-	-	-	**05**	05
				Total Marks - CIA	**40**
ESE	3	50	10	-	**60**

Components for Internal Assessment and Distribution of Marks for CIA (Foundation Course -Theory)

Max Marks	Marks for		Components for CIA				
	CIA	ESE	CIA		Model		Total
			Actual	Weightage	Actual	Weightage	
50	50	-	50	25	50	25	50

Question Paper Pattern

Duration in Hours	Mode of Exam	Type of Questions	No. of Questions	Marks
2	Offline	Open Choice	5 (Out of 8)	5 x 10=50

Components for and Distribution of Marks for ESE (Theory) Ability Enhancement Compulsory Courses (AECC) & Question Paper Pattern

Duration in Hours	Mode of Exam	Type of Questions	No. of Questions	Marks
2	Online	MCQ	50	50x1=50