BACHELOR OF VOCATION

(INFORMATION AND COMMUNICATION TECHNOLOGY)

Programme: B.VOC (ICT) CBCS Syllabus – Outcome Based Education (OBE)

NATIONAL SKILLS QUALIFICATIONS FRAMEWORK (NSQF)

(For those who have joined during the Academic Year 2025--2028 onwards)

Programme Code: BVCUG2020

Since 1919

SYLLABUS

NATIONAL COLLEGE (Autonomous)
Tiruchirappalli - 620 001.

VISION

Our vision is to lead in digital transformation education, equipping students with the expertise to proficiently manage technical work processes, apply essential employability skills to repair and maintenance and ensure system specifications align seamlessly with job requirements.

MISSION

We aim to empower students with valuable skills, fostering innovation and creativity. Our vision is to inspire a strong sense of social responsibility and promote diversity and inclusion. We are committed to graduating individuals who lead positive change across various industries.

ELIGIBILITY

The eligibility condition for admission to B.VOC ICT Program shall be 10+2 or equivalent, in anystream. There shall be No age bar for admission in this course.

AIM

Our aim is a high-quality degree program that ensures that students will be able to integrate theoryand practice, recognize the importance of abstraction and appreciate the value of efficient design created to meet clearly developed requirements.

OBJECTIVE

To provide judicious mix of skills relating to a profession and appropriate content of General Education. To ensure that the students have adequate knowledge and skills, so that they are workready at each exit point of the program.

To provide flexibility to the students by means of pre-defined entry and multiple exit points.

To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.

To provide vertical mobility to students coming out of 10+2 with vocational subjects.

LEVELS OF AWARDS

The certification levels will lead to Diploma/Advanced Diploma/B. Voc. Degree in oneor more vocational areas and will be offered under the aegis of the University. This is out-lined in Table 1.

Table 1: Awards

Award	Duration	Corresponding NSQF level
Diploma	1 Year	5
Advanced Diploma	2 Years	6
B.Voc., Degree	3 Years	7

CURRICULUM

- Skill Development Components
- General Education Components

SKILL DEVELOPMENT COMPONENTS

- The overall design of the skill development component along with the job roles selected.

GENERAL EDUCATION COMPONENTS

- The general education component should adhere to the normal university standards.
- It should not exceed 40% of the total curriculum

JOB ROLE SPECIFICATION

- Technical Writer SSC/Q 0505- NSQF Level-4
- Media Developer SSC/Q 0504- NSQF Level-4

- Software Programmer SSC/Q 0510- S1001 Level-4
- Software Developer IT Service SSC/Q0501 NSQF Level-5
- Data Associate SSC/Q0401 NSQF Level-5
- Solution Architect SSC/Q8202 NSQF Level-6

PROGRAM OUTCOME

PO1: Language Skills

Demonstrate oral and written skills to effectively communicate in English and Languages of their choice Apply reading and listening skills to facilitate access to knowledge resources and understanding

Domain Knowledge

Acquire knowledge of basic concepts, theories and processes through study of core courses in respective programmes. Apply and Analyse domain specific knowledge to emerging areas of academia and industry. Assess, adapt and develop domain specific transferrable skills to new/unfamiliar context

PO2: Interdisciplinary knowledge

Identify and determine relationships across disciplines

Acquire and apply interdisciplinary knowledge for holistic academic development

Digital Skills

Acquire computer skills and their application relevant to classroom and self-directed web-based learning .Familiarize with and use domain-related software resources, computational skills and digital tools for data analysis, visualization and interpretation. Ethically apply digital skills to creatively communicate a wide range of ideas and issues related to academic experiences

PO3: Analytical skills

Develop the ability to think critically and relate learning to academic, professional and real-life problem solving. Apply empirical knowledge and skills to identify

and collect quantitative and qualitative data to analyze and formulate evidence-based suggestions and solutions.

PO4: Academic writing & Presentation skills

Formulate and document results obtained in laboratory, case studies, near pod MCQ questions, project work, field work and internships .Effectively communicate through engaging presentations using methodologies appropriate to the discipline.

PO5: Innovation and Creativity

Demonstrate transferable capabilities and entrepreneurial skills that are relevant to the industry and other employment opportunities Develop entrepreneurial skills and generate intellectual property

PO6: Social Engagement and Responsibility

Demonstrate the ability to link classroom learning with social concerns through service learning and outreach programmes. Enhance positive personality traits to adapt to changing circumstances and demonstrate leadership qualities as an individual and a member of cross-cultural and multi-disciplinary teams. Appreciate environmental consciousness and sustainability. Draw valuable insights from one's own spiritual tradition and that of others for peaceful coexistence and general wellbeing

PROGRAM SPECIFIC OUTCOME

PSO1: Understand the fundamental concepts of the web design and development of software solutions and management of computational systems.

PSO2: Acquired the required knowledge in the Hardware and Software aspects of Communication Technology domain and the art of programming.

PSO3: Apply fundamental principles and methods of Information Communication Technology to a wide range of applications.

PSO4: Design and document solutions to significant computational problem.

PSO5: Formulate solution for the computational problems.

PSO6: Attain qualification to be employed in the field of IT and Communication Technology

Quality Education:

To provide high-quality vocational education in Information and Communication Technology, incorporating the latest industry trends and technological advancements.

Skill Development:

To equip students with practical skills and knowledge essential for success in the ICT industry, enabling them to meet the demands of the ever-evolving technology landscape.

Industry Integration:

To establish strong industry partnerships, internships, and collaborations to ensure that our graduates are job-ready and industry-relevant.

Entrepreneurship:

To nurture an entrepreneurial spirit among students, encouraging them to develop innovative solutions and start their ventures in the ICT domain.

Research and Innovation:

To promote research and innovation in ICT through faculty and student-driven projects, contributing to the advancement of technology and knowledge.

Ethical and Social Responsibility:

To instill ethical values and a sense of social responsibility in students, ensuring that they use their ICT skills for the betterment of society.

Global Perspective:

To foster a global perspective among students, encouraging international collaborations and cross-cultural experiences.

NATIONAL COLLEGE (Autonomous), Trichy-1.

B.VOC (INFORMATION AND COMMUNICATION TECHNOLOGY)

(For the candidates to be admitted from the Academic year 2025 onwards)

Sl. No.	Course Code	Part	Hours / week	Credit	Course Type	Course Title	Course Kind	Hours of Exam		IE Marks (for 25)		E/E Marks (for 75)		Remarks
								Theory	Practical	Theory	Practical	Theory	Practical	
Semester – I General Component														
1	U25ICT1/U25H1/ U25S1	I	2	2	Language	(Language Course – 1) (Tamil-I/ Hindi-I/Sanskrit-I) Mozhippadam-1	Theory	3		25		75		
2	U25ICE1	II	2	2	English	(English Language Course-II) General English-I	Theory	3		25		75		
3	U25IC1	III	3	2	CORE 1	(Core Course) Introduction to Information and Communication Technology	Theory	3		25		75		
4	U25ICAM1	III	3	2	ALLIED 1	Fundamental of Mathematics	Theory	3		25		75		
5	U25ES	IV	2	2	ES	Environmental Studies	Theory	3		25		75		
Skill Component (Technical Writer SSC/Q 0505- NSQF Level-4)														
6	U25IC2P	III	4	2	CORE 2	C Programming	Practical		1		25		75	
7	U25IC3P	III	3	2	CORE 3	C Programming Lab	Practical		3		25		75	
8	U25IC4P	III	3	2	CORE 4	ICT Lab-I (Word Processor, Spreadsheet Software)	Practical		3		25		75	
9	U25IC5P	III	3	2	CORE 5	ICT Lab-II (Presentation Software, Database Software Outlook)	Practical		3		25		75	
10	U25IC6P	III	3	2	CORE 6	Search Engine Optimization Lab	Practical		3		25		75	
11	U25IC7P	III	2	1	CORE 7	Case Study-I	Practical		1		25		75	

Sl. No.	Course Code	Part	Hours / week	Credit	Course Type	Course Title	Course Kind	Hours of Exam		IE Marks (for 25)		E/E Marks (for 75)		Remarks
								Theory	Practical	Theory	Practical	Theory	Practical	
Semester – II General Component														
12	U25ICT2 /U25H2/U25S2	I	2	2	Language	(Language Course – 1) (Tamil-II/ Hindi-II/Sanskrit-II) Mozhippadam-2	Theory	3		25		75		
13	U25ICE2	II	2	2	English	(English Language Course-II) General English-II	Theory	3		25		75		
14	U25IC8	III	5	2	CORE 8	(Core Course) Graphical Designing Tools	Theory	3		25		75		
15	U25ICAMS2	III	3	2	ALLIED 2	Fundamentals of Statistics	Theory	3		25		75		
Skill Component(Media Developer SSC/Q 0504- NSQF Level-4)														
16	U25IC9P	III	4	2	CORE 9	Python Programming	Practical		1		25		75	
17	U25IC10P	III	3	2	CORE 10	Python Programming Lab	Practical		3		25		75	
18	U25IC11P	III	3	2	CORE 11	Graphical Designer Lab-I (Vector Graphics Editor)	Practical		3		25		75	
19	U25ICA12P	III	3	2	ALLIED 3	Data Analysis using Excel	Practical		3		25		75	
20	U25IC13P	III	3	2	CORE 12	Graphical Designer Lab-II (Photo Editing Software)	Practical		3		25		75	
21	U25IC14P	III	2	1	CORE 13	Case Study-II	Practical		1		25		75	

Sl. No.	Course Code	Part	Hours / week	Credit	Course Type	Course Title	Course Kind	Hours of Exam		IE Marks (for 25)		E/E Marks (for 75)		Remarks
								Theory	Practical	Theory	Practical	Theory	Practical	
Semester – III General Component														
22	U25ICT3//U25H3/U25S3	I	2	2	Language	Language Course – I (Tamil-III/ Hindi-III/Sanskrit-III) Kaninitamil	Theory	3		25		75		
23	U25ICE3	II	2	2	English	(English Language Course-II) General English-III	Theory	3		25		75		
24	U25IC15	III	2	2	CORE 14	Java Programming	Theory	3		25		75		
25	U25IC16	III	3	2	CORE 15	Database Systems	Theory	3		25		75		
26	U25ICAC1	III	3	2	ALLIED 4	Principles of Accountancy	Theory	3		25		75		
Skill Component (Software Programmer SSC/Q 0510- S1001 Level-4)														
27	U25IC17P	III	3	2	CORE 16	Web Design	Practical		1		25		75	
28	U25IC18P	III	3	2	CORE 17	Web Design lab	Practical		3		25		75	
29	U25IC19P	III	3	3	CORE 18	Java Programming Lab	Practical		3		25		75	
30	U25IC20P	III	3	3	CORE 19	Database Systems Lab	Practical		3		25		75	
31	U25IC21P	III	2	2	CORE 20	INFOBAHN Lab	Practical		3		25		75	
32	U25ICAC2P	III	2	2	ALLIED 5	Accounting Package lab	Practical		3		25		75	
33	U25IC22P	III	2	1	CORE 21	Case Study-III	Practical		1		25		75	

Sl. No.	Course Code	Part	Hours / week	Credit	Course Type	Course Title	Course Kind	Hours of Exam		IE Marks (for 25)		E/E Marks (for 75)		Remarks
								Theory	Practical	Theory	Practical	Theory	Practical	
Semester – IV General Component														
34	U25ICT4/U25H 4/U25S4	I	2	2	Language	Language Course – I (Tamil-IV/ Hindi-IV/Sanskrit-IV) Enaiyatamil	Theory	3		25		75		
35	U25ICE4	II	2	2	English	(English Language Course-II) General English-IV	Theory	3		25		75		
36	U25IC23	III	2	2	CORE 22	Software Engineering	Theory	3		25		75		
37	U25ICAC3	III	2	2	ALLIED 6	E-Commerce and its Applications	Theory	3		25		75		
38	U25ICNME1	IV	2	2	NME1	Fundamentals of Information Technology	Theory	3		25		75		
39	U25VE	IV	2	2	VE	Value Education	Theory	3		25		75		
Skill Component(Software Developer IT Service SSC/Q0501 NSQF Level-5)														
40	U25IC24P	III	4	2	CORE 23	PHP Programming	Practical		1		25		75	
41	U25IC25P	III	3	2	CORE 24	PHP Programming Lab	Practical		3		25		75	
42	U25IC26P	III	3	2	CORE 25	JavaScript Lab	Practical		3		25		75	
43	U25IC27P	III	3	2	CORE 26	Latex Lab	Practical		3		25		75	
44	U25IC28P	III	3	3	CORE 27	AI Tools in Practice Lab	Practical		3		25		75	
45	U25IC29P	III	2	1	CORE 28	Case Study-IV	Practical		1		25		75	

Sl. No.	Course Code	Part	Hours / week	Credit	Course Type	Course Title	Course Kind	Hours of Exam		IE Marks (for 25)		E/E Marks (for 75)		Remarks
								Theory	Practical	Theory	Practical	Theory	Practical	
Semester – V General Component														
46	U25IC30	III	4	3	CORE 29	.Net Frame work	Theory	3		25		75		
47	U25IC31E	III	2	2	ELECTIVE1	Computer Graphics	Theory	3		25		75		
48	U25IC32E	III	2	2	ELECTIVE2	Cloud Computing	Theory	3		25		75		
49	U25ICNME2	IV	2	2	NME2	Basics of Information Security	Theory	3		25		75		
50	U25SS	IV	2	2	SS	Soft Skills	Theory	3		25		75		
		V	-	(1)		Extra Credit Course								
Skill Component(Data Associate SSC/Q0401 NSQF Level-5)														
51	U25IC33P	III	3	3	CORE 30	.Net Frame work Lab	Practical		1		25		75	
52	U25IC34P	III	3	3	CORE 31	R Programming Lab	Practical		3		25		75	
53	U25IC35P	III	4	3	CORE 32	Graphics Lab- (Web & Animation Software)	Practical		3		25		75	
54	U25IC36P	III	3	2	CORE 33	Data Visualization Tools	Practical		3		25		75	
55	U25IC37P	III	3	2	CORE 34	Cloud Infrastructure and Operations	Practical		3		25		75	
56	U25IC38P	III	2	2	CORE 35	Case Study-V	Practical		1		25		75	

Sl. No.	Course Code	Part	Hours / week	Credit	Course Type	Course Title	Course Kind	Hours of Exam		IE Marks (for 25)		E/E Marks (for 75)		Remarks
								Theory	Practical	Theory	Practical	Theory	Practical	
Semester –VI General Component														
57	U25IC39	III	3	2	CORE 36	Data Mining & Warehousing	Theory	3		25		75		
58	U25IC40E	III	3	2	ELECTIVE3	Digital Marketing	Theory	3		25		75		
59	U25IC41	III	3	3	CORE 37	Internet of Things	Theory	3		25		75		
60	U25IC42	III	3	2	CORE 38	Hardware and Troubleshooting	Theory	3		25		75		
61	U25GS	V	1	1	GS	Gender Studies	Theory	3		25		75		
Skill Component(Solution Architect SSC/Q8202 NSQF Level-6)														
62	U25IC43P	III	3	3	CORE 39	Data Mining Lab-Weka	Practical		1		25		75	
63	U25IC44P	III	3	2	CORE 40	MongoDB Lab	Practical		3		25		75	
64	U25IC45P	III	3	3	CORE 41	Internet of Things Lab	Practical		3		25		75	
65	U25IC46P	III	2	2	CORE 42	Tableau Lab	Practical		3		25		75	
66	U25ICP47	III	6	4	CORE 43	Project	Project		3		75		25	
67		V	-	(1)		Extension Activity								
	GRAND TOTAL		**180**	**140**										

OVERALL TOTAL CREDITS: 140 EXTRA CREDIT :2
OVERALL TOTAL HOURS: 180
TOTAL NUMBER OF PAPERS: 67 (GC – 30 & SC – 37)OVERALL MARKS: 6700

தேசியக்கல்லூரி (தன்னாட்சி), திருச்சிராப்பள்ளி - 620 001.
தமிழாய்வுத்துறை

இளநிலை B.Voc. (ICT மாணவர்களுக்கு மட்டும்) - தமிழ் - முதற்பருவம்
தாள்: மொழிப்பாடம்-1 செய்யுள், (கவிதை), சிறுகதை, இலக்கிய வரலாறு, இலக்கணம்

U25ICT1

கற்பிக்கும் காலம்: 2 மணி **தரப்புள்ளிகள்: 2**

கற்பித்தலின் நோக்கங்கள்

PO1	மரபுக்கவிதைகளின் மாண்பினை உணர்த்துதல்
PO2	புதுக்கவிதைகளின் சிந்தனைகளைக் கற்பித்தல்
PO3	ஆளுமையாளர்களின் உயர் கருத்துக்களை உரைநடைக் கட்டுரைகள் வழி தெளிவித்தல்
PO4	சிறுகதைகள் புலப்படுத்தும் வாழ்வியல் விழுமியங்களை வரையறுத்தல்
PO5	தமிழைப் பிழையின்றி எழுதப் பழக்குதல்
PO6	நவீனத் தமிழ் இலக்கியத்தின் போக்கினை அறிவித்தல்

அலகு – I மரபுக்கவிதை

1.	தமிழ்த்தெய்வ வணக்கம்	-	பெ. சுந்தரனார்
2.	புத்தரும் ஏழைச் சிறுவனும்	-	கவிமணி தேசிக விநாயகம்பிள்ளை
3.	ஆட்டனத்தி ஆதிமந்தி (ஆதிமந்தி புலம்பல்)	-	கண்ணதாசன்
4.	வினாத்தாள்	-	சுரதா

அலகு – II – புதுக்கவிதை

1.	வீட்டுக்கொரு மரம் வளர்ப்போம்	-	அப்துல் ரகுமான்
2.	வாழை மரத்தின் சபதம்	-	மு. மேத்தா
3.	ஆனந்தயாழை மீட்டுகிறாய்	-	நா. முத்துக்குமார்
4.	நீ எழுத மறுக்கும் எனது அழகு	-	இளம்பிறை

அலகு – III – சிறுகதைகள்

1.	வாய்ச்சொற்கள்	-	ஜெயகாந்தன்
2.	கடிதம்	-	புதுமைப்பித்தன்
3.	கரு	-	உமா மகேஸ்வரி
4.	காகித உறவு	-	சு. சமுத்திரம்

அலகு – IV - இலக்கிய வரலாறு - இக்காலம்

1. மரபுக்கவிதை – கவிஞர்கள்
2. புதுக்கவிதை
3. சிறுகதை

அலகு – V - இலக்கணம்

1. பொருள் பொதிந்த சொற்றொடர் அமைத்தல்
2. ஒரெழுத்து ஒரு மொழி
3. வேற்றுமை உருபுகள்
4. திணை, பால், எண், இடம்

கற்பித்தலின் பயன்கள்

CO1	கவிதை புனையும் பாங்கினை அறிவர்.	K1	PO1, PO2
CO2	சிறுகதை எழுத முயல்வர்	K2	PO4
CO3	இலக்கணப் பிழையின்றி எழுதுவர்	K6	PO5
CO4	தமிழின் எளிமை, இனிமை, ஆழம் ஆகியனவற்றைத் தேர்ந்து தெளிவர்	K3	PO1, PO2, PO3
CO5	தமிழ் இலக்கிய வரலாற்றை உணர்வர்	K4	PO3
CO6	தற்காலத் தமிழ் இலக்கியத்தில் செல்நெறியை அறிவர்	K5	PO2

பாடநூல்

தமிழ் - தாள் - 1 – தேசியக்கல்லூரி வெளியீடு.

Mapping COS Consistency with PSOs

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11	PSO12
CO1	2	2	2	1	2	2						
CO2	2	1	2	2	1	1						
CO3	1	2	2	2	2	2						
CO4	2	2	1	2	2	2						
CO5	2	2	2	1	2	2						
CO6	2	2	1	2	2	2						

Mapping COS Consistency with POs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1	2	1						
CO2	2	2	2	2	1	2						
CO3	1	2	1	2	2	2						
CO4	2	2	2	1	2	1						
CO5	2	1	2	2	2	2						
CO6	2	2	2	1	2	1						

Semester	Course Code	Title of the Course	Hours	Credit
I	U25ICT1	தமிழ் - தாள்-1-செய்யுள் (கவிதை) சிறுகதை, இலக்கிய வரலாறு, இலக்கணம்	2	2

Course Outcomes (COs)	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)						Mean Scores of COs
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6	
CO-1	1.5	1.5	1.5	1	1	1.5	1.5	1.5	1	1.5	1.5	1	1.35
CO-2	1	1.5	1	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.5	1.30
CO-3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.35
CO-4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1	1.45
CO-5	1	1.5	1	1.5	1	1.5	1.5	1	1.5	1.5	1.5	1.5	1.30
CO-6	1	1.5	1	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.5	1.30
Mean Overall Score													**1.33**

Curriculam Design and Development / பாடத்திட்ட வடிவமைப்பும் மேம்பாடும்

LOCAL/ உள்ளூர் படைப்பு சார்ந்தது	REGIONAL / மாநிலப் பொருண்மை தழுவியது	NATIONAL/ தேசியப் பார்வை கொண்டது	GLOBAL/ உலகளாவிய பான்மை உடையது
	✓✓✓		

Level and Correlation / பாடத்திட்ட நிலையும் தொடர்பும்

HIGH/ வலுவான இயைபுடையது	MEDIUM / மிதமான தொடர்பு கொண்டது	LOW/ குறைவான பான்மை உடையது
	✓✓✓	

கூடுதலாகப் படிக்க வேண்டிய நூல்

பாரதியார் கவிதைகள், அருணா வெளியீடு, பாரதிதாசன் கவிதைகள், ஸ்ரீசெண்பகா பதிப்பகம், சென்னை.

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25ICE1	English	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	GENERAL ENGLISH - I						

LEARNING OBJECTIVES:

LO1	To enable learners to acquireself awareness and positive thinking required in various life situations.
LO2	To help them acquire the attribute of empathy
LO3	To assist them in acquiring creative and critical thinking abilities
LO4	To enable them to learn the basic grammar
LO5	To assist them in developing LSRW skills

SYLLABUS

Unit No.	Unit Title & Text	No. of days for the Unit
I	**Poem** 1.1. Where the Mind is Without Fear – Gitanjali 35 – Rabindranath Tagore 1.2 Love Cycle – Chinua Achebe	20
II	**Short Story** 2.1 The School for Sympathy – E.V. Lucas 2.2 Barn Burning – William Faulkner	20
III	3.1 Stopping by the Woods on a Snowy Evening – Robert Frost **Readers Theatre** 3.2 The Magic Brocade – A Tale of China	20
IV	**Part of Speech** 4.1 Articles 4.2 Noun 4.3 Pronoun 4.4 Verb 4.5 Adverb 4.6 Adjective 4.7 Preposition	15
V	**Paragraph and Essay Writing** 5.1 Descriptive 5.2 Expository	15

COURSE OUTCOMES:

On completion of this course, students will:

CO1	Acquire self awareness and positive thinking required in various life situations	PO1,PO7
CO2	Acquire the attribute of empathy.	PO1,PO2, PO10
CO3	Acquire creative and critical thinking abilities.	PO4,PO6,PO9
CO4	Learn basic grammar	PO4,PO5,PO6
CO5	Development and integrate the use of four language skills i.e., listening, speaking, readingand writing.	PO3,PO8

Text books (Latest Editions)

1.	Rabindranath Tagore. “Gitanjali 35” from Gitanjali (Song Offerings): A Collection of Prose Translations Made by the Author from the Original Bengali. MacMillan, 1913.
2.	Chinua Achebe. The Love Cycle (Selected Short Story), Rupa Publications, 2011.
3.	N.Krishnasamy. Modern English: A Book of Grammar, Usage and Composition Macmillan, 1975.
4.	Aaron Shepard. Stories on Stage, Shepard Publications, 2017.
5.	J.C. Nesfield. English Grammar Composition and Usage, Macmillan, 2019.

WEB RESOURCES:

1	Rabindranath Tagore. “Gitanjali 35” from Gitanjali (Song Offerings)https://www.poetryfoundation.org/poems/45668/gitanjali-35
2	https://www.scribd.com/document/423334802/LOVE-CYCLE-docx
3	Aaron Shepard.Stories on Stage, Shepard Publications, 2017 https://amzn.eu/d/9rVzlNv
4	J C Nesfield. Manual of English Grammar and Composition. https://archive.org/details/in.ernet.dli.2015.44179

MAPPING WITH PROGRAMME OUTCOMES:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to POs	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

The COs and POs for the **U25ICE1- General English - I** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25IC1	Core-III	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	INTRODUCTION TO INFORMATION AND COMMUNICATION TECHNOLOGY						

Course Description

An overview of basic ICT concepts, tools, and applications, focusing on how technology supports communication, data management, and problem-solving in everyday life.

Course Objectives

1. Understand the fundamental concepts of Information and Communication Technology (ICT).
2. Learn the history and evolution of ICT and its impact on society.
3. Explore the basic components of computer systems and software applications.
4. Develop skills in using various communication tools and technologies.
5. Gain knowledge of internet safety, security, and ethical issues in ICT.
6. Examine the role of ICT in business, education, and everyday life.

Unit–I

Computer characteristics: Speed, storage, accuracy, diligence; Digital signals, Binary System, ASCII; Historic Evolution of Computers; Classification of computers: Microcomputer, Minicomputer, mainframes, Supercomputers; Personal computers: Desktop, Laptops, Palmtop, Tablet PC; Hardware & Software.

Unit–II

Hardware: CPU, Memory, Input devices, output devices. Memory units: RAM (SDRAM, DDR RAM, RDRAM etc. feature wise comparison only); ROM-different types: Flash memory; Auxiliary storage: Magnetic devices, Optical Devices; Floppy, Hard disk, Memory stick, CD, DVD, CD-Writer; Input devices - Keyboard, mouse, scanner, speech input devices, digital camera, Touch screen, Joystick, Optical readers, bar code reader; Output devices: Display device, size and resolution; CRT, LCD; Printers: Dot-matrix, Inkjet, Laser; Plotters, Sound cards & speaker.

Unit-III

Software- System software, Application software; concepts of files and folders, Introduction to Operating systems, Different types of operating systems: single user, multitasking, time-sharing multi-user; Booting, POST; Basic features of two GUI operating systems: Windows & Linux (Basic desk top management); Programming Languages, Compiler, Interpreter, Databases; Application softwares: Generic Features of Word processors, Spread sheets and Presentation softwares; Computer Viruses & Protection, Free software,open source.

Unit–IV

Flowchart and Algorithm-Internet: brief history, World Wide Web, Websites, URL, browsers, search engines, search tips.

Unit–V

Email, email software features (send receive, filter, attach, forward, copy, blind copy); characteristics of web-based systems.

Text Books

1. "Introduction to Information and Communication Technology" by Asegahegn, published by LAP Lambert Academic Publishing, 2018 edition.

Unit I: Book 1: Chapter 1 (Sections 11-13)
Unit II: Book 1: Chapter 5 (Sections 1-5)
Unit III: Book 1: Chapter 7
Unit IV: Book 2: Chapter 6 (Sections 1-5)
Unit V: Book 2: Chapter 6 (Sections 6-8)

Reference Books

1. "Introduction to Information and Communication Technology" by Preston Mwiinga, published by Preston Mwiinga Enterprise, 2023 edition.
2. "Introduction to Information and Communication Technology" by David M. Barnes, published by Pearson, 2019 edition.

Web Reference:

1. https://www.techopedia.com/definition/2432/information-and-communication-technology-ict
2. https://www.w3schools.com/
3. https://www.coursera.org/learn/ict-for-development
4. https://learn.microsoft.com/en-us/training/
5. https://www.khanacademy.org/computing

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the basic terminology in the field of IT	K1
CO2	Create the knowledge about PC hardware, operations and concepts	K2
CO3	Create the knowledge in the use of GUI Operating System	K3
CO4	Understand the knowledge in a standard office package (word processor, spreadsheet and presentation software) and popular utilities	K3
CO5	Establish the functional knowledge about networks and internet	K2
CO6	Develop the knowledge about the computer applications in various fields and an overall generic awareness about the scope of the field of IT.	K4

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	3	3	1	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**36**	**34**	**26**	**20**
Weighted percentage of Course contribution to POs	**18.46%**	**21.54%**	**18.46%**	**17.44%**	**13.33%**	**10.26%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3	PO4	PO5, PO6	--
CO2 / K2	PO1, PO2	PO3, PO4	PO5, PO6	--
CO3 / K3	PO1, PO2	PO3, PO4, PO5	PO6	--
CO4 / K4	PO1, PO2	PO5	PO3, PO4	PO6
CO5 / K5	PO1, PO2	PO5	PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC1-Introduction to Information and Communication Technology** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25ICAM1	Allied	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	FUNDAMENTALS OF MATHEMATICS						

COURSE DESCRIPTION

This course focuses on foundational arithmetic concepts and problem-solving techniques. Topics include Number Systems, H.C.F. & L.C.M., Simplification, Fractions , Problems on Numbers and Ages, Profit & Loss, Percentage and practical applications on Matrices. Emphasis is on enhancing computational skills and logical reasoning.

COURSE OBJECTIVES

- Introduce the fundamental concepts of numbers, including HCF and LCM, to develop a strong arithmetic foundation.
- Enhance students' ability to simplify numerical expressions efficiently.
- Develop problem-solving skills related to numbers and ages through logical reasoning and mathematical techniques.
- Equip students with the knowledge of profit and loss calculations to apply in business and financial contexts.
- Enable students to solve problems on Matrices in real-life scenarios

UNITS

Unit – I (NUMBERS) **(6 HRS)**

Number system: Numbers – HCF-LCM of numbers.

Unit – II(FRACTIONS) **(6 HRS)**

Fractions: Decimal fractions – Simplifications.

Unit – III (AGES AND NUMBERS) **(6 HRS)**

Problem on Numbers – problems on Ages.

Unit – IV(PERCENTAGE) **(6 HRS)**

Percentage: Percentage – Profit and Loss.

Unit – V (MATRICES) **(6 HRS)**

Matrices: Fundamental concepts – Operations – Associated matrices – Rank of matrix.

Text Books:

1.Scope and Treatment as in “Quantitative Aptitude” by R.S. Aggarwal, S.Chand&Company Ltd., Revised Edn.

2.Allied Mathematics, P.Kandasamy& K. Thilagavathy, S. Chand & Company Ltd.,2010.

Unit – I : Chapter – 1,2 [Text Book -1]
Unit – II : Chapter – 3,4 [Text Book -1]
Unit – III : Chapter – 7,8 [Text Book -1]
Unit – IV : Chapter – 11,12 [Text Book - 1]
Unit – V : Chapter – 1,2 [Text Book - 2]

REFERENCES

1. Bharat Jhunjhunwale, Quantitative Aptitude, S.Chand publications, 2003[330.9]
2. Abhijit Guha, Quantitative Aptitude, Mcgraw Hill Education private limited, 2010 [001.8]
3. Mohan Rao.U, Quantitative Aptitude, Scitech Publications [080]

4. Udayagiri Mohan Rao, Quantitative Aptitude, Scitech Publications [080]
5. Sulava, Quantitative Aptitude for MBA entrance examination, McgrawHill Publications, 2011[080]

DIGITAL OPEN EDUCATIONAL RESOURCES

1. https://results.amarujala.com
2. https://www.careers360.com

COURSEOUTCOMES

CONo.	Course Outcome	KnowledgeLevel
CO1	Understand the basic concepts of Number Systems, including H.C.F. and L.C.M., and apply them in problem-solving.	**K1**
CO2	Develop proficiency in simplifying complex arithmetic expressions	**K2**
CO3	Analyze and solve problems related to age calculations using appropriate mathematical methods	**K3**
CO4	Apply the profit and loss , percentages effectively to solve real-life problems	**K4**
CO5	Gain the ability to solve practical problems related to matrices, emphasizing rank calculations.	**K5**
CO6	Enhance critical thinking and analytical skills by solving diverse arithmetic problems, improving overall problem-solving abilities.	**K6**

Mapping Cos consistency with POs: Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	0	0	0	0
CO2	9	3	3	0	0	0
CO3	9	3	3	3	0	0
CO4	9	3	3	3	3	0
CO5	9	3	3	3	3	3
CO6	9	3	3	3	3	9
Weightage	**54**	**18**	**15**	**12**	**9**	**12**
WeightedPercentageof CoursecontributiontoPO's	**45%**	**15%**	**12.5%**	**10%**	**7.5%**	**10%**

Course Outcomes mapped with Knowledge level (Revised Bloom's Taxonomy) and POs

Co/K-Level	LevelofCorrelation			
	High	**Medium**	**Low**	**Zero**
CO1/K1	**PO1**	**PO2**	-	**PO3,PO4,PO5,PO6**
CO2/K2	**PO1**	**PO2,PO3**	-	**PO4,PO5,PO6**
CO3/K3	**PO1**	**PO2,PO3,PO4**	-	**PO5,PO6**
CO4/K4	**PO1**	**PO2,PO3,PO4,PO5**	-	**PO6**
CO5/K5	**PO1**	**PO2,PO3,PO4,PO5,PO6**	-	-
CO6/K6	**PO1,PO6**	**PO2,PO3,PO4,PO5**	-	-

Course Outcome (CO) Attainment Assessment Tools & Evaluation Procedure

K Levels	C 1	C2	C3	Total Scholastic Marks	Non Scholastic Marks C4	CIA Total	% of Assessment
	T 1 4 Marks	T2 10 Marks	Assignment 6 Marks	20 Marks	Attendance 5 Marks	25 Marks	
K1	1	1	1	3	-	3	12
K2	1	1	1	3	-	3	12
K3	1	2	1	4	-	4	16
K4	1	2	1	4	-	4	16
K5	-	2	1	3	-	3	12
K6	-	2	1	3	-	3	12
Non Scholastic	-	-	-	-	5	5	20
Total	4	10	6	20	5	25	100%

The COs and POs for the **U25ICAM1-Mathematics I** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25ES	EV	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	ENVIRONMENTAL STUDIES						

Unit: 1 THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES.

Definition, scope and importance. Need for public awareness.

Unit: 2 NATURAL RESOURCES:

Renewable and non-renewable resources:
Natural resources and associated problems.

a) Forest resources: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.

c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources - Case studies.

d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity - Case studies.

e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources - Case studies.

f) Land resources: Land as resources, land degradation, man induced Landslides, soil erosion and desertification.

Unit: 3 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 ecosystems:-
  a. Forest ecosystem
  b. Grassland ecosystem
  c. Desert ecosystem
  d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit: 4 BIODIVERSITY AND ITS CONSERVATION

- Introduction – Definition: Genetic, species and ecosystem diversity.
- Biogeographical 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: habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
- Biological Diversity Act 2002/ BD Rules, 2004.

Unit: 5 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.
- Ill-Effects of Fireworks: Firework and Celebrations, Health Hazards, Types of Fire, Firework and Safety.

Unit: 6 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: 7 HUMAN POPULATIONS AND THE ENVIRONMENT

- Population growth, variation among nations.
- Population explosion – Family Welfare Programmes.
- 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.

Unit: 8 FIELD WORK

- Visit to a local area to document environmental assets-river / forest/ grassland/ hill / mountain.

References:

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Public Ltd Bikaner.
2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt ltd, Ahamedabad – 380013, India, E-mail: mapin@icenet.net (R).
3. Brunner R.C. 1989, Hazardous Waste Incineration, McGraw Hill Inc 480 p.
4. Clark R.S. Marine Pollution, Clanderson Press Oxford (TB).
5. Cunningham, W.P.Cooper, T.H.Gorhani E & Hepworth, M.T. 2001.
6. De A.K. Environmental Chemistry, Wiley Eastern Ltd.
7. Down to Earth, Centre for Science and Environment (R)
8. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford University, Press 473p.
9. Hawkins, R.E. Encyclopedia of India Natural History, Bombay Natural History Society, Bombay (R)
10. Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge University Press 1140 p.
11. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws Himalaya Pub. House, Delhi 284 p.
12. Mckinney, M.L. & Schoch R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition 639 p.
13. Mhaskar A.K. Matter Hazardous, Techno-Science Publications (TB)
14. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
15. Odum, E.P. 1971 Fundamentals of Ecology. W.B. Saunders Co. USA. 574 p
16. Rao MN & Datta, A.K. 1987 Waste Water treatment, Oxford & IBH Publication Co. Pvt Ltd 345 p.
17. Sharma B.K. 2001 Environmental chemistry Goel Publ House, Meerut.
18. Survey of the Environment, The Hindu (M).
19. Townsend C. Harper, J and Michael Begon, Essentials of Ecology, Blackwell science (TB)
20. Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media (R).
21. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science Publications (TB).
22. Wagner K.D. 1998 Environmental Management. W.B. Saunders Co. Philadelphia USA 499 p
23. http://nbaindia.org/uploaded/Biodiversityindia/Legal/33%20Biological%20Diversity%20 Rules,%202004.pdf.

(M) Magazine (R) Reference (TB) Textbook

The COs and POs for the **U25ES- Environmental Studies** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25IC2P	Core-Practical	4	2	25	75	100
Programme Code: BVCUG2020							
Course Title	C PROGRAMMING						

Course Description

An introduction to the C programming language, covering basic syntax, data types, control structures, functions, and simple program development.

Course Objectives

1. Understand the fundamentals of C programming language syntax and structure.
2. Learn how to write, compile, and debug simple C programs.
3. Develop problem-solving skills using variables, data types, and operators in C.
4. Master control flow statements (if, loops, switch) to create decision-making programs.
5. Explore functions and modular programming to improve code efficiency and reusability.
6. Understand pointers, arrays, and memory management for advanced programming techniques.

UNIT-I:

Overview of C: History of C, Importance of C, Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant, Structure of a C Program, printf(), scanf() Functions, Operators & Expression: Arithmetic, relational, logical, BVITwise, unary, assignment, shorthand assignment operators, conditional operators and increment and decrement operators, Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy& associativity.

UNIT-II:

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement,ELSE-IF ladder, switch statement, goto statement. Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement, Nested loops.

UNIT-III:

Functions: Standard Mathematical functions, Input/output: Unformatted & formatted I/O function in C, Inputfunctions viz. getch(), getche(), getchar(), gets(), output functions viz., putch(), putchar(), puts(), string manipulation functions. User defined functions: Introduction/Definition, prototype, Local and global variables, passing parameters, recursion.

UNIT -IV:

Arrays, strings and pointers: Definition, types, initialization, processing an array, passing arrays to functions, Array of Strings. String constant and variables-Declaration and initialization of string, Input/output of stringdata.

UNIT -V:

Introduction to pointers- Files Operation- Random files.

Text books:

1."The C Programming Language" by Brian Kernighan & Dennis Ritchie, published by Prentice Hall, 4th edition, 2015.

Unit I: Book 1: Chapter 1 (Sections 1.1–1.6), Chapter 2 (Sections 2.1–2.4)
Unit II: Book 1: Chapter 2 (Sections 2.5–2.10), Chapter 3 (Sections 3.1–3.4)

Unit III: Book 1: Chapter 3 (Sections 3.5–3.9), Chapter 4 (Sections 4.1–4.3)
Unit IV: Book 1: Chapter 5 (Sections 5.1–5.5), Chapter 6 (Sections 6.1–6.3)
Unit V: Book 1: Chapter 6 (Sections 6.4–6.6), Chapter 7 (Sections 7.1–7.3)

Reference Books:

1. "C Programming: A Modern Approach" by K.N. King, published by W. W. Norton & Company, 2nd edition, 2008.
2. "C Programming Absolute Beginner's Guide" by Greg Perry & Dean Miller, published by Que Publishing, 4th edition, 2017.

Web Reference:

1. https://www.tutorialspoint.com/cprogramming/index.htm
2. https://www.geeksforgeeks.org/c-programming-language/
3. https://www.w3schools.com/c/
4. https://www.cprogramming.com/
5. https://www.learn-c.org/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Create a knowledge about C programming language.	K2
CO2	Develop the knowledge about C programming structure, variables, and identifiers, all types of operators, functions, pointers, structures, unions and files.	K2
CO3	Establish the knowledge about various examples and applications in C language.	K3
CO4	Create the knowledge to write basic C programs.	K3
CO5	Demonstrate the control statements like decision making and looping to solve problems associated with conditions and repetitions.	K3,K5
CO6	Understand the concept of String built-In Functions.	K2

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	3	3	1	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**36**	**34**	**26**	**20**
Weighted percentage of Course contribution to POs	**18.46%**	**21.54%**	**18.46%**	**17.44%**	**13.33%**	**10.26%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3	PO4	PO5, PO6	--
CO2 / K2	PO1, PO2	PO3, PO4	PO5, PO6	--
CO3 / K3	PO1, PO2, PO3, PO4	PO5	PO6	--
CO4 / K4	PO1, PO2	PO5	PO3, PO4	PO6
CO5 / K5	PO1, PO2	PO5	PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC2P-C Programming** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25IC3P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	C PROGRAMMING LAB						

Course Description

An introduction to the C programming language, covering basic syntax, data types, control structures, functions, and simple program development.

Course Objectives

1. Develop hands-on skills in writing, compiling, and debugging C programs.
2. Gain practical experience with variables, data types, and operators in C.
3. Implement control flow statements (if, loops, switch) to solve problems.
4. Practice writing functions and using modular programming techniques.
5. Work with arrays, pointers, and memory management in C.
6. Solve complex problems using file handling and advanced C programming concepts.

List of Programs

1. Control statements
2. Looping structures
3. Functions
4. Arrays
5. String manipulations
6. Structures
7. Application
8. Debugging
9. Binary Search
10. String Reversal

Text books:

1."The C Programming Language" by Brian Kernighan & Dennis Ritchie, published by Prentice Hall, 4th edition, 2015.

Unit I: Book 1: Chapter 1 (Sections 1.1–1.6), Chapter 2 (Sections 2.1–2.4)
Unit II: Book 1: Chapter 2 (Sections 2.5–2.10), Chapter 3 (Sections 3.1–3.4)
Unit III: Book 1: Chapter 3 (Sections 3.5–3.9), Chapter 4 (Sections 4.1–4.3)
Unit IV: Book 1: Chapter 5 (Sections 5.1–5.5), Chapter 6 (Sections 6.1–6.3)
Unit V: Book 1: Chapter 6 (Sections 6.4–6.6), Chapter 7 (Sections 7.1–7.3)

Reference Books:

1. "C Programming: A Modern Approach" by K.N. King, published by W. W. Norton & Company, 2nd edition, 2008.
2. "C Programming Absolute Beginner's Guide" by Greg Perry & Dean Miller, published by Que Publishing, 4th edition, 2017.

Web Reference:

1. https://www.tutorialspoint.com/cprogramming/index.htm
2. https://www.geeksforgeeks.org/c-programming-language/
3. https://www.w3schools.com/c/
4. https://www.cprogramming.com/
5. https://www.learn-c.org/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the fundamentals of C Programming and its different modules	K2
CO2	Develop knowledge to write, compile and debug C program.	K3
CO3	Use the role of identifiers, operators and type conversion	K3
CO4	Demonstrate the control statements like decision making and looping to solve problems associated with conditions and repetitions.	K3
CO5	Use the role of Functions involving the idea of modularity	K3
CO6	Understand the concept of Array and pointers dealing with memory management.	K2

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3	PO4	PO5, PO6	--
CO2 / K2	PO1, PO2, PO3	PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO3	PO4, PO5	PO6	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO2, PO3, PO4, PO5	PO1	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC3P- C Programming Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25IC4P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	ICT LAB-I (Word Processor, Spread Sheet Software)						

Course Description

Hands-on training in word processing and spreadsheet software for creating, editing, and managing documents and data.

Course Objectives

1. Understand MS Word Basics: Learn to create, format, and edit documents in MS Word.
2. Advanced MS Word Features: Develop skills in using templates, styles, and mail merge.
3. Introduction to MS Excel: Gain proficiency in creating and formatting spreadsheets.
4. Data Analysis in Excel: Learn to use formulas, functions, and basic data analysis tools.
5. Charts and Visualization: Create and customize charts for data representation in Excel.
6. Practical Problem-Solving: Apply MS Word and Excel skills to real-world ICT tasks.

Word Processor

1.Text Manipulations.
2.Usage of Numbering, Bullets, Footer and Headers.
3.Usage of Spell check, and Find & Replace.
4.Text Formatting.
5.Picture insertion and alignment.
6.Creation of documents, using templates.
7.Creation templates
8.Mail Merge Concepts.

Spread Sheet Software

1. Cell Editing
2. Usage of Formulae and Built-in Functions
3. File Manipulations
4. Data Sorting (both number and alphabets)
5. Worksheet Preparation
6. Drawing Graphs
7. Usage of Auto Formatting

Text Books:

1. "Microsoft Word 2019 Step by Step" by Joan Lambert, published by Microsoft Press, 1st edition, 2019.
   Book 1: (Chapters 1–5)
   Book 2: (Chapters 1–6)
   Book 3: (Chapters 1–7)

Reference Books:

1. "Excel 2019 for Dummies" by Greg Harvey, published by Wiley, 1st edition, 2019.
2."Mastering Microsoft Excel 2016" by Mark Moore, published by Packt Publishing, 1st edition, 2017.

Web Reference:

1. https://support.microsoft.com/en-us/word
2. https://support.microsoft.com/en-us/excel
3. https://www.w3schools.com/word/
4. https://support.microsoft.com/en-us/training
5. https://www.excel-easy.com

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the fundamentals of MS-Word	K2
CO2	Develop knowledge to create a document file using MS-Word.	K3
CO3	Establish the knowledge about to create mail-merge.	K3
CO4	Create a document using templates	K3
CO5	Understand the fundamentals of MS-Excel.	K2
CO6	Develop knowledge to create a excel file using Formulae and Built-in Functions.	K3

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3	PO4	PO5, PO6	--
CO2 / K2	PO1, PO2, PO3	PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO2, PO3, PO4, PO5	PO1	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC4P- ICT Lab-I (Word Processor, Spread Sheet Software)** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25IC5P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	ICT LAB-II (Presentation Software, Database Software Outlook)						

Course Description

Practical skills in presentation, database, and email software for effective communication and data management.

Course Objectives

1. Master PowerPoint Basics: Learn to create and design professional presentations.
2. Advanced PowerPoint Skills: Develop expertise in animations, transitions, and multimedia integration.
3. Understand MS Access Fundamentals: Gain proficiency in creating and managing databases.
4. Data Management with MS Access: Learn to design tables, queries, forms, and reports.
5. Efficient Email Management with Outlook: Master email organization, calendar scheduling, and task management.
6. Integration of Tools: Apply PowerPoint, MS Access, and Outlook together for collaborative and efficient workflows.

Presentation Software

1) Inserting Clip arts and Pictures
2) Frame movements of the above
3) Insertion of new slides
4) Preparation of Organization Charts
5) Presentation using Wizards
6) Usage of design templates

Database Software

1) Creating a Database
2) Tables

2.1) Table Creation using Design View

2.2) Saving and Naming a Table

2.3) Opening & Closing a Table

2.4) Renaming a Table

2.5) Deleting a Table

3) Import Data from another Source into Access Table
4) Queries
   - 4.1) Creating using Design View
   - 4.2) Creating using SQL View
5) Forms
   - 5.1) Create a Form
   - 5.2) Adding Controls to a Form
6) Reports
   - 6.1) Create a Simple Report
   - 6.2) Explain Simple Report Sections
   - 6.3)View & Print the Report

Outlook

1) Outlook Bar
2) Configuring Outlook for our Email
3) Sending and Receiving Email

Managing Mails

Text books:

1."Microsoft PowerPoint 2019 Step by Step" by Joan Lambert, published by Microsoft Press, 1st edition, 2019.
Book 1: (Chapters 1–5)
Book 2: (Chapters 1–4)
Book 3: (Chapters 1–5)

Reference Books:

1. "Access 2019 For Dummies" by Ken Bluttman, published by Wiley, 1st edition, 2019.
2. "Mastering Microsoft PowerPoint 2019" by Mark Moore, published by Packt Publishing, 1st edition, 2019.

Web Reference:

1. https://support.microsoft.com/en-us/ powerpoint
2. https://support.microsoft.com/en-us/ access
3. https://support.microsoft.com/en-us/training
4. https://support.microsoft.com/en-us/office/outlook-training
5. https://edu.gcfglobal.org/en

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the fundamentals of PowerPoint.	K2
CO2	Develop knowledge to create a database using MS-Access.	K3
CO3	Establish knowledge to do Manipulations on table using MS-Access.	K3
CO4	Create a MS-Access File using Queries, Forms and Reports.	K3
CO5	Develop Knowledge to create a PowerPoint presentation.	K3
CO6	Develop knowledge to send and receive mail using Outlook.	K3

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3	PO4	PO5, PO6	--
CO2 / K2	PO1, PO2, PO3	PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO2, PO3, PO4, PO5	PO1	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC5P- ICT Lab-II (Presentation Software, Database Software Outlook)** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25IC6P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	SEARCH ENGINE OPTIMIZATION LAB						

Course Description

Practical training in SEO techniques to improve website visibility and ranking on search engines.

Course Objective

1. Learn the fundamentals of Google Cloud services, including storage, computing, and networking.
2. Gain practical experience integrating and using Google APIs for data manipulation, cloud functions, and more.
3. Explore Google Big Query for managing large datasets, performing queries, and conducting analytics.
4. Learn how to build, deploy, and manage applications using Google Cloud services.
5. Understand the use of Google Dataflow for stream and batch data processing.
6. Learn best practices for securing applications and data within the Google Cloud environment.

LIST OF PROGRAMS:

1. Create the Digital Marketing Webpage.
2. Conducting the Search Engine Optimization and Search Engine Marketing
3. Using Google Analytics to analyze website performance.
4. Creating promotional banner through canvas
5. Facebook Promotion using banners.
6. Creating YouTube channel for Marketing
7. Twitter Marketing
8. Instagram Marketing.
9. Email Marketing.
10. Digital Marketing Implementation in Business Scenario.

Text Books

1. Building Your Next Big Thing with Google Cloud Platform – Jose L. Ugia Gonzalez & S. P. T. Krishnan, Packt Publishing, 1st Edition, 2023

Book 1: (Chapters 1–10)
Book 2: (Chapters 1–10)
Book 3: (Chapters 1–10)

Reference Books

1. Google Cloud Platform for Architects – Judy Raj, Janani Ravi & Vitthal Srinivasan, PacktPublishing, 1st Edition, 2023
2. Professional Cloud Architect Google Cloud Certification Guide – Konrad Cłapa & Brian Gerrard, Packt Publishing, 2nd Edition, 2022

Web Reference:

1. https://cloud.google.com/training
2. https://developers.google.com/
3. https://www.qwiklabs.com/
4. https://cloud.google.com/solutions
5. https://cloud.google.com/blog

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Recall and understand digital marketing tools such as search en optimization and associated analytics.	**K1**
CO2	Apply digital marketing tools effectively.	**K2**
CO3	Analyze the importance of digital marketing strategies to optimize campaigns.	**K4**
CO4	Improve brands reach which physically is relatively difficult and effective.	**K3**
CO5	Evaluate the performance of various social media platforms in context of an overall digital marketing plan.	**K5**
CO6	Design and develop search engine optimization (SEO) and Search Engine Marketing (SEM) campaigns.	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2	PO3, PO5	PO4, PO6	--
CO4 / K4	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO5 / K5	PO1, PO2	PO5	PO3, PO6	PO4
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC6P- Search Engine Optimization Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25IC7P	Core-Practical	2	1	25	75	100
Programme Code: BVCUG2020							
Course Title	CASE STUDY-I						

Course Description

Analysis of real-world scenarios to develop problem-solving and decision-making skills.

Course Objectives

1. Understand the Objective
2. Choose a Relevant Topic
3. Structure Your Case Study
4. Use Supporting Evidence
5. Format and Style
6. Review and Edit
7. Add Visuals

LIST OF AREAS

1. Improving Student Performance with E-Learning Tools
2. Enhancing Customer Experience Through Digital Solutions
3. Optimizing Supply Chain Management Using Technology

தேசியக்கல்லூரி (தன்னாட்சி), திருச்சிராப்பள்ளி – 620 001.
தமிழாய்வுத்துறை

இளநிலை B.Voc. (ICT மாணவர்களுக்கு மட்டும்) - தமிழ் இரண்டாம் பருவம்
தாள்: மொழிப்பாடம்-2 செய்யுள் (பக்தி இலக்கியம், சிற்றிலக்கியம்), உரைநடை, இலக்கிய வரலாறு, இலக்கணம்

U25ICT2

கற்பிக்கும் காலம்: 2 மணி **தரப்புள்ளிகள்: 2**

கற்பித்தலின் நோக்கங்கள்

PO1	பல்வேறு சமய நெறிமுறைகளை உணர்த்துதல்.
PO2	பக்தி இலக்கிய மாண்பினைப் புலப்படுத்துதல்.
PO3	புதின இலக்கிய வகையை அறிமுகம் செய்தல்.
PO4	வல்லினம் மிகும், மிகா இடங்களைத் தெளிவித்தல்
PO5	பல்வகைப்பட்ட சமய இலக்கிய வரலாறுகளைக் கற்பித்தல்
PO6	பக்தி மரபில் தோத்திரப் பாடல்களின் பங்கினை அறிவித்தல்.

அலகு – 1 பக்தி இலக்கியங்கள் - I

1. திருநாவுக்கரசர் - மறுமாற்றுத் திருத்தாண்டகம் (நாமார்க்கும் குடியல்லோம் எனத் தொடங்கும் பதிகம்)
2. ஆண்டாள் - திருப்பாவை (முதல் 10 பாசுரங்கள்)

அலகு – 2 பக்தி இலக்கியங்கள் - II

1. குமரகுருபரர் - சகலகலாவல்லி மாலை
2. வள்ளலார் - அருள் விளக்க மாலை (முதல் 10 பாடல்கள்)

அலகு – 3 சிற்றிலக்கியங்கள்

1. திருக்குற்றாலக் குறவஞ்சி - குறத்தி மலைவளம் கூறுதல் (6 பாடல்கள்)
2. தமிழ் விடு தூது - முதல் 25 கண்ணிகள்

அலகு – 4 உரைநடைக் கட்டுரைகள்

1. உ.வே.சாமிநாத ஐயர் - பரம்பரைக் குணம்
2. கி.ஆ. பெ. விசுவநாதம் - முடத்தெங்கு
3. ரா.பி. சேதுப்பிள்ளை - கடற்கரையிலே

அலகு – 5 இலக்கிய வரலாறும் மொழித் திறனும்

1. சைவ இலக்கியங்கள்
2. வைணவ இலக்கியங்கள்
3. சிற்றிலக்கியங்கள்
4. தமிழ் உரைநடை வளர்ச்சி
5. மரபுத்தொடர், பழமொழிகள்

குறிப்பு: ஐந்து அலகுகளிலும் சம அளவில் வினாக்கள் அமைதல் வேண்டும்.

பாடநூல்

தமிழ் - தாள் - 2 - இரண்டாம் பருவம் - தேசியக்கல்லூரி வெளியீடு.

கற்பித்தலின் பயன்கள்

CO1	வேறுபட்ட சமய வழக்காறுகளை அறிவர்.	K1	PO1
CO2	பிற சமயத்தார்களிடம் அன்பு பாராட்டுவர்.	K2	PO2
CO3	புனைகதை வடிவங்களில் புதினம் பற்றி அறிவர்.	K6	PO4
CO4	பக்தி இலக்கிய நெறிகளை உணர்வர்	K3	PO3
CO5	வல்லெழுத்து மிகும், மிகா இடங்களைச் சான்றுகளுடன் அறிவர்.	K4	PO5
CO6	இறைவழிபாட்டில் போற்றிப் பாடல்களின் பங்கினை உணர்வர்	K5	PO4

Mapping COS Consistency with PSOs

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11	PSO12
CO1	2	2	2	1	2	2						
CO2	2	2	1	2	1	2						
CO3	1	2	2	1	2	2						
CO4	2	1	2	2	1	1						
CO5	2	2	1	2	2	2						
CO6	2	1	2	2	1	1						

Mapping COS Consistency with POs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1	2	2						
CO2	2	1	1	2	2	2						
CO3	1	2	2	2	1	1						
CO4	2	2	2	1	2	2						
CO5	2	2	1	2	2	2						
CO6	2	2	2	1	2	2						

Semester	Course Code	Title of the Course	Hours	Credit
II	U251CT2	செய்யுள் (பக்தி இலக்கியம், சிற்றிலக்கியம்) உரைநடை, இலக்கிய வரலாறு, இலக்கணம்	2	2

Course Outcomes (COs)	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)						Mean Scores of COs
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6	
CO-1	1.5	1.5	1.5	1	1	1.5	1.5	1.5	1	1.5	1.5	1	1.35
CO-2	1	1.5	1	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.5	1.30
CO-3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.35
CO-4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1	1.45
CO-5	1	1.5	1	1.5	1	1.5	1.5	1	1.5	1.5	1.5	1.5	1.30
CO-6	1	1.5	1	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.5	1.30
Mean Overall Score													1.33

Course Outcomes (COs)	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)						Mean Scores of COs
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6	
CO-1	2	2	2	1	2	1	2	2	2	1	2	1	1.8
CO-2	2	1	1	2	2	2	2	2	1	2	1	2	1.6
CO-3	1	2	2	2	1	2	1	2	2	1	2	1	1.6
CO-4	2	2	2	1	2	1	2	1	2	2	1	2	1.7
CO-5	2	2	1	2	2	2	2	2	1	2	2	2	1.8
CO-6	2	1	1	2	2	2	2	2	1	2	1	2	1.6
Mean Overall Score													1.69

Curriculam Design and Development / பாடத்திட்ட வடிவமைப்பும் மேம்பாடும்

LOCAL/ உள்ளூர் படைப்பு சார்ந்தது	REGIONAL / மாநிலப் பொருண்மை தழுவியது	NATIONAL/ தேசியப் பார்வை கொண்டது	GLOBAL/ உலகளாவிய பான்மை உடையது
	✓✓✓		

Level and Correlation / பாடத்திட்ட நிலையும் தொடர்பும்

HIGH/ வலுவான இயைபுடையது	MEDIUM / மிதமான தொடர்பு கொண்டது	LOW/ குறைவான பான்மை உடையது
	✓✓✓	

கூடுதலாகப் படிக்க வேண்டிய நூல்

முனைவர் பாக்கியமேரி, வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, நியூ செஞ்சுரி புத்தக நிறுவனம், சென்னை

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	U25ICE2	English	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	GENERAL ENGLISH II						

LEARNING OBJECTIVES:

LO1	To make students realize the importance of resilience
LO2	To enable them to become good decision makers
LO3	To enable them to imbibe problem-solving skills
LO4	To enable them to use tenses appropriately
LO5	To help them use English effectively at the work place.

SYLLABUS

Unit No.	Unit Title & Text	No. of Periods for the Unit
I	**RESILIENCE** **Poem** 1.1 Don't Quit – Edgar A. Guest 1.2 Still Here – Langston Hughes	20
II	**DECISION MAKING** **Poem** 2.3 The Road not Taken – Robert Frost 2.4 Snake – D. H Lawrence	20
III	**PROBLEM SOLVING** **Prose life Story** 3.1 How I taught My Grandmother to Read – Sudha Murthy 3.2 Wings of Fire (Chapters 1,2,3) by A.P.J Abdul Kalam	20
IV	**Tenses** 4.1 Present 4.2 Past 4.3 Future	15
V	**English in the Workplace** 5.1 E-mail – Invitation, Enquiry, Seeking Clarification 5.2 Minutes of the Meeting	15

COURSE OUTCOMES:

On completion of this course, students will;

CO1	Realize the importarice of resilience	PO1,PO7
CO2	Become good decision-makers	PO1,PO2,PO10
CO3	Imbibe problem-solving skills	PO4,PO6,PO9
CO4	Use tenses appropriately	PO4, PO5,PO6
CO5	Use English effectively at the work place.	PO3,PO8

TEXTBOOKS (LATEST EDITIONS):

1.	Martin Hewings. Advanced English Grammar. Cambridge University Press, 2000
2.	SP Bakshi, Richa Sharma. Descriptive English.Arihant Publications (India) Ltd., 2019.
3.	Sheena Cameron, Louise Dempsey. The Reading Book: A Complete Guide to Teaching Reading. S & L. Publishing, 2019.
4.	Barbara Sherman. Skimming and Scanning Techniques, Liberty University Press, 2014.
5.	Phil Chambers. Brilliant Speed Reading: Whatever you need to read, however. Pearson, 2013.
6.	Communication Skills : Practical Approach Ed.ShaikhMoula
7.	R. K. Narayan. “A Snake in the Grass.” In *An Astrologer’s Day and Other Stories*, Indian Thought Publications, 1947..
8	A. P. J. Abdul Kalam and Arun Tiwari. *Wings of Fire: An Autobiography*, Universities Press, 1999.

WEB SOURCES:

1	Langston Hughes. Still Here https://poetryace.com/im-still-here
2	R. K. Narayan. Engine Trouble http://www.sbioaschooltrichy.org/work/Work/images/new/8e.pdf
3	The story “A Snake in the Grass” is part of the collection *An Astrologer’s Day and Other Stories*
4	Frank Stockton. The Lady or the Tigerhttps://www.gutenberg.org/ebooks/396
5	A. P. J. Abdul Kalam and Arun Tiwari. *Wings of Fire* https://archive.org/details/WingsOfFireAnAutobiographAPJAbdulKalam3873

MAPPING WITH PROGRAMME OUTCOMES:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 - Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to POs	3.0	3.0	3.0	3.0

The COs and POs for the **U25ICE2- General English - II** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	U25IC8	Core-III	5	2	25	75	100
Programme Code: BVCUG2020							
Course Title	GRAPHICAL DESIGNING TOOLS						

Course Description

Introduction to graphic design tools for creating visual content using digital software.

Course Objectives

1. Learn the fundamentals of design, including color theory, typography, and layout.
2. Gain proficiency in tools like Adobe Photoshop, Illustrator, and InDesign.
3. Develop skills in creating and editing images, logos, and illustrations.
4. Learn to design elements for websites, including banners and icons.
5. Create designs for brochures, posters, and other print media.
6. Experiment with advanced design techniques such as photo manipulation and 3D rendering.

CorelDraw

UNIT I

Bitmap Vs. Vector: Vector Graphics- Resolution and Quality- Colors and Fills-File Size- Common Formats- Bitmap Graphics- Resolution- Size and Quality- Color- File Size-File Formats

The CorelDraw Interface: CorelDraw Window - The Startup Screen- Title Bar - Menu Bar - Standard Toolbar - Property Bar - Other Toolbars – Toolbox - Color Palette - Status Bar - Drawing Window - Dialog Boxes. **Drawing Predefined Shapes:** Rectangles- 3-Point Rectangles – Ellipses - Using the Modifier Keys- Creating Arcs and Pie Wedges – Polygons - Drawing a Star- Perfect Shapes - Drawing Perfect Shapes-Smart Drawing Tool- Smart Drawing Tool Overview.

UNIT-II

Creating & Manipulating Text: Creating Artistic Text - Paragraph Text- Character Formatting– Font- Paragraph Formatting- Spacing – Indents - Tabs and Indents - Frames and Columns –Bullets- Wrapping Text Around Graphics -Changing Case- Insert Symbol Character **Selecting & Transforming Objects:** Selecting Objects with the Mouse Digger Tool - Marquee Selection - Using the Menus - Manipulating Objects – Positioning Objects- Resizing Objects - Rotating and Skewing Objects - Manipulating Objects with Other Tools - Free Transformation Tools - Free Rotation Tool - Free Scale Tool - Free Skew Tool - The Transform Toolbar - Undoing All Transformations.

In-Design

UNIT-III

Introduction to Adobe InDesign - Creating and Viewing Documents- Understanding Your Workspace- Pages- Working with text- Working with Graphics- Formatting Objects-Working with Color- Points and Paths.

UNIT-IV

Managing and Transforming Objects-Character and Paragraph Formatting- Using Styles- Tables-Long and Interactive Documents- Packaging and Printing.

Photoshop

UNIT-V

PHOTOSHOP Introduction –Knowing Various Tools in Tool Box – Image Formats – Image Sizes –Pixel – Resolution - Aspect Ratio – Open – Save- Save as – Close a File – Compressed and Uncompressed File Format- Image Modes- Color Correction – Curves Levels – Contrast – Saturation- Selective Color- Correction - Image Variations – Image Size - Cropping - Delete – Copy and Merging Layers– Adding Text to Images – Working with Images.

Text Books:

1. "Adobe Illustrator Classroom in a Book (2020 release)" by Brian Wood, published by Adobe Press, 1st edition, 2020.

Unit I: Book 1: Chapters 1, 2, 3
Unit II: Book 1: Chapters 4, 5
Unit III: Book 2: Chapters 1, 2
Unit IV: Book 2: Chapters 3, 4
Unit V: Book 3: Chapters 1, 2

Reference Books:

1. 1. "The Adobe Photoshop CC Book for Digital Photographers" by Scott Kelby, published by New Riders, 1st edition, 2019.
2. "Adobe InDesign CC Classroom in a Book (2021 release)" by Conrad Chavez & the Adobe Creative Team, published by Adobe Press, 1st edition, 2021.

Web Reference:

1. https://www.adobe.com/creativecloud.html
2. https://www.canva.com/learn/design-school/
3. https://www.skillshare.com/browse/graphic-design
4. https://www.youtube.com/c/Piximake
5. https://www.linkedin.com/learning/topics/graphic-design

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	**Identify** and **describe** the fundamentals of CorelDRAW, In-Design, and Photoshop.	K,K2
CO2	**Construct** logos, invitations, and visiting cards using CorelDRAW.	K3,K4
CO3	**Manipulate** and **transform** shapes using CorelDRAW for design projects.	K3,K4
CO4	**Differentiate** between bitmap and vector graphics and **explain** their uses.	K2,K3
CO5	**Design** and **compose** pages using In-Design for both print and digital formats.	K3,K4
CO6	**Create** and **enhance** images using Photoshop for professional design work.	K3,K4

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3	PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO2, PO3, PO4, PO5	PO1	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC8-Graphical Designing Tools** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	25ICAMS2	Allied	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	FUNDAMENTALS OF STATISTICS						

Course Description

This is an introductory course in statistics designed to provide students with the basic concepts of statistics. Statistics are used to describe the basic concept and analyze of a univariate and bivariate data in a study.

Course Objectives

1. To teach the basic concept of data and graphs
2. To draw the diagrammatic and graphs
3. To teach the individual and discrete case of central tendency and dispersion
4. To analyse the coefficient of variation and correlation coefficient between two variables
5. To teach relationship between Correlation and Regression

Unit I

Statistics: Definition – Functions – Applications – Limitations – Data – Primary and Secondary – Methods of Collecting Primary Data – Sources of Secondary Data

Unit II

Classification of Data – Objectives – Types – Diagrammatic Representation – Bar Diagrams – Pie Diagram – Simple Problems

Unit III

Measures of Central Tendency: Types of Averages – Arithmetic Mean – Median – Mode Geometric Mean – Harmonic Mean – Simple Problems (Individual and Discrete Series Data)

Unit IV

Measures of Dispersion: Methods of Studying Variation – Range – Quartile Deviation – Standard Deviation – Simple Problems (Individual and Discrete Series Data) – Coefficient of Variation (Concept Only)

Unit V

Correlation Analysis (Bivariate): Definition – Types – Methods for Studying Correlation – Karl Pearson's – Spearman's Rank Correlation – Regression Analysis – Regression Equations – Simple Problems

Text Books:

1.S. P. Gupta (Reprint 2021): Elementary Statistical Methods, 18th Ed., Sultan Chand & Sons, New Delhi.[330.9]

Unit – I : Page No.: 1.4 – 1.10, 1.21 – 1.25 & 1.30
Unit – II : Page No.: 2.2 – 2.4, 3.4 – 3.8 & 3.14
Unit – III : Page No.: 4.3 – 4.5, 4.16 & 4.17, 4.28 – 4.30, 4.37 & 4.38, 4.41 & 4.42
Unit – IV : Page No.: 5.3 – 5.7, 5.13 – 5.15 & 5.20
Unit – V : Page No.: 7.3 – 7.5, 7.9 & 7.10, 7.19 – 7.23 & 8.2 – 8.5

2.B. L. Agarwal (Reprint, 2018): Programmed Statistics, 3rd Ed., New Age International Publishers. [330.9]

- **Students should be trained to Solved Problems Questions based on Text Book – 1**
- **Students should be trained to Objective Type Questions based on Text Book – 2**

Reference Book:

S. C. Gupta and V. K. Kapoor (2020): Fundamental of Mathematical Statistics, 12th Rev. Ed., Sultan Chand & Sons, New Delhi.[511]

DIGITAL OPEN EDUCATIONAL RESOURCES:

1.https://incois.gov.in/documents/ITCOocean/C4_descriptive%20statistics.pdf

2.https://cosmologist.info/teaching/STAT/CHAP4.pdf

COURSE OUTCOMES

Upon completion of the course, the students will be able to

CO No.	Course Outcome	Knowledge Level
CO1	**Recall** the basic concept of data and diagrammatic	**K1/K2**
CO2	**Classify** the data and descriptive statistics	**K2/K3**
CO3	**Apply** the data of central tendency and dispersion	**K3/K4**
CO4	**Analyze** the correlation coefficient between two variables	**K4**
CO5	**Interpret** the relationship between variables based on correlation	**K5**
CO6	**Construct** regression equations based on X and Y	**K6**

CO – PO MAPPING (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	9	9	9	9
CO2	9	9	9	9	9	9
CO3	9	9	9	1	1	9
CO4	3	3	3	9	9	3
CO5	9	9	9	9	9	3
CO6	9	9	9	1	1	3
Weightage	48	48	48	38	38	36
Weighted Percentage of Course contribution to PO's	88.88	88.88	88.88	70.37	70.37	66.67

Correlation between CO & PO **1:** Low **3:** Medium **9:** High

Course Outcome mapped with Knowledge level (Revised Bloom's Taxonomy) and POs

Co/ K-Level	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1/K1/K2	**PO1,PO3**	**PO2**	**-**	**PO4,PO5,PO6**
CO2/K2/K3	**PO1**	**PO2**	**PO3**	**PO4,PO5,PO6**
CO3/K3/K4	**PO1,PO2,PO4**	**PO3**	**PO5**	**PO6**
CO4/K4/K5	**PO1,PO2,PO4**	**PO2**	**PO6**	**PO5**
CO5/K5/K6	**PO1,PO2,PO4**	**PO5**	**PO6**	**-**

CO6/K5/K6	**PO1,PO2,PO4**	**PO3**	**PO5**	**PO6**

Course Outcome (CO) Attainment Assessment Tools & Evaluation Procedure

K Levels	**C1**	**C2**	**C3**	**Total Scholastic Marks**	**Non Scholastic Marks C4**	**CIA Total**	**% of Assessment**
	T1 4 Marks	**T2 10 Marks**	**Assignment 6 Marks**	**20 Marks**	**Attendance 5 Marks**	**25 Marks**	
K1	**1**	**1**	**1**	**3**	**-**	**3**	**12**
K2	**1**	**1**	**1**	**3**	**-**	**3**	**12**
K3	**1**	**2**	**1**	**4**	**-**	**4**	**16**
K4	**1**	**2**	**1**	**4**	**-**	**4**	**16**
K5	**-**	**2**	**1**	**3**	**-**	**3**	**12**
K6	**-**	**2**	**1**	**3**	**-**	**3**	**12**
Non Scholastic	**-**	**-**	**-**	**-**	**5**	**5**	**20**
Total	**4**	**10**	**6**	**20**	**5**	**25**	**100%**

The COs and POs for the **U25ICAMS2- Statistics and Operations Research** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	U25IC9P	Core-III	4	2	25	75	100
Programme Code: BVCUG2020							
Course Title	PYTHON PROGRAMMING						

Course Description

An introduction to Python programming focusing on syntax, data structures, and basic problem-solving.

Course Objective

1. Learn Python syntax, variables, and data types.
2. Master conditional statements, loops, and functions.
3. Work with lists, tuples, dictionaries, and sets in Python.
4. Learn to read and write files using Python.
5. Understand classes, objects, inheritance, and encapsulation in Python.
6. Explore Python libraries like NumPy, Pandas, and Matplotlib for data analysis and visualization.

UNIT I

Welcome to Python - What is Python – History of Python – Features of Python – Installing Python – RunningPython - Comments –Operators - Variables and Assignment - Python Objects– Standard Types -Other Built-in Types - Internal Types -Standard Type Operators – Standard Type Built-in Functions - Categorizing the Standard Types - Unsupported Types.

UNIT II

Introduction to Numbers – Integers - Floating Point Real Numbers - Complex Numbers – Operators -Built-inFunctions -Sequences – Strings - Strings and Operators - String-only Operators - Built-in Functions - String Built-in Methods - Special Features of Strings.

UNIT III

Lists – Operators - Built-in Functions - List Type Built-in Methods - Special Features of Lists - Tuples - TupleOperators and Built-in Functions - Special Features of Tuples - Conditionals andLoops – if statement - else statement - else if statement - while statement - for statement – breakstatement - continue statement - pass statement - else statement.

UNIT IV

Regular Expressions – Introduction – Special symbols and characters for Regular Expressions– Regular Expressions and Python – Network Programming – Introduction – Networkprogramming in Python – Sockets :Communication end points.

UNIT V

GUI Programming with TKinter – Introduction TKinter and Python Programming – Tkinter examples – Relatedmodules and other GUIs – Web programming – Web surfing with Python –Advanced web clients.

Text Books:

1. "Python Crash Course" by Eric Matthes, published by No Starch Press, 2nd edition, 2019.

Unit I: Book 1: Chapters 1–3
Unit II: Book 1: Chapters 4–6
Unit III: Book 1: Chapters 7–9
Unit IV: Book 1: Chapters 10–12
Unit V: Book 1: Chapters 13–15

Reference Books:

1. "Automate the Boring Stuff with Python" by Al Sweigart, published by No Starch Press, 2nd edition, 2019.
2. "Python for Data Analysis" by Wes McKinney, published by O'Reilly Media, 2nd edition, 2018.

Web Reference:

1. https://docs.python.org/3/
2. https://realpython.com/
3. https://www.w3schools.com/python/
4. https://learn.microsoft.com/en-us/learn/modules/python-introduction/
5. https://www.codecademy.com/learn/learn-python-3

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	**Identify** and **describe** Python data types and functions.	K1,K2
CO2	**Apply** decision-making and functions in Python.	K3
CO3	**Summarize** and **explain** file handling operations in Python.	K2
CO4	**Design** and **implement** client-server network applications in Python, **evaluate** their performance.	K3,K4,K5
CO5	**Implement** GUI programming with Tkinter in Python.	K2,K3
CO6	**Solve** problems using Python, **evaluate** solutions, and **create** efficient code.	K4,K5,K6

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3	PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO3	PO4, PO5	PO6	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO2, PO3, PO4, PO5	PO1	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC9P-Python Programming** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	U25IC10P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	PYTHON PROGRAMMING LAB						

Course Description

Hands-on practice in Python programming for developing and testing basic applications.

Course Objective

1. Understand basic Python syntax, variables, and data types.
2. Master conditionals, loops, and writing functions.
3. Work with lists, tuples, dictionaries, and sets.
4. Learn to open, read, write, and manipulate files in Python.
5. Understand exceptions and debug Python programs effectively.
6. Implement classes, objects, inheritance, and polymorphism in Python.

Problem solving and programming capability

1. Write a python program to perform operation on List
2. Write a python program to perform operation on Tuple
3. Write a python program to perform operation on Dictionary
4. Write a python program using Decision making statements
5. Write a python program using Decision making statements looping statements
6. Write a Python program to implement using the concept of Regular Expression.
7. Write a Python program using ‘calendar’.
8. Write a Python program to create applications using controls in ‘Tkinter’
9. Write a python program to perform Palindrome Check
10. Write a python program to perform Factorial of a Number

Text Books:

1."Python Crash Course" by Eric Matthes, published by No Starch Press, 2nd edition, 2019.

Unit I: Book 1: Chapters 1–3
Unit II: Book 1: Chapters 4–6
Unit III: Book 1: Chapters 7–9
Unit IV: Book 1: Chapters 10–12
Unit V: Book 1: Chapters 13–15

Reference Books:

1. "Automate the Boring Stuff with Python" by Al Sweigart, published by No Starch Press, 2nd edition, 2019.
2."Python for Data Analysis" by Wes McKinney, published by O'Reilly Media, 2nd edition, 2018.

Web Reference:

1. https://docs.python.org/3/
2. https://realpython.com/
3. https://www.w3schools.com/python/
4. https://learn.microsoft.com/en-us/learn/modules/python-introduction/
5. https://www.codecademy.com/learn/learn-python-3

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand Python Programming Basics	K1,K2
CO2	Apply and create Python functions and modules.	K3,K4
CO3	Use and work with data structures in Python.	K3,K4
CO4	**Implement** object-oriented programming in Python.	K3,K4
CO5	**Handle** file I/O and ensure data persistence.	K3,K4
CO6	**Debug**, **resolve**, and **optimize** Python code.	K4,K5,K6

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3	PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO3	PO4, PO5	PO6	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO2, PO3, PO4, PO5	PO1	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC10P- Python Programming Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	U25IC11P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	GRAPHICAL DESIGNER LAB-I (Vector Graphics Editor)						

Course Description

Practical training in creating and editing vector graphics using design software.

Course Objectives

1. Familiarize with the CorelDraw workspace, tools, and navigation.
2. Learn to design and manipulate vector shapes and objects.
3. Work with text tools to create and format professional typography.
4. Explore color theory, gradients, and special effects for creative designs.
5. Develop skills in creating logos, icons, and other graphic elements.
6. Learn to export and optimize designs for print and digital use.

List of Exercises

1. Create a document using various shapes.
2. Creating spiral shapes.
3. Create two pictures one another based on mirror function.
4. Fill the color existing image, add some text
5. Create a pie model diagram.
6. Create an envelope.
7. Write a text in different paths.
8. Create an outline on existing image.
9. Create an advertisement.
10. Design a business card for a company embed photo in it.

Text Books:

1. "Adobe Illustrator CC Classroom in a Book (2020 release)" by Brian Wood, published by Adobe Press, 1st edition, 2020.

Unit I: Book 1: Chapter 1–2
Unit II: Book 1: Chapter 3–4
Unit III: Book 1: Chapter 5–6
Unit IV: Book 1: Chapter 7–8
Unit V: Book 1: Chapter 9–10

Reference Books:

1. "Illustrator CC Digital Classroom" by Jennifer Smith, published by Wiley, 1st edition, 2019.
2. "Mastering Illustrator: A Complete Guide to Vector Graphics" by Michael J. Arndt, published by John Wiley & Sons, 1st edition, 2019.

Web Reference:

1. https://www.coreldraw.com
2. https://www.coreldraw.com/en/learn/tutorials/
3. https://www.youtube.com/user/coreldraw
4. https://tutsplus.com/tutorials/search/coreldraw
5. https://www.udemy.com/topic/coreldraw/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	**Identify** and **explain** CorelDraw basics.	**K1,K2**
CO2	**Use** CorelDraw tools to **create** logos, cards, and invitations.	**K2,K3**
CO3	**Edit** and **combine** shapes to create designs in CorelDraw.	**K3,K4**
CO4	**Describe** and **compare** Bitmap and Vector graphics.	**K1,K2**
CO5	**Apply** and **enhance** designs with effects.	**K3,K4**
CO6	**Prepare** and **output** designs for printing.	**K3,K4,K5**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3	PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO3	PO4, PO5	PO6	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO2, PO3, PO4, PO5	PO1	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC11P-Graphical Designer Lab-I (Vector Graphics Editor)** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	U25ICA12P	Allied -Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	DATA ANALYSIS USING EXCEL						

Course Description

The learning objectives of this expose the students to the statistical analysis of data using excel

Course Objectives

1. To teach the construction of diagrammatic representations
2. To teach the concept of measures of central tendency & dispersion using Excel,
3. To Make use of the formula of statistical analysis
4. To teach the curve fitting
5. To teach the regression analysis

List of Exercises

1. Diagrammatic Representations
   - ❖ Bar Diagram: Simple
   - ❖ Bar Diagram: Multiple
   - ❖ Pie Diagram
   - ❖ Histogram
2. Measures of Central Tendency
3. Measures of Dispersion
4. Correlation Analysis (Karl Pearson's)
5. Correlation Analysis (Spearman)
6. simple Regression Analysis
7. Multiple Regression Analysis

COURSE OUTCOMES

CO. No	Course Outcomes	Knowledge Level
CO1	**Recall** the construction of diagrammatic representations	K1
CO2	**Explain** the concept of measures of central tendency & dispersion	K2
CO3	**Make use of** the formula of statistical analysis	K3
CO4	**Theme** of graphical representations and simple analysis tools	K4
CO5	**Inference** the concept of correlation and regression	K5
CO6	**Estimate** the data using regression analysis	K6

CO-PO MAPPING (course articulation matrix)

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	9	9	9	9
CO2	9	9	9	9	9	9
CO3	9	9	3	3	3	3
CO4	9	9	3	3	3	3
CO5	3	3	3	3	1	1
CO6	3	3	1	1	1	1
Weightage	42	42	28	28	26	26
Weightage of course contribution to PO's	**77.78**	**77.78**	**51.85**	**51.85**	**48.15**	**48.15**

Correlation between CO & PO **1:** Low **3:** Medium **9:** High

Course Outcome mapped with Knowledge level (Revised Bloom's Taxonomy) and POs

Co/ K-Level	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1/K1/K2	**PO1,PO3**	**PO2**	**-**	**PO4,PO5,PO6**
CO2/K2/K3	**PO1**	**PO2**	**PO3**	**PO4,PO5,PO6**
CO3/K3/K4	**PO1,PO2,PO4**	**PO3**	**PO5**	**PO6**
CO4/K4/K5	**PO1,PO2,PO4**	**PO2**	**PO6**	**PO5**
CO5/K5/K6	**PO1,PO2,PO4**	**PO5**	**PO6**	**-**
CO6/K5/K6	**PO1,PO2,PO4**	**PO3**	**PO5**	**PO6**

The COs and POs for the **U25IC12P- Data Analysis using Excel** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	U25IC13P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	GRAPHICAL DESIGNER LAB-II (Photo Editing Software)						

Course Description

Practical skills in photo editing and image enhancement using digital editing tools.

Course Objectives

1. Familiarize with Photoshop tools, panels, and workspace.
2. Master layer management, blending modes, and layer masks for advanced editing.
3. Learn to enhance and manipulate photos, fix imperfections, and apply filters.
4. Use drawing, painting, and selection tools to create custom graphics.
5. Integrate and style text for designs, advertisements, and web content.
6. Learn to export and optimize images for various media formats.

List of Exercises

1. Drawing Watch using custom shapes
2. Create a poster design
3. Using multichannel mode
4. Using the sponge Tool
5. Create a greeting card
6. Adding an arrowhead.
7. Removing an element from an image
8. Applying Transformations
9. Create a multiple page newsletter
10. Using the mask Tool

Text Books:

1."Adobe Photoshop CC Classroom in a Book (2020 release)" by Andrew Faulkner & Conrad Chavez, published by Adobe Press, 1st edition, 2020.

Unit I: Book 1: Chapter 1–3
Unit II: Book 1: Chapter 4–6
Unit III: Book 1: Chapter 7–9
Unit IV: Book 1: Chapter 10–12
Unit V: Book 1: Chapter 13–15

Reference Books:

1."Photoshop for Photographers" by Martin Evening, published by Focal Press, 11th edition, 2020.
2."The Adobe Photoshop CC Book for Digital Photographers" by Scott Kelby, published by New Riders, 1st edition, 2019.

Web Reference:

1. https://www.adobe.com/products/photoshop.html
2. https://helpx.adobe.com/photoshop/tutorials.html
3. https://www.linkedin.com/learning/topics/photoshop
4. https://www.youtube.com/user/Photoshop
5. https://www.linkedin.com/learning/topics/photoshop

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understanding Adobe Photoshop Interface and Tools	**K1**
CO2	Basic Image Editing and Enhancements	**K2**
CO3	Working with Layers and Masks	**K3**
CO4	Advanced Image Manipulation and Retouching	**K3,K4**
CO5	Working with Text and Typography	**K3**
CO6	Preparing Images for Output (Print and Web)	**K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	3	1	1	1
CO2	9	9	9	3	3	1
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	9	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**42**	**42**	**34**	**28**	**20**
Weighted percentage of Course contribution to POs	**18.37%**	**21.43%**	**21.43%**	**17.35%**	**14.29%**	**10.20%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO2, PO3, PO4, PO5	PO1	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC13P- Graphical Designer Lab-III (Photo Editing Software)** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	U25IC14P	Core-Practical	2	1	25	75	100
Programme Code: BVCUG2020							
Course Title	CASE STUDY-II						

Course Description

Advanced analysis of real-world cases to enhance critical thinking and practical problem-solving skills.

Course Objectives

1. Understand the Objective
2. Choose a Relevant Topic
3. Structure Your Case Study
4. Use Supporting Evidence
5. Format and Style
6. Review and Edit
7. Add Visuals

LIST OF AREAS

1. Custom Business Card Design
2. Personalized Invitation Creation
3. Impactful Poster Design
4. Branding with Print Design
5. Designing for Every Occasion
6. A Case Study on Digital Design Tools and Techniques

தேசியக்கல்லூரி (தன்னாட்சி), திருச்சிராப்பள்ளி – 620 001
தமிழாய்வுத்தறை

இளநிலை – B.VOC - இரண்டாம் ஆண்டு - மூன்றாம் பருவம்

கணினித்தமிழ் U22ICT3

கற்பிக்கும் காலம் : 2 மணி **தரப்புள்ளிகள் : 2**

கற்பித்தலின் நோக்கங்கள்

1. கணினித் தொழில் நுட்பம் பற்றிய அறிமுகத்தினை ஏற்படுத்துதல்
2. கணினியின் பாகங்களை எடுத்துரைத்தல்
3. தமிழ்த் தட்டச்சு செய்யும் விசைப்பலகைகளை அடையாளங்காட்டுதல்
4. தமிழ் மென்பொருட்களைப் பயன்படுத்தக் கற்றுத்தருதல்
5. மைக்ரோசாப்ட் ஆபிஸ் பயன்படுத்தும் முறையை எடுத்துரைத்தல்
6. தமிழ்க்கணினிப் பயன்பாட்டின் முன் முயற்சிகளைத் தெளிவித்தல்

அலகு – 1

கணினியின் வரலாறு – தொடக்ககாலப் பயன்பாடு – கணினியின் தலைமுறைகள் - வளர்ச்சிநிலை – கணினியின் அமைப்பு – கணினி வகைப்பாடுகள் - மேசைக்கணினி – மடிக்கணினி – திறன்பேசி – கணினியின் பயன்கள்.

அலகு – 2

மையச் செயலகம் - உள்ளீட்டகம் - விசைப்பலகை - சுட்டி – ஒளிப்பேனா முதலியன – வெளியீட்டகம் - திரை – அச்சுப்பொறி வகைகள் - வன்பொருள் - மென்பொருள் - இயங்கு மென்பொருள் - செயலிகள் - குறுஞ்செயலி.

அலகு – 3

பெயிண்ட் - நோட்பேட் - வேர்டுபேட் - தமிழ் விசைப்பலகை – என்ஹெச்.மெ. ரைட்டர் - தமிழ் எழுத்துருக்கள் - பாமினி – ஒருங்குறி – எழுத்துரு மாற்றிகள்

அலகு -4

எம். எஸ். வேர்டு – கோப்பு உருவாக்கம் - தட்டச்சு செய்தல் - எழுத்து உரு, எழுத்தளவு, வண்ணம் மாற்றம், அட்டவணை – படங்கள் - மெயில் மெர்ஜ் - புக்மார்க் - பக்க வடிவமைப்பு – தாள் அளவு – அச்சிடுதல்.

அலகு – 5

பவர் பாய்ண்ட் - டிசைன் - டிரான்ஸ்மிசன் - அமைப்புமுறை – காலக்கெடு - படங்கள் - அட்டவணைகள் - ஒலிஒளி கோப்புகளை இணைத்தல்.

பாடநூல்கள்

1. இல. சுந்தரம், 2015, கணினித்தமிழ், விகடன் பிரசுரம், சென்னை.
2. துரை. மணிகண்டன், 2012, தமிழ் கணினி இணையப் பயன்பாடுகள், கமலினி பதிப்பகம், கச்சமங்கலம்.

பார்வை நூல்கள்

1. ஆண்டோ பீட்டர். மா, 2002, தமழும் கணிப்பொறியும், கற்பகம், புத்தகாலயம், சென்னை.
2. செல்லப்பன், இராதா, 2011, தமிழும் கணினியும், கவிதை அமுதம் வெளியீடு, திருச்சி.
3. பன்னிருகை வடிவேலன், இரா. 2014, தமிழ் மென்பொருள்கள், நோக்கு, சென்னை.

கற்றலின் பயன்கள்

CO1	கணினித்தமிழ் வளர்ச்சி வரலாற்றை அறிவர்	**KI**	**PO1, PO2**
CO2	வன்பொருள், மென்பொருள் பயன்பாடு பற்றி உணர்வர்	**K2**	**PO4**
C03	தமிழில் தட்டச்சு செய்யும் திறனைப் பெறுவர்	**K3**	**PO5**
CO4	எம். எஸ்.வேர்டு மூலம் கட்டுரை, ஒப்படைவு போன்றவற்றை உருவாக்குவர்	**K4**	**PO1, PO2, PO3**
CO5	எக்ஸெல் வழியாகக் கணக்கிடும் முறையை அறிவர்	**K5**	**PO3**
C06	பவர்பாய்ண்டைப் பயன்படுத்திக் கருத்து விளக்கமுறையைக் கையாள்வர்	**K6**	**PO2**

Mapping COS Consistency with PSO3

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11	PSO12
CO1	1.5	1.5	1	1.5	1.5	1.5						
CO2	1	1.5	1.5	1	1.5	1						
C03	1.5	1	1.5	1.5	1	1.5						
CO4	1.5	1.5	1	1.5	1.5	1.5						
CO5	1.5	1	1.5	1.5	1.5	1.5						
C06	1.5	1.5	1	1.5	1.5	1.5						

Mapping COS Consistency with POs

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11	PSO12
CO1	1.5	1.5	1.5	1	1.5	1.5						
CO2	1	1.5	1	1.5	1.5	1						
C03	1.5	1.5	1.5	1.5	1.5	1.5						
CO4	1.5	1.5	1.5	1.5	1.5	1.5						
CO5	1	1.5	1	1.5	1	1						
C06	1.5	1.5	1.5	1.5	1.5	1.5						

Semester	Course Code	Title of the Course	Hours	Credit
III	U22ICT3	கணினித்தமிழ்	2	2

Course Outcomes (Cos)	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)						Mean Scores of COs
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	
CO1	1.5	1.5	1.5	1	1	1.5	1.5	1.5	1	1.5	1.5	1	1.35
CO2	1	1.5	1	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.5	1.30
C03	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.35
CO4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1	1.45
CO5	1	1.5	1	1.5	1	1.5	1.5	1	1.5	1.5	1.5	1.5	1.30
C06	1	1.5	1	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.5	1.30
Mean Overall Score													1.33

Curriculam Design and Development / பாடத்திட்ட வடிவமைப்பும் மேம்பாடும்

LOCAK /உள்ளூர் படைப்பு சார்ந்தது	REGIONAL /மாநிலப் பொருண்மை தழுவியது	NATIONAL / தேசியப் பார்வை கொண்டது	GLOBAL / உலகளாவிய பான்மை உடையது
	✓✓✓		

Level and Correlation / பாடத்திட்ட நிலையம் தொடர்பும்

HIGH / வலுவான இயைபுடையது	MEDIUM / மிதமான தொடர்பு கொண்டது	LOW / குறைவான பான்மை உடையது
	✓✓✓	

கூடுதலாகப் படிக்க வேண்டிய நூல்

புவனேஸ்வரி, காம்கேர் கே, 2009, இண்டர்நெட் A to Z, விகடன் பிரசுரம், சென்னை.

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25ICE3	English	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	GENERAL ENGLISH - III						

Learning Objectives:

LO1	To make them active listeners
LO2	To enhance the interpersonal relationship skills
LO3	To embolden them to cope with stress
LO4	To master grammar skills
LO5	To help them to use English effectively in a business environment

SYLLABUS

Unit No.	Unit Title & Text	No. of Periods for the Unit
I	**ACTIVE LISTENING** **Short Story** 1.1 The Gift of the Magi – O' Henry **Prose** 1.2 Nobel Prize Acceptance Speech – WangariMaathai	20
II	**INTERPERSONAL RELATIONSHIPS** **Prose** 2.1 Of Friendship – Francis Bacon **Song on (Motivational/ Narrative)** 2.2 And Still I Rise – Maya Angelou	20
III	**COPING WITH STRESS** **Poem** 3.1 Leisure – W.H. Davies **Readers Theatre** 3.2 Where there is a Will – Mahesh Dattani	20
IV	**Grammar** 4.1 Phrasal Verbs & Idioms 4.2 Modals and Auxiliaries	15
V	**Composition/ Writing Skills** 5.1 Official Correspondence – Leave Letter , Letter of Application, Permission Letter	15

COURSE OUTCOMES:

On completion of this course, students will;

CO1	Listen actively	PO1,PO7
CO2	Develop interpersonal relationship skills	PO1,PO2,PO10
CO3	Acquire self-confidence to cope with stress	PO4,PO6,PO9
CO4	Master grammar skills	PO4,PO5,PO6
CO5	Carry out business communication effectively	PO3,PO8

TEXT BOOKS (LATEST EDITIONS):

1	WangariMaathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Jul 2023.
2	O. Henry. "The Gift of the Magi," in *The Four Million*, McClure, Phillips & Company, 1906.
3	Martin Hewings, Advanced English Grammar, Cambridge University Press, 2000
4	EssentialEnglish Grammar by Raymond Murphy
5	Francis Bacon. "Of Friendship," *The Essays or Counsels, Civil and Moral of Francis Lord Verulam*, Last Edition (1625).

WEB RESOURCES:

1	WangariMaathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Mon. 17 Jul 2023. https://www.nobelprize.org/prizes/peace/2004/maathai/lecture/
2	Telephone Conversation - Wole Soyinka https://www.k-state.edu/english/westmank/spring_00/SOYINKA.html
3	Anxiety Monster- RhonaMcFerran- www.poetrysoup.com

MAPPING WITH PROGRAMME OUTCOMES:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 – Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to POs	3.0	3.0	3.0	3.0

The COs and POs for the **U25ICE3 - General English - III** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25IC15	Core-Practical	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	JAVA PROGRAMMING						

Course Description

Introduction to Java programming covering object-oriented concepts, syntax, and basic application development.

Course Objectives

1. To acquire the programming skills with java.
2. To implement the object-oriented concepts with java language.
3. To learn the art of GUI programming with Applet.
4. Work with data structures such as arrays, lists, and stacks.
5. Handle exceptions and debug Java programs.
6. Perform file I/O operations with Java.

UNIT I

Object-Oriented Programming - API - variables - primitive data types –- operators – Control Statements: if, if-else, nested if & if-else- if statements – logical operators – conditional operator – switch – increment and decrement – while, do-while & for loops – nested loops – break and continue; Classes and Objects: classes and objects

UNIT II

Arrays Introduction– two Dimensional Arrays - Arrays with Three or More Dimensions; String Handling-Inheritance–polymorphism

UNIT III

Exception Handling -Multithreading: Introduction – threads – thread creation – life cycle – thread control – thread Pool – thread group – daemon thread; Files and I\O Streams: file Class – streams – Random Access File class – character streams.

UNIT IV

Applet and GUI Part I, Fundamentals – applet class – life cycle – steps for applet program –GUI– creating windows – dialog boxes – layout managers – AWT component classes – Swing component classes – applications of AWT controls.

UNIT V

GUI Part II and Java Database Connectivity, Event handling – AWT components – AWT graphics classes – Swing controls – Java Database Connectivity: types of drivers – JDBC architecture –creating a new Database and table with JDBC.

Text Books:

1. S. Sagayaraj, R. Denis, P. Karthik & D. Gajalakshmi, "Constructive Java Programming", Universities Press, 2021.

Unit I: Book 1: Chapter 1–4
Unit II: Book 1: Chapter 5–8
Unit III: Book 1: Chapter 9–12
Unit IV: Book 1: Chapter 13–16
Unit V: Book 1: Chapter 17–20

Reference Books:

1. E. Balagurusamy, “Programming with JAVA”, Tata McGraw Hill, New Delhi, 2019.
2. Malina Pronto, "Java: How To Learn Java Programming: How To Improve Your Java Coding In 2020/2021: 5 Programming Languages To Learn For Beginners In Tech", Independently Published, 2020.

Web Reference:

1. https://www.javatpoint.com/java-tutorial
2. https://www.w3schools.com/java/
3. https://docs.oracle.com/javase/tutorial/
4. https://www.geeksforgeeks.org/java/
5. https://www.tutorialspoint.com/java/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading.	**K1**
CO2	Identify members of a class and to implement them	**K2,K3**
CO3	Create Java application programs using sound OOP practices (e.g., interfaces and APIs) and proper program structuring (e.g., by using access control identifies, and create user define package for specific task,(reusability concepts) error exception handling)	**K3,K4**
CO4	Develop programs using the Java standard class library.	**K2,K3**
CO5	Develop software using Java programming language, (using applet, AWT controls, and JDBC).	**K3,K4**
CO6		**K4,K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	1	0
CO2	9	9	3	3	1	0
CO3	9	9	9	3	3	3
CO4	3	9	9	9	3	3
CO5	3	3	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**36**	**36**	**34**	**26**	**18**
Weighted percentage of Course contribution to POs	**19.67%**	**19.67%**	**19.67%**	**18.58%**	**14.21%**	**8.87%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1	PO2, PO3, PO4	PO5	PO6
CO2 / K2	PO1, PO2	PO3, PO4	PO5	PO6
CO3 / K3	PO1, PO2, PO3	PO4, PO5	PO6	--
CO4 / K4	PO2, PO3	PO4, PO5	PO1, PO6	--
CO5 / K5	PO3, PO4	PO5	PO1, PO2, PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC15- Java Programming** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25IC16	Core-III	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	DATABASE SYSTEMS						

Course Description

Introduction to database concepts, design, and SQL for managing structured data.

Course Objectives

1. Learn the fundamentals of databases, including types, models, and DBMS architecture.
2. Study the relational model, entities, attributes, and relationships in databases.
3. Gain proficiency in SQL for querying, updating, and managing databases.
4. Understand the process of designing efficient databases, including normalization and schema design.
5. Learn about database transactions, ACID properties, and concurrency control techniques.
6. Study database security measures, user permissions, and backup strategies for data protection.

UNIT I

Introduction: Database System Applications – Purpose of Database Systems – View of Data – Database Language – Relational Databases – Database Design – Object – Based and semi structured Databases

UNIT II

Data Storage and Querying Transaction Management — Database Architecture: Database Users and Administrators.

UNIT III

Relational Languages: The Tuple Relational Calculus – The Domain Relational Calculus – Query – by – Example.

UNIT IV

Database Design and the E- R Model: Overview of the Design Process – The Entity – Relational Ship Model – Constraints – Entity – Relational ship Diagrams – Entity – Relationship Design Issues

UNIT V

Normalization –normal form I, normal form II, normal form III –normal form IV -Boyce code normal form. (Explanation using table)

Text Books:

1"Database System Concepts" by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, published by McGraw-Hill Education, 7th edition, 2019.

Unit I: Book 1: Chapter 1–2
Unit II: Book 1: Chapter 3–4
Unit III: Book 1: Chapter 5–6
Unit IV: Book 1: Chapter 7–8
Unit V: Book 1: Chapter 9–10

Reference Books:

1. "Modern Database Management" by Jeffrey A. Hoffer, V. Ramesh, Heikki Topi, published by Pearson, 12th edition, 2020.
2. "SQL and Relational Theory" by C. J. Date, published by O'Reilly Media, 1st edition, 2019.

Web Reference:

1. https://www.w3schools.com/sql/
2. https://www.geeksforgeeks.org/database-management-system-dmbs/
3. https://www.tutorialspoint.com/dbms/index.htm
4. https://www.coursera.org/courses?query=database%20systems
5. https://www.khanacademy.org/computing/computer-programming/sql

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	**Recall** the features of Database Management Systems and Relational databases.	**K1**
CO2	**Identify** and **describe** various data models used in databases.	**K1,K2**
CO3	**Explain** and **analyze** file organization and addressing schemes in databases.	**K2,K3**
CO4	**Apply** normalization techniques to design efficient and scalable databases.	**K3**
CO5	**Understand** SQL features, **apply** SQL syntax, and **evaluate** SQL queries for database manipulation.	**K2,K3,K5**
CO6	**Understand** the concept of PL/SQL, and **design** and **implement** PL/SQL procedures for database operations.	**K2,K3,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	1	0
CO2	9	9	3	3	1	0
CO3	9	9	9	3	3	3
CO4	3	9	9	9	3	3
CO5	3	3	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**36**	**36**	**34**	**26**	**18**
Weighted percentage of Course contribution to POs	**19.67%**	**19.67%**	**19.67%**	**18.58%**	**14.21%**	**8.87%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1	PO2, PO3, PO4	PO5	PO6
CO2 / K2	PO1, PO2	PO3, PO4	PO5	PO6
CO3 / K3	PO1, PO2, PO3	PO4, PO5	PO6	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO3, PO4, PO5	PO1, PO2	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC16-Database Systems** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25ICAC1	Allied	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	PRINCIPLES OF ACCOUNTANCY						

Course Description

This course introduces basic accounting principles, focusing on financial statements, the accounting cycle, and essential business transactions.

Course Objectives

1. Understand basic accounting principles and concepts.
2. Record business transactions accurately.
3. Prepare key financial statements.
4. Analyze financial data effectively.
5. Apply the accounting cycle in practice.
6. Develop foundational skills for further accounting studies.

Unit I

Introduction – Accounting concepts and conventions –Accounting Standards – Meaning-Double entry system – Journal, Ledger, Subsidiary books, Trial Balance- Bank Reconciliation Statement.

Unit II

Final Accounts of sole traders with adjustment entries - Rectification of Errors.

Unit III

Accounts of Non-profit organization – Bills of exchange – Average due date – Account Current.

Unit IV

Consignments and Joint Ventures.

Unit V

Single Entry System. Depreciation - Methods, provisions and reserves.

Text Books:

1 "Principles of Accounting" is the **Second Edition** by **Steven M. Bragg**, published in **November 2024**.

Unit I: Book 1: Chapter 1–2
Unit II: Book 1: Chapter 3–4
Unit III: Book 1: Chapter 5–6
Unit IV: Book 1: Chapter 7–8
Unit V: Book 1: Chapter 9–10

Reference Books:

1. "Principles of Accounting, Volume 1: Financial Accounting" by **OpenStax**, published in **2019**.
2. "Wiley GAAP 2024: Interpretation and Application of Generally Accepted Accounting Principles" by **Joanne M. Flood**, published in **November 2023**,

Web Reference:

1. https://www.investopedia.com/terms/a/accounting-principles.asp
2. https://cleartax.in/s/accounting-principles
3. https://www.theknowledgeacademy.com/blog/accounting-principles/
4. https://www.shiksha.com/online-courses/articles/understanding-the-principles-of-accounting/
5. https://efinancemanagement.com/financial-accounting/all-10-gaap-principles

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand Fundamental Accounting Concepts	K1
CO2	Record Financial Transactions Accurately	K1, K2
CO3	Prepare Financial Statements	K2, K3
CO4	Analyze and Interpret Financial Data	K3
CO5	Apply Accounting Procedures for Various Business Types	K2, K3, K5
CO6	Demonstrate Ethical Financial Reporting Practices	K2, K3, K6

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	1	0
CO2	9	9	3	3	1	0
CO3	9	9	9	3	3	3
CO4	3	9	9	9	3	3
CO5	3	3	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	36	36	36	34	26	18
Weighted percentage of Course contribution to POs	**19.67%**	**19.67%**	**19.67%**	**18.58%**	**14.21%**	**8.87%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1	PO2, PO3, PO4	PO5	PO6
CO2 / K2	PO1, PO2	PO3, PO4	PO5	PO6
CO3 / K3	PO1, PO2, PO3	PO4, PO5	PO6	—
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	—
CO5 / K5	PO3, PO4, PO5	PO1, PO2	PO6	—
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	—	—

The COs and POs for the **U25ICAC1- Principles of Accountancy** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25IC17P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	WEB DESIGN						

Course Description

Basics of designing and developing websites using HTML, CSS, and web design tools.

Course Objectives

1. Learn the basic structure of an HTML document, including tags, attributes, and elements.
2. Learn to create simple web pages using basic HTML elements like headings, paragraphs, and links.
3. Understand how to create interactive forms with input fields, buttons, and validation.
4. Learn to embed images, audio, and video into web pages using HTML.
5. Understand how to style web pages using internal and external CSS for layout and design.
6. Learn to make web pages user-friendly, accessible, and responsive across different devices.

UNIT I

Introduction to HTML- Designing a Home page- History of HTML- HTML Generations- HTML Documents- Anchor Tag-Hyper Links.

UNIT II

Header Section- Title- Prologue- Links- Colorful Web Page- Comment Lines- Designing the Body Sections- Heading printing- Aligning the headings- Horizontal rule- Paragraph.

UNIT – III

Defining Semantics elements – non-semantic elements – Types of semantic elements – HTML images – HTML links.

UNIT – IV

Introduction to CSS - Syntax of CSS – CSS Colors – CSS Backgrounds – CSS Height/Width.

UNIT – V

CSS Text – CSS Fonts – CSS Tables – CSS Align.

Text Books:

1. "Web Design with HTML, CSS, JavaScript and jQuery Set" by Jon Duckett, published by Wiley, 1st edition, 2015.
   Unit I: Book 1: Chapter 1–2
   Unit II: Book 1: Chapter 3–4
   Unit III: Book 1: Chapter 5–6
   Unit IV: Book 1: Chapter 7–8
   Unit V: Book 1: Chapter 9–10

Reference Books:

1. 1. "Responsive Web Design with HTML5 and CSS" by Ben Frain, published by Packt Publishing, 2nd edition, 2015.
2. "Don't Make Me Think: A Common Sense Approach to Web Usability" by Steve Krug, published by New Riders, 3rd edition, 2014.

Web Reference:

1. https://www.w3schools.com/html/
2. https://developer.mozilla.org/en-US/docs/Web/HTML
3. https://www.freecodecamp.org/learn/

4. https://html.com/
5. https://www.coursera.org/learn/web-design

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	**Recall** and **apply** markup languages for processing and presenting information in web pages.	**K1,K2,K3**
CO2	**Understand** and **use** scripting languages and web services to add interactivity.	**K2,K3,K4**
CO3	**Use** and **evaluate** graphics in webpages to enhance user experience.	**K3,K4,K5**
CO4	**Create** and **evaluate** hyperlinks for web navigation.	**K3,K4,K5,K6**
CO5	**Insert, arrange**, and **evaluate** headings for webpage structure.	**K3,K4,K5,K6**
CO6	**Apply, organize**, and **evaluate** lists to effectively structure webp content.	**K3,K4,K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	1	0
CO2	9	9	3	3	1	0
CO3	9	9	9	3	3	3
CO4	3	9	9	9	3	3
CO5	3	3	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**36**	**36**	**34**	**26**	**18**
Weighted percentage of Course contribution to POs	**19.67%**	**19.67%**	**19.67%**	**18.58%**	**14.21%**	**8.87%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO3, PO5	PO4, PO6	--
CO5 / K5	PO1, PO2	PO5	PO3, PO6	--
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC17P- Web Design** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25IC18P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	WEB DESIGN LAB						

Course Description

Practical training in building and styling web pages using HTML, CSS, and design tools.

Course Objectives

1. Learn the basic structure of HTML documents, including tags, attributes, and elements.
2. Develop simple web pages using basic HTML elements like headings, paragraphs, and links.
3. Learn to create interactive forms using input elements, buttons, and form validation techniques.
4. Learn how to embed images, videos, and audio files into web pages using appropriate HTML tags.
5. Use internal and external CSS to style web pages, including fonts, colors, and layout design.
6. Learn how to validate and debug HTML code using browser developer tools and online validators.

List of Exercises

1. Introduction to HTML:

Write HTML code to develop a web page having the background in red and title "My First Page" in any othercolor.

Create a HTML document giving details of your name, age, telephone, address, TLC code & enrollment no.aligned in proper order?

Write HTML code to design a page containing a text in a paragraph give suitable heading style.

2.Tags in HTML Exercise:- FONT

Create a page to show different attribute of Font tag.

Create a page to show different attribute italic, bold, underline.

Design a page having background color given text color red and using all the attributes of font tab.

3. Tags in HTML Exercise:-PAGE

Write a HTML code to create a web page of blue color and display links in red color.Write HTML code to create a WebPages that contains an Image at its center.

Create a web page with appropriate content and insert an image towards the left hand side of the page when userclicks on the image. It should open another web page.

4: Tags in HTML Exercise:- href

1. Create a web Page using href tag having the attribute alink, vlink etc.
2. Create a web page, when user clicks on the link it should go to the bottom of the page.
3. Write a HTML code to create a web page of pink color and display moving message in red color.

5: Tags in HTML Exercise: LIST

1. Create a web page, showing an ordered list of name of your five friends.
2. Create a HTML document containing a nested list showing the content page of any book3.Create a web page, showing an unordered list of name of your five friends.

6: Tags in HTML Exercise: TABLE

1.Create a web page which should contain a table having two rows and two columns.2.Fill in the data in the table created by you in question 1.

2. create the following table in HTML with Dummy Data

Name of train	Place	Train No.	Time		Fair
			Arrival	Departure	

7: Frames in HTML Exercise:

Create a web page which should divide page into two equal frames

Frame1	Frame2

Create a web page which should generate following output:

FRAME1	FRAME2
	FRAME3

Create a web page having two frames one containing lines and another with contents of the link. When link is clicked appropriate contents should be displayed on Frame 2.

Text Books:

1."Web Design with HTML, CSS, JavaScript and jQuery Set" by Jon Duckett, published by Wiley, 1st edition, 2015.

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3-4
UNIT III: Book 1: Chapters 5-6
UNIT IV: Book 1: Chapters 7-8
UNIT V: Book 1: Chapters 9-10

Reference Books:

1. "Responsive Web Design with HTML5 and CSS" by Ben Frain, published by Packt Publishing, 2nd edition, 2015.
2. "Don't Make Me Think: A Common Sense Approach to Web Usability" by Steve Krug, published by New Riders, 3rd edition, 2014.

Web Reference:

1. https://www.w3schools.com/html/
2. https://developer.mozilla.org/en-US/docs/Web/HTML
3. https://www.freecodecamp.org/learn/
4. https://html.com/
5. https://www.coursera.org/learn/web-design

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Recall and apply basic HTML tags for structuring a webpage.	**K1,K2,K3**
CO2	Demonstrate and format images, lists, and tables in a webpage..	**K2,K3**
CO3	Construct HTML forms with input elements.	**K3**
CO4	Implement semantic HTML5 tags for accessibility and structure.	**K3**
CO5	Integrate multimedia elements (audio, video) into webpages.	**K3**
CO6	Validate and debug HTML code for responsiveness and accessibility.	**K3,K4**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	1	0
CO2	9	9	3	3	1	0
CO3	9	9	9	3	3	3
CO4	3	9	9	9	3	3
CO5	3	3	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**36**	**36**	**34**	**26**	**18**
Weighted percentage of Course contribution to POs	**19.67%**	**19.67%**	**19.67%**	**18.58%**	**14.21%**	**8.87%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC18P- Web Design Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25IC19P	Core-Practical	3	3	25	75	100
Programme Code: BVCUG2020							
Course Title	JAVA PROGRAMMING LAB						

Course Description

Hands-on practice in Java programming focusing on object-oriented concepts and application development.

Course Objectives

1. To understand the basics of JAVA programs and their execution.
2. To learn concepts like inheritance, packages and interfaces.
3. To understand the life cycle of the applets, database connectivity and their functionality.
4. Work with data structures such as arrays, lists, and stacks.
5. Handle exceptions and debug Java programs.
6. Perform file I/O operations with Java.

List of Exercises

1. Write a program to sort the given numbers using arrays.
2. Write a program to implement the FIND and REPLACE operations in the given text.
3. Write a program to implement a calculator to perform basic arithmetic Operations, doing with constructers
4. Write a program to find the student's percentage and grade using command line arguments.
5. Write a program to draw circle or triangle or square using polymorphism and inheritance.
6. Implement multiple inheritance concepts in java using interface, you can choose your own example of a company or education institution or a general concept which requires the use of interface to solve a particular problem.
7. Write a program to create threads and perform operations like start, stop, suspend, resume
8. Write a program to develop an applet to play multiple audio clips using multithreading.
9. Write a program to retrieve employee data from a file
10. Write a program to retrieve student data from a Database

Text Books:

1. S. Sagayaraj, R. Denis, P. Karthik & D. Gajalakshmi, "Constructive Java Programming", Universities Press, 2021.

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3-4
UNIT III: Book 1: Chapters 5-6
UNIT IV: Book 1: Chapters 7-8
UNIT V: Book 1: Chapters 9-10

Reference Books:

1. E. Balagurusamy, "Programming with JAVA", Tata McGraw Hill, New Delhi, 2019.
2. Malina Pronto, "Java: How To Learn Java Programming: How To Improve Your Java Coding In 2020/2021: 5 Programming Languages To Learn For Beginners In Tech", Independently Published, 2020.

Web Reference:

1. https://www.javatpoint.com/java-tutorial
2. https://www.w3schools.com/java/

3. https://docs.oracle.com/javase/tutorial/
4. https://www.geeksforgeeks.org/java/
5. https://www.tutorialspoint.com/java/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Develop java programs to understand the OOP concepts.	**K1**
CO2	Write java programs for classes and objects.	**K2**
CO3	Develop simple programs with multiple threads.	**K3**
CO4	Write java programs using Applets.	**K4**
CO5	Develop java programs to connect databases and files.	**K5**
CO6	Utilize Java's Networking API for Client-Server Applications	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	3	3	1	0
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	3	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**30**	**36**	**34**	**25**	**18**
Weighted percentage of Course contribution to POs	**19.57%**	**16.30%**	**19.57%**	**18.48%**	**13.59%**	**9.78%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC19P- Java Programming Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25IC20P	Core-Practical	3	3	25	75	100
Programme Code: BVCUG2020							
Course Title	DATABASE SYSTEMS LAB						

Course Description

Practical experience in database design, SQL queries, and data management using DBMS tools.

Course Objective

1. Learn the basic concepts of relational databases, including tables, columns, rows, and relationships.
2. Develop proficiency in writing SQL queries for data retrieval, manipulation, and aggregation.
3. Learn how to design and create relational databases, including tables, indexes, and constraints.
4. Understand and apply data integrity concepts using primary keys, foreign keys, and normalization techniques.
5. Learn techniques for improving SQL query performance and database optimization.
6. Gain hands-on experience with user management, backups, and security practices in MySQL.

List of Exercises:

1. Develop a SQL query to create, update and to insert data in databases
2. Use select statement to perform AND, OR, NOT Operators, WHERE clause.
3. Use select statement to perform UNION, INTERSECTION, MINUS.
4. Use select statement to perform Sorting and grouping.
5. Use select statement to perform Sub queries
6. Write a PL/SQL Program To Add Two Numbers
7. Construct a PL/SQL Program for Prime Number
8. Formulate PL/SQL Program to Find Factorial of a Number
9. Create PL/SQL Program for Swap two Numbers
10. PL/SQL Program to Print Patterns

Text Books:

1."Database System Concepts" by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, published by McGraw-Hill Education, 7th edition, 2019.

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3-4
UNIT III: Book 1: Chapters 5-6
UNIT IV: Book 1: Chapters 7-8
UNIT V: Book 1: Chapters 9-10

Reference Books:

1."Modern Database Management" by Jeffrey A. Hoffer, V. Ramesh, Heikki Topi, published by Pearson, 12th edition, 2020.
2."SQL and Relational Theory" by C. J. Date, published by O'Reilly Media, 1st edition, 2019.

Web Reference:

1. https://www.geeksforgeeks.org/mysql-tutorial/
2. https://www.tutorialspoint.com/mysql/
3. https://www.w3schools.com/sql/
4. https://dev.mysql.com/doc/
5. https://www.codecademy.com/learn/learn-sql

OURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Recall the basic SQL commands and their usage.	**K1**
CO2	Explain the key features and characteristics of PL/SQL.	**K2**
CO3	Apply SQL concepts to create and manage database solutions.	**K3**
CO4	Analyze and design relational databases using MySQL and apply normalization techniques for data efficiency.	**K4**
CO5	Create and manage PL/SQL constructs like stored procedures, functions, triggers, and cursors for business logic.	**K5**
CO6	Evaluate SQL queries, optimize performance, and troubleshoot issues in database management and transactions.	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	9	9	3	3	1	0
CO3	9	9	9	3	3	3
CO4	3	3	9	9	3	3
CO5	3	3	9	9	9	3
CO6	3	3	3	9	9	9
Weightage	**36**	**30**	**34**	**33**	**25**	**18**
Weighted percentage of Course contribution to POs	**19.46%**	**16.22%**	**18.38%**	**17.84%**	**13.51%**	**9.73%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1	PO2, PO3	PO4	PO5, PO6
CO2 / K2	PO1, PO2	PO3, PO4	PO5, PO6	--
CO3 / K3	PO1, PO2, PO3	PO4, PO5	PO6	--
CO4 / K4	PO3, PO4	PO1, PO2, PO5	PO6	--
CO5 / K5	PO3, PO4, PO5	PO1, PO2	PO6	--
CO6 / K6	PO4, PO5, PO6	PO1, PO2, PO3	--	--

The COs and POs for the **U25IC20P-Database Systems Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25IC21P	Core-Practical	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	INFOBAHN LAB						

Course Description

Practical exploration of internet technologies, web browsing, online communication, and networking tools.

Course Objective

1. Learn the basic concepts of computer networks, protocols, and communication models.
2. Gain knowledge of the structure and components of the internet, including IP addresses, DNS, and routing.
3. Learn to build, deploy, and troubleshoot web applications using HTML, CSS, JavaScript, and web servers.
4. Study the principles of data transmission, including TCP/IP, data encoding, and packet switching.
5. Gain practical experience in working with networking protocols such as HTTP, FTP, SMTP, and others.
6. Understand essential security practices for protecting networks and data, including encryption, firewalls, and secure communication protocols.

List of Exercises:

1. Create and configure an email account and set up Google Classroom.
2. Schedule, host, and manage a meeting using Google Meet.
3. Use a search engine to find, download files, and access an online library.
4. Analyze a business website for content, usability, and insights.
5. Book a railway or flight ticket online and review the booking process.
6. Design a promotional banner using HTML5 Canvas.
7. Set up and evaluate a basic web server using Apache or Nginx.
8. Implement and secure HTTP client-server communication in JavaScript.
9. Assess an online booking system for security, usability, and privacy.
10. Compare search engines and evaluate best practices for online privacy.

Text Books:

1."The Lab Book" by Darren Wershler, Lori Emerson, and Jussi Parikka, published by University of Minnesota Press, 1st edition, 2022.

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3-4
UNIT III: Book 1: Chapters 5-6
UNIT IV: Book 1: Chapters 7-8
UNIT V: Book 1: Chapters 9-10

Reference Books:

1."The Lab Book" by Darren Wershler, Lori Emerson, and Jussi Parikka, published by University of Minnesota Press, 1st edition, 2022.
2."City of Bits: Space, Place, and the Infobahn" by William J. Mitchell, published by The MIT Press, Revised edition, 1996.

Web Reference:

1. https://www.w3schools.com/
2. https://www.netacad.com/
3. https://www.geeksforgeeks.org/computer-network-tutorials/
4. https://developer.mozilla.org/
5. https://www.coursera.org/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Create and configure an email account and set up Google Classroom.	**K3**
CO2	Schedule, host, and manage a meeting using Google Meet.	**K3**
CO3	Use a search engine to find, download files, and access an online library.	**K2**
CO4	Analyze a business website for content, usability, and insights.	**K4**
CO5	Book a railway or flight ticket online and review the booking process.	**K5**
CO6	Design a promotional banner using HTML5 Canvas.	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	1	0	0	0
CO2	3	3	1	0	0	0
CO3	3	3	3	1	0	0
CO4	3	3	3	9	3	3
CO5	3	3	3	3	9	3
CO6	3	3	3	3	9	9
Weightage	**18**	**18**	**14**	**16**	**21**	**15**
Weighted percentage of Course contribution to POs	**16.98%**	**16.98%**	**13.21%**	**15.09%**	**19.81%**	**14.15%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2	PO3	PO4, PO5, PO6	--
CO2 / K2	PO1, PO2	PO3	PO4, PO5, PO6	--
CO3 / K3	PO1, PO2, PO3	PO4	PO5, PO6	--
CO4 / K4	PO4	PO1, PO2, PO3, PO5	PO6	--
CO5 / K5	PO5	PO1, PO2, PO3, PO4	PO6	--
CO6 / K6	PO5, PO6	PO1, PO2, PO3, PO4	--	--

The COs and POs for the **U25IC21P- Infobahn Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25ICAC2P	Allied-Practical	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	ACCOUNTING PACKAGE LAB						

Course Description

Hands-on training in accounting software for managing financial records and transactions.

Course Objective

1. Learn how to navigate the interface and utilize key tools for accounting tasks.
2. Practice inputting various types of financial transactions such as sales, purchases, expenses, and income.
3. Learn how to use the software to produce balance sheets, income statements, and cash flow reports.
4. Practice reconciling bank statements with accounting software to ensure accurate records.
5. Use software tools to analyze financial performance and make informed business decisions.
6. Explore how to automate repetitive tasks like invoicing, payroll, and tax calculations within the accounting package.

List of Exercises:

1. Trial Balance
2. Stock Creation
3. Voucher Creation
4. Pay slip Preparation
5. TDS (Tax Deducted Sources)
6. GST (Goods and Service Tax)
7. Purchase Entry
8. Sales Entry
9. Accounting Package

Text Books:

1."Financial Accounting Plus NEW MyAccountingLab with Pearson eText -- Access Card Package (9th Edition)" by C. William Thomas, published by Pearson, 9th edition, 2013.

UNIT I: Chapters 1-2;
UNIT II: Chapters 3-4;
UNIT III: Chapters 5-6;
UNIT IV: Chapters 7-8;
UNIT V: Chapters 9-10.

Reference Books:

1. "QuickBooks Online: Comprehensive, Academic Year 2024-2025" by Patricia Hartley, MBA, published by Labyrinth Learning, 1st edition, 2024.
2."LAB BOOK Plus" by BVT Publishing, published by BVT Publishing, 1st edition, 2020.

Web Reference:

1. https://quickbooks.intuit.com/
2. https://www.coursera.org/learn/accounting-with-quickbooks
3. https://www.tallyeducation.com/
4. https://learning.tallysolutions.com/
5. https://www.accountingtools.com/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand accounting concepts and software.	**K1**
CO2	Explain the use and features of accounting software for financial transactions.	**K2**
CO3	Create and manage financial records.	**K3**
CO4	Process accounts and generate financial statements.	**K3**
CO5	Analyze financial reports for decision-making.	**K4**
CO6	Evaluate the integration of accounting software with business functions for accurate financial reporting.	**K2**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	1	0	0	0	0
CO2	3	3	1	0	0	0
CO3	3	3	3	3	0	0
CO4	3	3	3	3	3	0
CO5	3	3	3	9	3	3
CO6	3	3	3	3	9	3
Weightage	**18**	**16**	**13**	**18**	**15**	**6**
Weighted percentage of Course contribution to POs	**18.37%**	**16.33%**	**13.27%**	**18.37%**	**15.31%**	**6.12%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25ICAC2P- Accounting Package Lab – Allied III** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	U25IC22P	Core-Practical	2	1	25	75	100
Programme Code: BVCUG2020							
Course Title	CASE STUDY-III						

Course Description

In-depth examination of complex real-world cases to develop advanced analytical and decision-making skills.

Course Objectives

1. Understand the Objective
2. Choose a Relevant Topic
3. Structure Your Case Study
4. Use Supporting Evidence
5. Format and Style
6. Review and Edit
7. Add Visuals

LIST OF AREAS

1. Website Layout Design
2. Web Page Styling
3. Digital Interface Design
4. Responsive Design
5. Web Visual Design
6. Online Platform Design

தேசியக்கல்லூரி (தன்னாட்சி), திருச்சிராப்பள்ளி – 620 001
தமிழாய்வுத்தறை

இளநிலை – B.VOC - இரண்டாம் ஆண்டு – நான்காம் பருவம்

இணையத்தமிழ் U22ICT4

கற்பிக்கும் காலம் : 2 மணி **தரப்புள்ளிகள் : 2**

கற்பித்தலின் நோக்கங்கள்

1. இணையம் பற்றிய அறிமுகத்தினைத் தருதல்
2. மின்னஞ்சல் முகவரி உருவாக்கம் பற்றி எடுத்துரைத்தல்.
3. உலாவிகள், தேடுபொறிகள் குறித்துக் கற்பித்தல்
4. தமிழ் விக்கிப்பிடியாவைப் பயன்படுத்த, உருவாக்க வழிகாட்டுதல்.
5. வலைப்பூ உருவாக்கம், படைப்புகளை வெளியிட நெறிகாட்டுதல்.
6. இணைய சேவைகள் குறித்து விழிப்புணர்வு உண்டாக்குதல்.

அலகு – 1

இணைய அறிமுகம் - இணையத்தின் வரலாறும் வளர்ச்சியும் - இன்றைய வாழ்விற்கு இணையத்தின் பங்கு – தமிழ் இணையத்தின் தொடக்கம் - வளர்ச்சிப் போக்குகள் - இணைய மாநாடுகள்.

அலகு – 2

இணைய இயங்குதளங்கள் - இணையத்தில் தகவல் உலாவுதல், தகவல் தேடுதல் - தமிழ்த் தேடு பொறிகள் - இணையத்தில் தரவுகளைப் பதிவிறக்குதல் பதிவேற்றுதல்.

அலகு – 3

தகவல் பரிமாற்றம் - மின்னஞ்சல் உருவாக்கமும் அதன் பயன்பாடுகளும் - மின்னஞ்சல் முகவரி உருவாக்கம் - கடவுச்சொல் உருவாக்கமும் மாற்றமும் – மின்னஞ்சலின் உள்ளடக்கம் - அமைப்புகள் - மின்னஞ்சலைத் தமிழில் பயன்படுத்துதல் - மின்னஞ்சலில் தமிழ்க்கலைச்சொற்கள்.

அலகு -4

விக்கிப்பீடியா அறிமுகம் - விக்கிப்பீடியா பெயர்க்காரணம் - விக்கிப்பீடியாவின் பயன்பாடுகள் - தமிழ் விக்கிப்பீடியா – விக்கிப்பீடியா கணக்கு உருவாக்கம் - விக்கிப்பீடியாவில் கட்டுரை எழுதுதலும் புதுப்பித்தலும்

அலகு – 5

வலைப்பூ அறிமுகம் - அதன் வளர்ச்சியும் வகைப்பாடும் - தமிழ் வலைப்பூக்கள் - வலைப்பூ உருவாக்கம் - வலைப்பூ தொடங்குவதற்கான அடிப்படைகள் - வலைப்பூத் தலைப்பும் முகவரியும் - பக்க வடிவமைப்புத் தெரிவு – குறிப்பிடத்தகுந்த தமிழ் வலைப்பூக்கள்

பாடநூல்கள்

1. துரை. மணிகண்டன், 2012, தமிழ் கணினி இணையப் பயன்பாடுகள், கமலினி பதிப்பகம், கச்சமங்கலம்.

பார்வை நூல்கள்

1. சு. துரையரசன், இணையமும் இனிய தமிழும், இசைப்பதிப்பகம், கும்பகோணம்.
2. துரை. மணிகண்டன், இணையத்தில் தமிழ் வலைப்பூக்கள், கௌதம் பதிப்பகம், சென்னை.
3. மு. பொன்னவைக்கோ, இணையத்தமிழ்வரலாறு, பாரதிதாசன் பல்கலைக்கழகம், திருச்சிராப்பள்ளி.

கற்றலின் பயன்கள்

CO1	இணையத்தின் செயல்பாடு குறித்து அறிவர்	**KI**	**PO1, PO2**
CO2	தமிழ்சார் தரவுகளை இணையத்தில் திறம்படத் தேடப் பழகுவர்.	**K2**	**PO4**
C03	மின்னஞ்சல் சேவையின் கூறுகளை உணர்வர்	**K3**	**PO5**
CO4	விக்கிப்பீடியா பற்றிய தகவல்களை அறிவர்	**K4**	**PO1, PO2, PO3**
CO5	வலைப்பூப் பக்கத்தை உருவாக்கித் தங்கள் படைப்புகளைப் பதிவேற்றி வெளியிடுவர்.	**K5**	**PO3**
C06	பல்வேறுபட்ட இணைய சேவைகளைப் பயன்படுத்தித் தெளிவர்	**K6**	**PO2**

Mapping COS Consistency with PSO3

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11	PSO12
CO1	1.5	1.5	1	1.5	1.5	1.5						
CO2	1	1.5	1.5	1	1.5	1						
C03	1.5	1	1.5	1.5	1	1.5						
CO4	1.5	1.5	1	1.5	1.5	1.5						
CO5	1.5	1	1.5	1.5	1.5	1.5						
C06	1.5	1.5	1	1.5	1.5	1.5						

Mapping COS Consistency with POs

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11	PSO12
CO1	1.5	1.5	1.5	1	1.5	1.5						
CO2	1	1.5	1	1.5	1.5	1						
C03	1.5	1.5	1.5	1.5	1.5	1.5						
CO4	1.5	1.5	1.5	1.5	1.5	1.5						
CO5	1	1.5	1	1.5	1	1						
C06	1.5	1.5	1.5	1.5	1.5	1.5						

Semester	Course Code	Title of the Course										Hours	Credit
III	U22ICT4	இணையத்தமிழ்										2	2
Course Outcomes (Cos)	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)						Mean Scores of COs
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	
CO1	1.5	1.5	1.5	1	1	1.5	1.5	1.5	1	1.5	1.5	1	1.35
CO2	1	1.5	1	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.5	1.30
C03	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.35
CO4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1	1.45
CO5	1	1.5	1	1.5	1	1.5	1.5	1	1.5	1.5	1.5	1.5	1.30
C06	1	1.5	1	1.5	1.5	1.5	1	1.5	1.5	1	1.5	1.5	1.30
Mean Overall Score													1.33

Curriculam Design and Development / பாடத்திட்ட வடிவமைப்பும் மேம்பாடும்

LOCAK /உள்ளுர் படைப்பு சார்ந்தது	REGIONAL /மாநிலப் பொருண்மை தழுவியது	NATIONAL / தேசியப் பார்வை கொண்டது	GLOBAL / உலகளாவிய பான்மை உடையது
	✓✓✓		

Level and Correlation / பாடத்திட்ட நிலையும் தொடர்பும்

HIGH / வலுவான இயைபுடையது	MEDIUM / மிதமான தொடர்பு கொண்டது	LOW / குறைவான பான்மை உடையது
	✓✓✓	

கூடுதலாகப் படிக்க வேண்டிய நூல்

புவனேஸ்வரி, காம்கேர் கே, 2009, இண்டர்நெட் A to Z, விகடன் பிரசுரம், சென்னை.

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25ICE4	English	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	GENERAL ENGLISH - IV						

LEARNING OBJECTIVES:

LO1	To help learners imbibe goal-setting attitude.
LO2	To enable them to understand the value of integrity.
LO3	To help them deal with emotions.
LO4	To teach the learners to frame sentences using tenses.
LO5	To enhance reporting skills.

SYLLABUS

Unit No.	Unit Title & Text	No. of Periods for the Unit
I	**GOAL SETTING (UNICEF)** **Life Story** 1.1 Why I Write - George Orwell **Short Essay** 1.2 On the Love of Life – William Hazlitt	20
II	**INTEGRITY** **Short Story** 2.1The Taxi Driver – K.S. Duggal **Extract from a play** 2.2 The Quality of Mercy (Trial Scene from the Merchant of Venice - Shakespeare)	20
III	**COPING WITH EMOTIONS** **Poem** 3.1 Phenomenal Woman – Maya Angelou **Reader's Theatre** 3.2 The Giant's Wife A Tall Tale of Ireland – William Carleton	20
IV	**Language Competency Sentences** 4.1 Simple Sentences 4.2 Compound Sentences 4.3 Complex Sentences	15
V	**Drafting Speeches** 5.3 Welcome Address 5.4 Vote of Thanks	15

COURSE OUTCOMES:

On completion of this course, students will;

CO1	Determine their goals	PO1,PO7
CO2	Identify the value of integrity.	PO1,PO2,PO10
CO3	Deal with emotions.	PO4,PO6,PO9
CO4	Frame grammatically correct sentences	PO4,PO5,PO6
CO5	Write cohesive reports.	PO3,PO8

TEXT BOOKS (LATEST EDITIONS):

1.	Oxford Practice Grammar , John Eastwood, Oxford University Press
2.	Cambridge Grammar of English , Ronald Carter and Michael McCarthy
3.	William Hazlitt. *"On the Love of Life"* (from *The Round Table*, January 15, 1815), originally collected in *The Round Table: A Collection of Essays on Literature, Men, and Manners*, Archibald Constable, 1817.
4	K. S. Duggal. *"The Taxi Driver"* (short story), in *Modern Indian Short Stories* (ed. K. S. Duggal), Indian Council for Cultural Relations, 1975–1976.
5	William Carleton. *"The Giant's Wife: A Tall Tale of Ireland,"* included in *Fairy and Folk Tales of the Irish Peasantry* (selected and edited by W. B. Yeats), Roberts Brothers, 1888.

WEB RESOURCES:

1	http:/www.gradesaver.com/George-orwell-essays/study/summary
2	O' Henry. A Retrieved Reformation. https://americanenglish.state.gov/files/ae/resource_files/a-retrieved-reformation.pdf
3	Maya Angelou. Phenomenal Woman. https://www.poetryfoundation.org/poems/48985/phenomenal-woman
4	The Quality of Mercy, https://poemana1ysis.com
5	https://www'.oxfordscho1ar1yeditions.coin/disp1ay/10.1093/actrade/9780199235742.book.1/actrade-9780199235742-div1-106- William Hazilitt
6	http://kketexts.blogspot.com/2024/12/the-taxi-driver-karthar-singh-duggal.html

MAPPING WITH PROGRAMME OUTCOMES:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 – Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to POs	3.0	3.0	3.0	3.0

The COs and POs for the **U25ICE4- General English - IV** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25IC23	Core-III	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	SOFTWARE ENGINEERING						

Course Description

Introduction to software development processes, methodologies, and project management principles.

Course Objective

1. Learn and apply design patterns, architectural styles, and best practices in software development.
2. Gain proficiency in unit testing, integration testing, and system testing to ensure software quality.
3. Study agile, DevOps, and other methodologies to manage the software development lifecycle efficiently.
4. Learn how to use tools like Git for source code management and collaboration.
5. Understand techniques for estimating, planning, and tracking software projects to deliver on time and within budget.
6. Focus on the principles of scalability, performance optimization, and long-term maintainability of software systems.

UNIT I

Introduction to Software Engineering: Definitions - Size factors – Quality and Productivity Factors – Managerial Issues. The Product: The evolving role of software – Software – characteristics-applications.

UNIT II

The process: Software engineering: A Layered Technology – The software process–Evolutionary softwareprocess models: Spiral model.

UNIT III

Planning a Software Project: Defining the problem – Developing a solution Strategy–Planning the developmentProcess – Planning an organizational structure.

UNIT IV

Software Cost Estimation: Software Cost Factors – Software Cost Estimation Technique- Delphi model.

UNIT V

Software Design: Fundamental Design Concepts – Modules and Modularization Criteria –Design Notation –Design techniques –Structured coding techniques – coding style – Documentation guidelines.

Text Books:

1."Introduction to Software Engineering" by Wiley, published by Wiley, 1st edition, 2019.

UNIT I: Chapters 1-2
UNIT II: Chapters 3-4
UNIT III: Chapters 5-6
UNIT IV: Chapters 7-8
UNIT V: Chapters 9-10

Reference Books:

1. "Software Engineering: Theory and Practice" by Shari Lawrence Pfleeger, Joanne M. Atlee, published by Pearson, 5th edition, 2014.

2."Software Engineering: Design and Development" by Kendall E. Arnold, published by Wiley, 1st edition, 2019.

Web Reference:

1. https://www.geeksforgeeks.org/software-engineering/
2. https://www.coursera.org/courses?query=software%20engineering
3. https://www.edx.org/learn/software-engineering
4. https://www.sei.cmu.edu/
5. https://stackoverflow.com/questions/tagged/software-engineering

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Explain a process model for a software project development	**K1,K2**
CO2	Prepare the SRS, Design document, Project plan of a given software system	**K3**
CO3	Apply Project Management and Requirement analysis, Principles to software project development.	**K3,K4**
CO4	Analyze the cost estimate and problem complexity using various estimation techniques	**K4**
CO5	Demonstrate the ability to use **software project management tools** to plan, monitor, and control software projects, ensuring adherence to timelines, budget, and quality standards.	**K3,K4,K5**
CO6	Develop an understanding of **software testing methodologies** (e.g., unit testing, integration testing, system testing, acceptance testing) and their importance in delivering quality software.	**K2,K3**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	3	0	0
CO3	3	9	9	3	3	0
CO4	3	3	9	9	3	0
CO5	3	3	9	9	9	3
CO6	3	3	3	3	3	9
Weightage	**24**	**30**	**34**	**27**	**18**	**12**
Weighted percentage of Course contribution to POs	**17.14%**	**21.43%**	**24.29%**	**19.29%**	**12.86%**	**8.57%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC23-Software Engineering** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25ICAC3	Allied	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	E-COMMERCE AND IT'S APPLICATIONS						

Course Description

Study of e-commerce concepts, models, and technologies used in online business applications.

Course Objectives

1. Understand the fundamentals and types of e-commerce models.
2. Learn the key technologies used in e-commerce platforms.
3. Develop basic e-commerce websites and online stores.
4. Explore digital marketing strategies for e-commerce growth.
5. Study legal, ethical, and security issues in e-commerce transactions.
6. Analyze various e-commerce business models and strategies.

UNIT – I

E–Commerce–Electronic Commerce – E–Commerce types – E–Commerce and world at the large – E Commerce Case studies: Intel, Amazon.

UNIT – II

Electronic Mail –Internet addresses – Multipurpose Internet mail Extension –Email User agent.

UNIT – III

EDI– Costs and benefits – Components of EDI Systems – EDI implementation issues – EDIFACT.

UNIT – IV

Cyber Security – Cyber Attacks – Hacking – SSL – Authentication and assurance of DATA integrity – Cryptographic based solution – Digital Signatures – VPN.

UNIT – V

Electronic Payment Systems – Payment gateway – internet banking – the SET protocol – E–Cash – E–Cheque – Elements of electronics payments

Text Books

1. **E-Commerce 2021: Business, Technology, Society** by Kenneth C. Laudon and Carol Guercio Traver; 16th Edition, 2022.

   UNIT I: Chapters 1-2
   UNIT II: Chapters 3-4
   UNIT III: Chapters 5-6
   UNIT IV: Chapters 7-8
   UNIT V: Chapters 9-10

Reference Books

1. **E-Commerce and Its Applications** by U. Pandey, Rahul Srivastava, and Saurabh Shukla; 2nd Edition, 2017.
2. **E-Commerce: Business, Technology, Society** by Kenneth C. Laudon and Carol Guercio Traver; 15th Edition, 2021.

Web Reference:

1. http://www.coursera.org/courses?query=e-commerce
2. http://www.investopedia.com/terms/e/ecommerce.asp
3. http://www.pearson.com/store/p/e-commerce-business-technology-society/P100000608945
4. http://books.google.com/books?id=YWQ1XAQAAQBAJ
5. http://www.amazon.com/Commerce-Strategy-Technologies-Applications/dp/007044532X

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Gain a comprehensive understanding of the E-Commerce landscape.	**K1**
CO2	Business models, and the technology and infrastructure underpinnings of the business.	**K2**
CO3	Leverage the E-Commerce platforms to enhance current business or incubate new businesses.	**K3**
CO4	Gain an understanding on how innovative use of the E-Commerce can help developing competitive advantage.	**K4**
CO5	Develop an understanding on how internet can help business grow.	**K5**
CO6	Discuss the Electronic Payment Systems and Internet.	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	3	0	0
CO3	3	9	9	3	3	0
CO4	3	3	9	9	3	0
CO5	3	3	9	9	9	3
CO6	3	3	3	3	3	9
Weightage	**24**	**30**	**34**	**27**	**18**	**12**
Weighted percentage of Course contribution to POs	**17.14%**	**21.43%**	**24.29%**	**19.29%**	**12.86%**	**8.57%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25ICAC3- E-Commerce and its Applications** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25ICNME1	NME	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	FUNDAMENTALS OF INFORMATION TECHNOLOGY						

Course Description

Overview of basic IT concepts, including hardware, software, networks, and data management.

Course Objectives

1. Learn the foundational principles of information technology, including hardware, software, and networking.
2. Gain knowledge of how computers are designed, including the components and how they interact to process information.
3. Learn introductory programming concepts and languages, such as Python or Java, to solve problems with technology.
4. Understand how to work with common operating systems (Windows, macOS, Linux) and essential software tools (word processors, spreadsheets, etc.).
5. Understand the basics of database design, management, and querying using tools like SQL.
6. Study the principles of cybersecurity, data protection, and ethical concerns in the use of information technology.

UNIT - I:

Introduction to Computers - Generation of Computers - Classification of Digital Computer - Anatomy of Digital Computer.

UNIT-II:

CPU and Memory - Secondary Story Devices - Input Devices - Output Devices.

UNIT-III:

Introduction to Computer Software - Programming Language - Operating Systems - Introduction to Database Management System.

UNIT - IV:

Computer Networks - WWW and Internet - Email - Web Design

UNIT - V:

Computers at Home, Education, Entertainment, Science, Medicine and Engineering - Introduction to Computer Security - Computer Viruses, Bombs, Worms.

Text Books

1. Alexis Leon and Mathews Leon, Fundamentals of Information Technology, Vikas Publishing House Pvt. Ltd, 2009

UNIT I: Chapters 1-2
UNIT II: Chapters 3-4
UNIT III: Chapters 5-6
UNIT IV: Chapters 7-8
UNIT V: Chapters 9-10

Reference Books

1. Fundamentals of Computers and Information Technology, M.N Doja,2005
2. Ramesh Bangia,"Computer Fundamentals and Information Technology", Laxmi Publications Pvt Limited, 2008.

Web Reference:

1. https://www.comptia.org/certifications/it-fundamentals
2. https://www.geeksforgeeks.org/
3. https://www.tutorialspoint.com/information_technology_basics.htm
4. https://www.w3schools.com/
5. https://www.khanacademy.org/computing

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand basic concepts and terminologies in IT and IT-enabled services.	**K1,K2**
CO2	Understanding personal computers and their operations.	**K1,K2**
CO3	Understand operating systems and database management	**K2,K3**
CO4	Comprehend about WWW, internet, email and web design concepts	**K2,K3**
CO5	Respond to computer security issues.	**K3,K4**
CO6	Develop Problem-Solving and Troubleshooting Skills	**K3,K4,K5**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	3	0	0
CO3	3	9	9	3	3	0
CO4	3	3	9	9	3	0
CO5	3	3	9	9	9	3
CO6	3	3	3	3	3	9
Weightage	**24**	**30**	**34**	**27**	**18**	**12**
Weighted percentage of Course contribution to POs	**17.14%**	**21.43%**	**24.29%**	**19.29%**	**12.86%**	**8.57%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25ICNME1- Fundamentals of Information Technology** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25IC24P	Core-III	4	2	25	75	100
Programme Code: BVCUG2020							
Course Title	PHP PROGRAMMING						

Course Description

Introduction to PHP for server-side scripting and dynamic web development.

Course Objectives

1. Learn the basic syntax, variables, operators, and control structures used in PHP.
2. Develop skills to collect and process user input using PHP forms and manage form data.
3. Learn how to define and use functions to organize and optimize code in PHP.
4. Learn how to connect PHP with databases (e.g., MySQL) to store, retrieve, and manipulate data.
5. Understand how to maintain state in a web application using sessions and cookies in PHP.
6. Apply PHP to create dynamic and interactive web pages by integrating HTML, CSS, and PHP logic.

UNIT I

PHP: Server side scripting Language: Basic syntax – Types – Variables – Constants – Expressions – Operators – Control Structures

UNIT II

PHP: Functions – Classes and Objects –PHP access Specifiers.

UNIT III

Advanced concepts in PHP– Sessions, Cookies, PHP server Variables

UNIT IV

File Handling –Working with Database connectivity (MySQL commands)

UNIT V

File Transfer Protocols.

Text Books:

1."PHP: The Right Way" **by** Josh Lockhart**,** published by CreateSpace**,** 1st edition**,** 2019**.**

UNIT I: Chapters 1-3
UNIT II: Chapters 4-5
UNIT III: Chapters 6-7
UNIT IV: Chapters 8-9
UNIT V: Chapter 10

Reference Books:

1. "Learning PHP, MySQL & JavaScript" **by** Robin Nixon**,** published by O'Reilly Media**,** 5th edition**,** 2018**.**
2. "PHP Objects, Patterns, and Practice" by ** Mika Schwartz**, published **by** Wrox**,** 2nd edition**,** 2019**.**

Web Reference:

1. https://www.php.net/
2. https://www.w3schools.com/php/
3. https://www.tutorialspoint.com/php/
4. https://phptherightway.com/
5. https://www.php.net/docs.php

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand PHP syntax and basic programming concepts.	**K1,K2**
CO2	Use control structures like loops and conditionals in PHP.	**K3,K4**
CO3	Handle user input and forms using PHP.	**K3,K4**
CO4	Connect PHP with databases to perform CRUD operations.	**K3,K4**
CO5	Manage sessions and cookies in PHP applications.	**K3,K4**
CO6	Apply PHP security practices to safeguard web applications.	**K4,K5**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	3	0	0
CO3	3	9	9	3	3	0
CO4	3	3	9	9	3	0
CO5	3	3	9	9	9	3
CO6	3	3	3	3	3	9
Weightage	**24**	**30**	**34**	**27**	**18**	**12**
Weighted percentage of Course contribution to POs	**17.14%**	**21.43%**	**24.29%**	**19.29%**	**12.86%**	**8.57%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC24P- PHP Programming** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25IC25P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	PHP PROGRAMMING LAB						

Course Description

Hands-on practice in developing dynamic web applications using PHP and server-side scripting.

Course Objectives

1. Apply basic PHP syntax and constructs, including variables, loops, conditionals, and functions, in a practical environment.
2. Practice collecting and processing user input from web forms using PHP to enhance interactivity in applications.
3. Learn to connect PHP with a MySQL database to perform CRUD (Create, Read, Update, Delete) operations in web applications.
4. Develop practical skills in managing user sessions and cookies to maintain state across multiple web pages.
5. Implement PHP error handling, including custom error messages, to improve the robustness of web applications.
6. Build dynamic, data-driven websites by combining PHP with HTML and CSS to generate content based on user interaction or database queries.

List of Exercises:

1. Develop a PHP program for Date and time functions.
2. Develop a PHP program and check message passing mechanism between pages.
3. Develop a college application form using MYSQL table.
4. Develop a PHP program using parsing functions (use Tokenizing)
5. Develop a PHP program and check Regular Expression
6. Develop a PHP program and Check HTML functions.
7. Develop a PHP program for Hashing functions.
8. Develop a PHP program for Network functions.
9. Develop a PHP program using session.

Text Books:

1."PHP: The Right Way" **by** Josh Lockhart**,** published by CreateSpace**,** 1st edition**,** 2019**.**

UNIT I: Chapters 1-3
UNIT II: Chapters 4-5
UNIT III: Chapters 6-7
UNIT IV: Chapters 8-9
UNIT V: Chapter 10

Reference Books:

1. "Learning PHP, MySQL & JavaScript" **by** Robin Nixon**,** published by O'Reilly Media**,** 5th edition**,** 2018**.**
2."PHP Objects, Patterns, and Practice" by ** Mika Schwartz**, published **by** Wrox**,** 2nd edition**,** 2019**.**

Web Reference:

1. https://www.php.net/
2. https://www.w3schools.com/php/
3. https://www.tutorialspoint.com/php/

4. https://phptherightway.com/
5. https://www.php.net/docs.php

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	To understand the fundamentals of PHP syntax, data types, and operators.	**K1,K2**
CO2	To gain hands-on experience in developing dynamic web applications using PHP.	**K3,K4**
CO3	To learn how to handle forms, user input, and implement form validation in PHP.	**K3,K4**
CO4	To understand and implement PHP's interaction with MySQL databases for creating data-driven web pages	**K3,K4**
CO5	To develop skills in managing user sessions, cookies, and maintaining state across multiple pages.	**K3,K4**
CO6	To understand and implement PHP security features, such as input validation, protection against SQL injection, and secure session management.	**K4,K5**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	3	0	0
CO3	3	9	9	3	3	0
CO4	3	3	9	9	3	0
CO5	3	3	9	9	9	3
CO6	3	3	3	3	3	9
Weightage	**24**	**30**	**34**	**27**	**18**	**12**
Weighted percentage of Course contribution to POs	**17.14%**	**21.43%**	**24.29%**	**19.29%**	**12.86%**	**8.57%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC25P- PHP Programming Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25IC26P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	JAVASCRIPT LAB						

Course Description

Practical training in JavaScript for creating interactive and dynamic web pages.

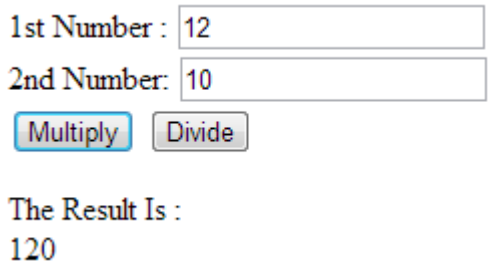
Course Objectives

1. Practice writing JavaScript code to implement basic programming concepts like variables, loops, and functions.
2. Learn how to use JavaScript to dynamically change HTML and CSS on web pages to create interactive experiences.
3. Implement event listeners to respond to user actions like clicks, mouse movements, or keyboard input.
4. Gain experience using arrays, objects, and other data structures to store and manipulate data effectively.
5. Apply JavaScript to validate user input in web forms, ensuring data integrity before submission.
6. Learn how to fetch data from external APIs using JavaScript, making your applications more dynamic by interacting with remote data sources.

List of Exercises:

1. Write a JavaScript program to display the current day and time in the following format.
2. Write a JavaScript program to print the contents of the current window.
3. Write a JavaScript program to rotate the string 'w3resource' in right direction by periodically removing one letter from the end of the string and attaching it to the front.
4. Write a JavaScript program to find 1st January is being a Sunday between 2014 and 2050.
5. Write a JavaScript program to calculate multiplication and division of two numbers (input from user).

   Sample form :

6. Write a JavaScript program to get the website URL (loading page).
7. Write a JavaScript program to create a new string from a given string changing the position of first and Last characters. The string length must be greater than or equal to 1.

Text Books:

1."JavaScript and JQuery: Interactive Front-End Web Development" by Jon Duckett, published by Wiley, 1st edition, 2014.

UNIT I: Chapters 1-3
UNIT II: Chapters 4-5
UNIT III: Chapters 6-7
UNIT IV: Chapters 8-9
UNIT V: Chapter 10

Reference Books:

1."Learning JavaScript Design Patterns" by Addy Osmani, published by O'Reilly Media, 1st edition, 2012.
2."JavaScript: The Definitive Guide" by David Flanagan, published by O'Reilly Media, 7th edition, 2020.

Web Reference:

1. https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide
2. https://www.w3schools.com/js/
3. https://javascript.info/
4. https://www.codecademy.com/learn/introduction-to-javascript
5. https://www.freecodecamp.org/learn/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand and apply the basic syntax and structure of JavaScript programming.	**K1,K2**
CO2	Use JavaScript to manipulate web page elements and handle events.	**K3,K4**
CO3	Implement JavaScript functions, arrays, and objects in practical applications	**K3,K4**
CO4	Apply DOM (Document Object Model) manipulation techniques to dynamically modify web content	**K3,K4**
CO5	Create interactive web applications using JavaScript for form validation and user input handling.	**K3,K4**
CO6	Debug JavaScript code effectively and apply best practices in JavaScript programming.	**K4,K5**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	3	0	0
CO3	3	9	9	3	3	0
CO4	3	3	9	9	3	0
CO5	3	3	9	9	9	3
CO6	3	3	3	3	3	9
Weightage	**24**	**30**	**34**	**27**	**18**	**12**
Weighted percentage of Course contribution to POs	**17.14%**	**21.43%**	**24.29%**	**19.29%**	**12.86%**	**8.57%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC26P-JavaScript Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25IC27P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	LATEX LAB						

Course Description

Hands-on training in LaTeX for creating professional documents, reports, and technical papers.

Course Objectives

1. Learn the basic syntax, including document classes, environments, and commands used in LaTeX.
2. Practice typesetting text, including paragraphs, headings, lists, and custom styles.
3. Learn to write and format complex mathematical formulas, equations, and symbols in LaTeX.
4. Understand how to create and format tables, figures, and captions within a LaTeX document.
5. Learn how to create bibliographies, manage references, and cite sources using tools like BibTeX or BibLaTeX.
6. Apply LaTeX to create reports, theses, or books with multiple sections, chapters, tables of contents, and pagination

List of Exercise

1. Demonstration of Bullets and numbering
2. List of items with different options
3. Demonstration of Bullets and numbering
4. List of items with different options
5. Demonstration of mathematical symbols and equations
6. Generate a train time table
7. Inserting picture in a document with alignments
8. Demonstration of various page styles
9. Draft a letter
10. Power point preparation: Five slides about your college

Text Books:

1. "The LaTeX Companion" by Frank Mittelbach, Michel Goossens, Johannes Braams, David Carlisle, & Chris Rowley, published by Addison-Wesley, 2nd edition, 2004.

UNIT I: Chapters 3-4
UNIT II: Chapters 4-5
UNIT III: Chapters 6
UNIT IV: Chapters 7-8
UNIT V: Chapter 9

Reference Books:

1."More Math Into LaTeX" by George Grätzer, published by Springer, 5th edition, 2016.
2."LaTeX Beginner's Guide" by Stefan Kottwitz, published by Packt Publishing, 1st edition, 2011.

Web Reference:

1. https://www.latex-project.org/
2. https://www.overleaf.com/
3. https://www.overleaf.com/learn
4. https://tex.stackexchange.com/
5. https://en.wikibooks.org/wiki/LaTeX

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the basics of LaTeX and set up a document.	**K1,K2**
CO2	Create well-formatted documents with text, tables, and figures.	**K3,K4**
CO3	Write and integrate complex mathematical expressions.	**K3,K4**
CO4	Use advanced LaTeX packages for document design.	**K4,K5**
CO5	Generate references, citations, and bibliographies in LaTeX.	**K3,K4**
CO6	Create professional presentations using LaTeX.	**K3,K4**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	3	0	0
CO3	3	9	9	3	3	0
CO4	3	3	9	9	3	0
CO5	3	3	9	9	9	3
CO6	3	3	3	3	3	9
Weightage	**24**	**30**	**34**	**27**	**18**	**12**
Weighted percentage of Course contribution to POs	**17.14%**	**21.43%**	**24.29%**	**19.29%**	**12.86%**	**8.57%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC27P-Latex Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25IC28P	Core-Practical	3	3	25	75	100
Programme Code: BVCUG2020							
Course Title	AI TOOLS IN PRACTICE LAB						

Course Description

Practical experience with AI tools and applications for real-world problem solving.

Course Objectives

1. Learn the foundational concepts and types of AI tools used in real-world applications.
2. Understand the key functionalities and use cases of popular AI tools like TensorFlow, PyTorch, and Hugging Face.
3. Gain hands-on experience in using AI tools to develop and implement machine learning models.
4. Explore how AI tools can solve business problems and improve processes in various industries.
5. Assess the performance, strengths, and weaknesses of different AI tools in practical scenarios.
6. Learn to automate AI processes and workflows using popular tools and frameworks.

List of Exercise

Generative AI:

1. **Conversational AI for Data Insights:** Use ChatGPT or Bard to generate insights and summaries from a provided dataset or text.
2. **AI Art Creation:** Design creative visuals using DALL-E or Runway ML based on a given theme or project brief.
3. **Custom Chatbot Development:** Build and test a simple FAQ chatbot using Google Dialogflow.
4. **Content Creation with Generative AI:** Use Jasper AI or Writesonic to create an engaging blog post or advertisement for a given topic.
5. **AI-Generated Storytelling:** Create a short interactive story using tools like StoryLab.ai or NovelAI.

AI Applications:

1. **Sentiment Analysis:** Analyze the sentiment of social media posts or reviews using IBM Watson NLU or MonkeyLearn.
2. **Speech-to-Text and Text-to-Speech:** Convert an audio file into text using Google Speech-to-Text API and generate synthetic speech using Text-to-Speech tools.
3. **Image Recognition Model:** Train a basic image classifier using Google's Teachable Machine.
4. **AutoML for Predictions:** Use Google Cloud AutoML to build and deploy a predictive model for a simple dataset.
5. **AI for Document Enhancement:** Utilize Grammarly or Quillbot to refine and paraphrase a provided text document.

Text Books:

1. "Artificial Intelligence: A Modern Approach"by Stuart Russell and Peter Norvig, Pearson, 4th Edition, 2020.

UNIT I: Chapters 1-2
UNIT II: Chapters 3-4
UNIT III: Chapters 5-6
UNIT IV: Chapters 7-8
UNIT V: Chapter 9-10

Reference Books:

1. "Generative AI in Practice: 100+ Amazing Ways Generative Artificial Intelligence Is Changing Business and Society" by Bernard Marr, Wiley, 1st Edition, 2023.
2. "Artificial Intelligence"** by David R. Martinez and Burke M. Kifle, The MIT Press, 1st Edition, 2024.

Web Reference:

1. https://ai.google
2. https://www.ibm.com/watson
3. https://azure.microsoft.com/en-us/overview/ai-platform
4. https://huggingface.co
5. https://www.tensorflow.org

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Identify and describe various AI tools and technologies used in practice.	**K1**
CO2	Explain the functionality and application of AI tools in real-world scenarios.	**K2**
CO3	Apply AI tools to solve practical problems in various domains such as healthcare, finance, or education.	**K3**
CO4	Analyze the ethical, social, and technical implications of AI tools in practice.	**K4**
CO5	Evaluate the performance and effectiveness of AI tools for different business and technological needs.	**K5**
CO6	Design and implement AI solutions using appropriate tools to ad specific challenges.	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	9	9	3	3	0	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**36**	**40**	**39**	**30**	**24**
Weighted percentage of Course contribution to POs	**16.85%**	**20.22%**	**22.47%**	**21.91%**	**16.85%**	**13.48%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC28P- AI Tools in Practice Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	U25IC29P	Core-Practical	2	1	25	75	100
Programme Code: BVCUG2020							
Course Title	CASE STUDY-IV						

Course Description

Critical analysis of advanced case studies to enhance strategic thinking and practical skills.

Course Objectives

1. Understand the Objective
2. Choose a Relevant Topic
3. Structure Your Case Study
4. Use Supporting Evidence
5. Format and Style
6. Review and Edit
7. Add Visuals

LIST OF AREAS

1. "Developing an Interactive Dynamic Website"
2. "Enhancing Engagement with a Dynamic Website"
3. A Practical Case Study in Web Development
4. "AI Integration in JavaScript & PHP
5. "Smart Web Apps with AI"
6. "AI-Powered Web Development"

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC30	Core-III	4	3	25	75	100
Programme Code: BVCUG2020							
Course Title	.NET FRAMEWORK						

Course Description

Introduction to the .NET Framework for building Windows and web applications using C# and related tools.

Course Objectives

1. Learn the fundamental components of the .NET Framework, including the Common Language Runtime (CLR) and the .NET class libraries.
2. Gain proficiency in C#, the primary language for .NET, and use it to develop console, desktop, and web applications.
3. Apply OOP principles like inheritance, polymorphism, and encapsulation in .NET-based applications.
4. Learn to interact with databases using ADO.NET, Entity Framework, and LINQ for data retrieval and manipulation.
5. Master techniques for handling errors and debugging .NET applications to ensure robustness and reliability.
6. Learn to create dynamic web applications with ASP.NET, including the development of web forms, MVC applications, and web services.

Unit I – Introduction

Overview of Microsoft .NET Framework - The .NET Framework components-The Common Language Runtime (CLR) Environment- The .NET Framework class Library - Getting Started with Visual Basic .net IDE -Visual basic language concept : variables, Constants, Data Types, Operators, Control Structures

Unit II - Introduction to Windows Common Controls

Working with Form - Properties: appearance, behavior, layout, windows style etc, methods and events - Differentiate procedure oriented, object oriented and event driven programming – Input box- Message box- Working with Common Tool Box Controls: Label , button, Textbox , Numeric Up Down , Check Box, Radio Button , Group Box , Date Time Picker, Masked Text box, Link Label - creating menu, inserting, deleting

Unit III -- In-Built FUNCTIONS and DIALOG BOX

Inbuilt Functions: Mathematical Functions-String manipulation - Dialog Boxes: Open File Dialog, Save File Dialog, Font Dialog, Color Dialog, Print Dialog - Sub Procedures and functions: declaring, passing and returning arguments, exiting from it, pass by value and pass by ref - - Multiple document Interface (MDI): MDI Parent form and child form.

Unit IV – Database Access using ADO.NET and ASP .NET

ADO .NET Object Model: Data provider - Dataset - ADO .NET Programming: Creating a Database Application, Creating Connection to a Database using ADO.NET, Populating Data in ADO.NET, Browsing Records, Data grid view, Editing, Saving, Adding and Deleting Records using bounded and unbounded.

Introduction to ASP.NET: Overview of ASP.NET framework, Application ASP.NET Life Cycle, page life cycle phases, Initialization, Instantiation controls on the page, ASP.NET Controls, Web forms, Web form controls ,server controls, client controls.

Unit V – Database connectivity in ASP.NET:

Architecture of ADO.NET, Connected and Disconnected Database. Create Connection using ADO.NET Objecodel, Connection Class, Command Class, Data Adapter Class, Dataset Class. Display data on data bound Controls and Data Grid. Database Accessing on web applications: Data Binding concept with web, creating data grid, Binding standard web server controls. Display data on web form using Data bound controls.

Text Books:

1."Pro C# 10 with .NET 6: Foundational Principles and Practices in Programming" by Andrew Troelsen and Phil Japikse, published by Apress, 11th edition, 2022.

UNIT I: Book 1: Chapters 1-4
UNIT II: Book 1: Chapters 5-9
UNIT III: Book 1: Chapters 10-13
UNIT IV: Book 1: Chapters 14-18
UNIT V: Book 1: Chapters 19-23

Reference Books:

1."C# 13 and .NET 9 – Modern Cross-Platform Development Fundamentals: Start building websites and services with ASP.NET Core 9, Blazor, and EF Core 9" by Mark J. Price, published by Packt Publishing, 1st edition, 2024.
2.".NET in Action, Second Edition" by Dustin Metzgar, published by Manning Publications, 2nd edition, 2023. Citeturnsearch

Web Reference:

1.https://learn.microsoft.com/en-us/dotnet/
2.https://www.pluralsight.com/paths/dotnet
3.https://www.dotnetperls.com/
4.https://www.tutorialspoint.com/dotnet/index.htm
5.https://stackoverflow.com/questions/tagged/.net-framework

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the architecture and components of the .NET Framework.	**K1,K2**
CO2	Develop and deploy applications using Visual Studio and .NET languages such as C# or VB.NET.	**K3,K4**
CO3	Implement object-oriented programming principles in .NET applications.	**K3,K4**
CO4	Create and manage databases using ADO.NET for data-driven applications.	**K3,K4**
CO5	Develop web applications using ASP.NET and related technologies (e.g., Web Forms, MVC).	**K3,K4**
CO6	Implement security, exception handling, and debugging in .NET applications.	**K4,K5**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	9	9	3	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**40**	**39**	**33**	**24**
Weighted percentage of Course contribution to POs	**16.48%**	**16.48%**	**21.98%**	**21.42%**	**18.13%**	**13.19%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC30-.Net Framework** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC31E	Elective	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	COMPUTER GRAPHICS						

Course Description

Introduction to computer graphics concepts, techniques, and applications in visual computing.

Course Objective

1. Learn the fundamentals of computer graphics, including graphics systems, devices, and applications.
2. Understand and apply transformations like translation, rotation, and scaling to objects in 2D and 3D spaces.
3. Study the creation and rendering of models, including techniques like shading, lighting, and texture mapping.
4. Differentiate between raster and vector graphics, and learn when and how to use each for different types of visual content.
5. Learn key algorithms for line drawing, circle generation, and filling polygons in both 2D and 3D graphics.
6. Explore how computer graphics are used in fields like gaming, virtual reality, simulations, and computer-aided design (CAD).

UNIT I

A survey of computer graphics: Computer aided design – Presentation graphics–computer art – Entertainment - Education and training – Visualization –Image Processing – Graphical user interfaces.

UNIT II

Overview of graphics systems: Video display devices – Raster- scan systems – Random scan Systems–Graphics monitors and workstation – Input devices – Hard-copy devices –Graphics software.

UNIT III

Output primitives: Points and lines – Line-drawing algorithms – DDA algorithm–Bresenham's line algorithm – Circle-generating algorithms – Filled-area primitives–Boundary-fill algorithm.

UNIT IV

Attributes of output primitives: Line attributes – Area-fill attributes – Character attributes- Bundled attributes – Inquiry functions – Antialiasing.

UNIT V

Two-dimensional Geometric transformations: Basic transformations – Matrix representations – Composite transformations – Other transformations.

Text book:

1. "Fundamentals of Computer Graphics" by Steve Marschner and Peter Shirley, published by A K Peters/CRC Press, 5th edition, September 2021.

UNIT I: Book 1: Chapters 1-8
UNIT II: Book 1: Chapters 9-15
UNIT III: Book 1: Chapters 16-20
UNIT IV: Book 1: Chapters 21-26
UNIT V: Book 1: Chapters 27-30

Reference Book:

1. "Computer Graphics from Scratch" by Gabriel Gambetta, published by No Starch Press, 1st edition, 2021.
2. “Introduction to Computer Graphics" by David J. Eck, available as an online textbook, 2nd edition, 2019.

Web Reference:

1. https://www.udacity.com/course/computer-graphics--cs291
2. https://www.geeksforgeeks.org/computer-graphics/
3. https://thecodingtrain.com/
4. https://learnopengl.com/
5. https://www.opengl-tutorial.org/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Describe the basics of Computer Graphics, input and hard copy device and graphics software	**K1,K2**
CO2	Explain about Raster Scan and Random Scan system	**K2,K3**
CO3	Explain and illustrate the various algorithms like line drawing, DDA,Bresenham’setcs	**K2,K3**
CO4	Discuss about various attributes of output primitives like line attribute,AreaFill ,Character fill etc	**K2,K3**
CO5	Illustrate 2D Geometric Transformations and Explain Matrix representation	**K3,K4**
CO6	Describe and illustrate Clipping Operations like Line clipping, polygon clipping.	**K2,K3**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	9	9	3	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**40**	**39**	**33**	**24**
Weighted percentage of Course contribution to POs	**16.48%**	**16.48%**	**21.98%**	**21.42%**	**18.13%**	**13.19%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO3 / K3	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO4 / K4	PO1, PO2	PO5	PO2, PO6	PO3
CO5 / K5	PO1, PO2	PO6	PO5	--
CO6 / K6	PO1, PO2, PO3, PO4	PO5, PO6	--	--

The COs and POs for the **U25IC31-Computer Graphics** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC32E	Elective	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	CLOUD COMPUTING						

Course Description

Introduction to cloud computing concepts, services, and deployment models for scalable IT solutions.

Course Objective

1. Learn the basic concepts of cloud computing, including its definition, characteristics, and benefits.
2. Study the different cloud deployment models such as public, private, hybrid, and community clouds, and understand when to use each.
3. Understand the various cloud service models, including IaaS, PaaS, and SaaS, and their applications in real-world scenarios.
4. Gain knowledge about resource management in the cloud, including elasticity, scalability, and load balancing.
5. Explore key cloud security concepts, including data encryption, identity management, and compliance with cloud security standards.
6. Learn how to deploy and manage applications on cloud platforms like AWS, Azure, and Google Cloud, and integrate cloud-based services.

UNIT- I

Introduction to Cloud Computing, History and Evolution of Cloud Computing, Types of clouds: Private Publicand hybrid clouds. Cloud Computing architecture: Cloud computing infrastructure, Merits of Cloud computing,Cloud computing delivery models

UNIT- II

IaaS (Infrastructure as a Service)- Architecture

UNIT -III

PaaS (Platform as a Service))- Architecture

UNIT- IV

Saas(Software as a Service))- Architecture

UNIT- V

Cloud Virtualization: characteristics-hypervisor- storage- security Issue

Text book:

1. "Cloud Computing: Concepts, Technology, and Architecture" by Thomas Erl, published by Pearson, 2nd edition, August 13, 2023.

UNIT I: Book 1: Chapters 1-7
UNIT II: Book 1: Chapters 8-9
UNIT III: Book 1: Chapters 10-11
UNIT IV: Book 1: Chapters 12-13
UNIT V: Book 1: Chapters 17-19

Reference books:

1. "Cloud Computing: The Future of Computing Explained" by Douglas E. Comer, published by Chapman and Hall/CRC, 1st edition, July 1, 2021.
2. "Cloud Computing, Revised and Updated Edition" by Nayan B. Ruparelia, published by The MIT Press, 2023

Web Reference:

1. https://learn.microsoft.com/en-us/learn/modules/intro-to-cloud-computing/
2. https://aws.amazon.com/training/
3. https://www.coursera.org/specializations/cloud-computing
4. https://cloud.google.com/training
5. https://cloudacademy.com/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the Basics of Cloud Computing	**K1,K2**
CO2	Explore Cloud Service Providers	**K2,K3**
CO3	Implement Cloud Solutions	**K3,K4**
CO4	Manage Cloud Security	**K3,K4**
CO5	Understand Cloud Storage and Data Management	**K2,K3**
CO6	Evaluate Cloud Computing for Business Needs	**K4,K5**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	9	9	3	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**40**	**39**	**33**	**24**
Weighted percentage of Course contribution to POs	**16.48%**	**16.48%**	**21.98%**	**21.42%**	**18.13%**	**13.19%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC32-Cloud Computing** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25ICNME2	NME	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	BASICS OF INFORMATION SECURITY						

Course Description

Introduction to fundamental concepts of information security, including threats, vulnerabilities, and protection methods.

Course Objective

1. Learn the core principles of information security, including confidentiality, integrity, and availability (CIA triad).
2. Identify various security threats (e.g., malware, phishing) and vulnerabilities that can compromise systems and data.
3. Understand basic encryption techniques and cryptographic protocols used to protect data confidentiality and integrity.
4. Learn about securing networks, firewalls, VPNs, and intrusion detection systems to protect against unauthorized access and attacks.
5. Understand methods of user authentication, authorization, and access control mechanisms used to ensure secure access to systems.
6. Learn how to implement security policies, risk management strategies, and disaster recovery plans to protect information systems.

UNIT I

Attacks on Computers and Computer Security: Introduction, The need for security, Security approaches, Principles of security, Types of Security attacks, Security Mechanisms.

UNIT II

Cryptography: Concepts and Techniques: Introduction, plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography.

UNIT III

E-Mail Security: Pretty Good Privacy, S/MIME IP Security: IP Security overview, IP Security architecture.

UNIT IV

Intruders, Virus and Firewalls: Intruders, Intrusion detection, password management, Virus and related threats, Firewall design principles, Types of firewalls

UNIT V

Cyber Security: Introduction – Cyber security fundamentals – The 7 layers of cyber security –Mobile and Wireless Devices: Attacks on Mobile – Cell Phones – Cyber Crime Prevention Tips.

Text Books:

1. Sanil Nadkarni, “Fundamentals of Information Security: A complete go to guide for beginners”, BPB publications 2020.

UNIT I: Book 1: Chapters 1-6
UNIT II: Book 1: Chapters 7-12
UNIT III: Book 1: Chapters 13-16
UNIT IV: Book 1: Chapters 17-21
UNIT V: Book 1: Chapters 22-26

Reference books:

1. Cryptography and Network Security: Atul Kahate, Mc Graw Hill, 2 Edition Raef Meeuwise, "Cyber Security for beginners", Cyber Simplicity Ltd,2017.
2. Mark Merkow. "Information security-principles and practices, Pearson India,2007

Web Reference:

1. https://www.cybrary.it/course/intro-to-it-security/
2. https://www.sans.org/cyber-security-courses/information-security-fundamentals/
3. https://www.coursera.org/specializations/intro-cyber-security
4. https://www.edx.org/course/introduction-to-cyber-security-2
5. https://owasp.org/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Recall the fundamentals of Information Security and describe its importance.	**K1,K2**
CO2	**Identify** and **classify** different types of security threats.	**K2,K3**
CO3	**Explain** and **apply** various cryptographic techniques in real-world scenarios.	**K2,K3**
CO4	**Illustrate** security measures and tools used in protecting information.	**K2,K3**
CO5	**Design** and **evaluate** access control mechanisms for securing data.	**K2,K3**
CO6	**Assess** and **implement** risk management strategies in information security.	**K3,K4**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	9	9	3	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**40**	**39**	**33**	**24**
Weighted percentage of Course contribution to POs	**16.48%**	**16.48%**	**21.98%**	**21.42%**	**18.13%**	**13.19%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25ICNME2- Basics of Information Security** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U22SS	SS	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	SOFT SKILLS DEVELOPMENT						

NEED OF THE COURSE:

In today's rapidly changing world, technical knowledge alone is not sufficient for professional success and personal growth. Employers increasingly value candidates who demonstrate excellent communication, interpersonal, leadership, and emotional intelligence skills. The ability to work in teams, manage time, handle stress, and present oneself confidently is essential life skills for every individual. Therefore, offering a structured course on Soft Skills Development to all undergraduate students is vital to equip them with the competencies needed to excel in academic pursuits, career progression, and social interactions.

LEARNING OBJECTIVES:

By the end of this course, students will be able to:

1. Understand and assess their own personality traits, attitudes, perceptions, and values to foster personal growth.
2. Develop effective interpersonal skills to build strong relationships and collaborate successfully in team settings.
3. Acquire proficient communication skills across listening, speaking, reading, and writing, including professional e-mail writing.
4. Cultivate essential corporate skills such as positive body language, proper etiquette, effective time management, and stress management.
5. Prepare for career advancement by mastering resume writing, interview techniques, group discussion skills, and career planning strategies.
6. Set clear personal and professional goals, and develop action plans to achieve them confidently.

UNIT I: Know Thyself/ Understanding Self: Introduction to Soft skills-Self discovery-Developing positive attitude - Improving perceptions - Forming values

UNIT II: Interpersonal Skills/ Understanding Others: Developing interpersonal relationship - Team building - group dynamics - Net working - Improved work relationship

UNIT III: Communication Skills / Communication with others: Art of listening - Art of reading - Art of speaking - Art of writing - Art of writing e-mails - email etiquette

UNIT IV: Corporate Skills / Working with Others: Developing body language - Practising etiquette and mannerism - Time management - Stress management

UNIT V: Selling Self / Job Hunting: Writing resume/cv - interview skills -Group discussion - Mock interview - Mock GD – Goal setting - Career planning

TEXT BOOKS:

1. N. Krishnasamy, Manju Dhariwel and Lalitha Krishnasamy (2015). Mastering Communication Skills and Soft Skills – Bloomburg.

2. Meena.K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R. Publishers & Distributors, No, B-20 & 21, V.M.M. Complex, Chatiram Bus Stand, Tiruchirappalli- 620 002. (Phone No: 0431-2702824: Mobile No: 94433 70597, 98430 74472).

3. Alex K. (2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi- 110 055. Mobile No : 94425 14814 (Dr.K.Alex)

REFERENCE BOOKS:

1. **Maxwell, J. C.** (2019). *Developing the Leader Within You 2.0* (25th Anniversary ed.). HarperCollins Leadership.
2. **Covey, S. R.** (2019). *The 7 Habits of Highly Effective People* (30th Anniversary ed.). Free Press.
3. **Goleman, D.** (2015). *Emotional Intelligence* (15th Anniversary ed.). Bantam Books.
4. **Covey, S. R.** (2003). *Principle-Centered Leadership* (Updated ed.). Free Press.

COURSE OUTCOMES:

1. Develop proficiency in listening, speaking, reading, and writing skills in English.
2. Enhance soft skills and actively participate in a variety of communicative tasks and activities.
3. Comprehend texts effectively and identify both specific details and overall meaning.
4. Strengthen communicative abilities in both spoken and written forms of English.
5. Build interpersonal skills essential for maintaining healthy human relationships.
6. Cultivate corporate skills to foster leadership qualities and team spirit.

The COs and POs for the U22SS- Soft Skills Development course in the B.Voc (Information and Communication Technology) Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC33P	Core-Practical	3	3	25	75	100
Programme Code: BVCUG2020							
Course Title	.NET FRAMEWORK LAB						

Course Description

Hands-on practice in developing applications using the .NET Framework and C#.

Course Objectives

1. Gain hands-on experience with the core concepts of the .NET Framework, such as assemblies, namespaces, and the Common Language Runtime (CLR).
2. Practice writing, compiling, and debugging C# code in a .NET environment.
3. Implement and understand the principles of OOP, such as classes, inheritance, polymorphism, and encapsulation in C#.
4. Create basic Windows Forms or WPF applications, learning how to build graphical user interfaces (GUIs).
5. Work with file input/output (I/O) and data management using .NET libraries.
6. Understand how to connect and interact with databases using ADO.NET or Entity Framework in the .NET environment.

List of Experiments:

1. Write a program test and debug applications to use textbox, label, and button.
2. Write, test and debug applications to use radio button, checkbox, numericupdown and group box controls.
3. Write, test and debug application using rich text box, progress bar, masked text box, link label.
4. Write, test and debug applications using MDI.
5. Create and test connection using ado.net to view SQL express server/Microsoft Access/ Oracle/other database data in textbox etc controls.
6. Create connection view controls like data-gridview ,detailsview, formview controls.
7. Write programs using web Controls in Calendar.
8. Write, test and debug small application to add, edit, search, and delete record in database in bounded mode.

Text Books:

1."Pro C# 10 with .NET 6: Foundational Principles and Practices in Programming" by Andrew Troelsen and Phil Japikse, published by Apress, 11th edition, 2022.

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3-4
UNIT III: Book 1: Chapters 5-6
UNIT IV: Book 1: Chapters 7-8
UNIT V: Book 1: Chapters 9-10

Reference Books:

1."C# 13 and .NET 9 – Modern Cross-Platform Development Fundamentals: Start building websites and services with ASP.NET Core 9, Blazor, and EF Core 9" by Mark J. Price, published by Packt Publishing, 1st edition, 2024.
2.".NET in Action, Second Edition" by Dustin Metzgar, published by Manning Publications, 2nd edition, 2023. Citeturnsearch

Web Reference:

1. https://learn.microsoft.com/en-us/dotnet/
2. https://learn.microsoft.com/en-us/dotnet/framework/
3. https://learn.microsoft.com/en-us/visualstudio/
4. https://learn.microsoft.com/en-us/dotnet/core/dotnet-five
5. https://dotnet.microsoft.com/learn

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Recall**,** apply**,** and demonstrate vowel detection and input validation techniques.	**K1,K2,K3**
CO2	**Design, develop,** and **test** functional UI applications with basic controls.	**K3,K4,K5**
CO3	**Integrate, analyze**, and **optimize** advanced UI components into applications.	**K4,K5,K6**
CO4	**Execute, evaluate,** and **improve** CRUD operations using database connectivity.	**K3,K4,K5**
CO5	**Design, implement**, and **manage** databases in .NET for efficient handling.	**K3,K4,K5**
CO6	**Debug, test, deploy**, and **optimize** .NET applications using best practices	**K4,K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	9	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**48**	**40**	**33**	**24**
Weighted percentage of Course contribution to POs	**15.87%**	**15.87%**	**25.40%**	**21.16%**	**17.46%**	**12.70%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC33P-.Net Framework Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC34P	Core-Practical	3	3	25	75	100
Programme Code: BVCUG2020							
Course Title	R PROGRAMMING						

Course Description

Introduction to R for statistical computing, data analysis, and visualization.

Course Objective

1. Learn to clean, organize, and manipulate data using R.
2. Create insightful graphs and charts with R's visualization libraries like ggplot2.
3. Perform descriptive and inferential statistical analyses in R.
4. Understand core programming concepts, including loops, functions, and conditional statements in R.
5. Master techniques to import and export data from various formats (e.g., CSV, Excel, databases).
6. Explore and utilize popular R packages to enhance data analysis workflows.

List of Experiments:

1. Download and install R programming environment and install basic packages using the install.packages() command.
2. Learn the basics of R programming, including data types, variables, and operators.
3. Write a program to find a list of even numbers from 1 to n using R loops.
4. Create a function to print squares of numbers in a sequence.
5. Write a program to join columns and rows in a data frame using cbind() and rbind() in R.
6. Implement various string manipulation functions in R.
7. Implement different data structures in R, such as Vectors, Lists, and Data Frames.
8. Write a program to read a CSV file and analyze the data in the file using R.
9. Create a pie chart and bar chart using R.
10. Create a dataset and perform statistical analysis on the data using R.

Text books:

1. "R Programming: Statistical Data Analysis in Research" by J.P. Latham**,** published by Springer**,** 2024th edition**,** July 8, 2024**.**

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3-4
UNIT III: Book 1: Chapters 5-6
UNIT IV: Book 1: Chapters 7-8
UNIT V: Book 1: Chapters 9-10

Reference books:

1. Hands-On Programming with R"Garrett Grolemund,O'Reilly Media,1st Edition (2014)
2. "R for Data Science: Import, Tidy, Transform, Visualize, and Model Data",Hadley Wickham, Garrett Grolemund,O'Reilly Media,1st Edition (2016)

Web Reference:

1. https://www.r-project.org/
2. https://www.r-project.org/
3. https://www.rstudio.com/
4. https://cran.r-project.org/
5. https://education.rstudio.com/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Install and set up the R programming environment and explore its basic functionalities.	**K1,K2,K3**
CO2	Demonstrate knowledge of R programming fundamentals such as variables, data types, and operators.	**K2,K3,K4**
CO3	Apply loops and functions to solve programming problems in R.	**K3,K4,K5**
CO4	Manipulate data structures (Vectors, Lists, and Data Frames) and handle string operations effectively.	**K3,K4,K5**
CO5	Perform basic statistical analysis and create visualizations like charts and bar charts in R.	**K3,K4,K5**
CO6	Analyze data from CSV files and derive meaningful insights.	**K4,K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	9	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**48**	**40**	**33**	**24**
Weighted percentage of Course contribution to POs	**15.87%**	**15.87%**	**25.40%**	**21.16%**	**17.46%**	**12.70%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC34P-R Programming** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC35P	Core-Practical	4	3	25	75	100
Programme Code: BVCUG2020							
Course Title	GRAPHICS LAB - (WEB & ANIMATION SOFTWARE)						

Course Description

Practical training in web graphics and animation using design and multimedia software.

Course Objective

1. Learn to create and manipulate vector-based artwork using Adobe Illustrator.
2. Master typography tools for designing creative text-based elements.
3. Develop skills in creating frame-by-frame and timeline-based animations in Adobe Animate.
4. Implement interactivity in animations using simple scripting techniques.
5. Design responsive web layouts using Adobe Dreamweaver's tools.
6. Integrate HTML, CSS, and multimedia elements into functional web pages.

Illustrator:

1. Create and Edit Shapes.
2. Create with Drawing Tools
3. Color picker.
4. Add text to designs

Animate:

5. Managing color in a document.
6. Drawing with the brush tool.
7. Draw and animate with variable-width strokes.
8. Turn a sketch into an animation.

Dreamweaver:

9. Text Management
10. Tables – Layers
11. Creating menubar
12. Creating Pages and sites

Text books:

1. Mastering Inkscape - Elliot Mercer, Independently published, 1st Edition, 2024

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3-4
UNIT III: Book 1: Chapters 5-8
UNIT IV: Book 1: Chapters 9-12
UNIT V: Book 1: Chapters 13-116

Reference books:

1. Web Development and Design Foundations with HTML5 - Terry Felke-Morris, Pearson, 9th Edition, 2017
2. Adobe Creative Cloud Classroom in a Book - Joseph Labrecque, Adobe Press, 1st Edition, 2022

Web Reference:

1. https://www.adobe.com/products/illustrator.html
2. https://www.adobe.com/products/animate.html
3. https://www.adobe.com/products/dreamweaver.html
4. https://helpx.adobe.com/
5. https://helpx.adobe.com/animate/tutorials.html

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand shapes.	**K1,K2**
CO2	Implement drawing tools.	**K3,K4**
CO3	Animate images.	**K3,K4**
CO4	Apply and synthesize color management techniques.	**K2,K3,K5**
CO5	Implement, organize, and optimize text management.	**K3,K4,K5**
CO6	Design, develop, and assess table creation techniques.	**K3,K4,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	9	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**48**	**40**	**33**	**24**
Weighted percentage of Course contribution to POs	**15.87%**	**15.87%**	**25.40%**	**21.16%**	**17.46%**	**12.70%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC35P- Graphics Lab - (Web & Animation Software)** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC36P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	DATA VISUALIZATION TOOLS						

Course Description

Introduction to tools and techniques for visualizing data to support analysis and decision-making.

Course Objective

1. Understand the fundamentals of data visualization.
2. Learn to use popular data visualization tools.
3. Create interactive and insightful visualizations.
4. Apply best practices for effective data storytelling.
5. Explore different chart types and their applications.
6. Integrate data visualizations into reports and dashboards.

LAB EXERCISES:

1. Chart preparation using excel sheet
2. Data analysis using google sheet
3. Creating dashboard and story
4. Map creation
5. Union and intersection
6. Importing a table in power bi
7. Chart view in power bi
8. Map creation in power bi
9. Chart preparation using pdf file
10. Chart preparation using Rapid Minor

Text books:

1. "Hands-On Data Visualization: Interactive Storytelling from Spreadsheets to Code" – Jack Dougherty and Ilya Ilyankou, O'Reilly Media, 1st Edition, 2021.

UNIT I: Book 1: Chapters 1-3
UNIT II: Book 1: Chapters 4-6
UNIT III: Book 1: Chapters 7-8
UNIT IV: Book 1: Chapters 9-10
UNIT V: Book 1: Chapters 11-12

Reference books:

1."Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures" – Claus O. Wilke, O'Reilly Media, 1st Edition, 2019.
2."Effective Data Visualization: The Right Chart for the Right Data" – Stephanie D.H. Evergreen, SAGE Publications, 2nd Edition, 2019.

Web Reference:

1. https://www.tableau.com
2. https://powerbi.microsoft.com
3. https://www.qlik.com/us/products/qlikview
4. https://www.highcharts.com
5. https://www.visualizefree.com

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Analyze data using exploratory visualization	**K1**
CO2	Build commonly requested types of visualizations as well as more advanced visualizations using ground-up customization.	**K2**
CO3	Create useful, performant visualizations from real-world data sources, including large and complex datasets.	**K2**
CO4	Improve your own work through usability testing and iteration, with attention to context	**K3**
CO5	Select appropriate tools for building visualizations, and gain skills to evaluate new tools.	**K3**
CO6	Explain the regulator and business needs for statistical data	**K4,K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	9	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**48**	**40**	**33**	**24**
Weighted percentage of Course contribution to POs	**15.87%**	**15.87%**	**25.40%**	**21.16%**	**17.46%**	**12.70%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC36P- Data Visualization Tools** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC37P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	CLOUD INFRASTRUCTURE AND OPERATIONS LAB						

Course Description

Hands-on experience in managing cloud infrastructure, services, and deployment operations.

Course Objective

1. Learn the core concepts of cloud computing, including deployment models and service models (IaaS, PaaS, SaaS).
2. Gain knowledge of provisioning, configuring, and managing cloud resources.
3. Understand identity management, access control, and data protection in the cloud.
4. Use cloud monitoring tools to analyze performance and optimize resources.
5. Learn automation techniques using Infrastructure as Code (IaC) and cloud-native tools.
6. Implement backup, disaster recovery, and high-availability strategies.

LAB EXERCISES:

AWS Operations:

1. **Launch and Configure a Virtual Machine:** Create and manage an AWS EC2 instance, including setting up SSH access and installing software.
2. **Host a Static Website:** Use AWS S3 to deploy a static website and configure custom permissions.
3. **Relational Database Setup:** Set up a relational database using AWS RDS and connect it to a sample application.
4. **Serverless Application Development:** Create and deploy a serverless function using AWS Lambda, triggered by an S3 bucket event.
5. **Infrastructure Automation:** Use AWS CloudFormation to automate the creation of a multi-tier web application stack.

Google Cloud Operations:

1. **Launch a Virtual Machine:** Set up and configure a VM instance using Google Compute Engine and connect via SSH.
2. **Cloud Storage Solutions:** Deploy a static website using Google Cloud Storage with proper bucket configurations.
3. **Database Deployment:** Set up a database using Google Cloud SQL and connect it to a sample application.
4. **Containerized Application Deployment:** Use Google Kubernetes Engine (GKE) to deploy and scale a containerized web application.
5. **Serverless Workflow:** Implement a simple Google Cloud Function to process a task, such as uploading a file to Google Cloud Storage.

Text books

1. "Hybrid Cloud Infrastructure and Operations Explained"** by Sriram Rajendran, Packt Publishing, 1st Edition, 2022.

UNIT I: Book 1: Chapters 1-3
UNIT II: Book 1: Chapters 6-8
UNIT III: Book 1: Chapters 9-10
UNIT IV: Book 1: Chapters 11
UNIT V: Book 1: Chapters 12

Reference books:

1. The Cloud Computing Book: The Future of Computing Explained"** by Douglas Comer, Chapman and Hall/CRC, 1st Edition, 2021.
2. "OCI Oracle Cloud Infrastructure Operations Associate Certification Study Guide"** by SukumarChillakuru, Sybex, 1st Edition, 2021.

Web Reference:

1. https://aws.amazon.com/training/
2. https://learn.microsoft.com/en-us/training/
3. https://cloud.google.com/training
4. https://cloudacademy.com
5. https://www.acloudguru.com

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the fundamentals of cloud computing and cloud service models (IaaS, PaaS, SaaS).	**K1**
CO2	Explain the core components of cloud infrastructure and their functions.	**K3**
CO3	Implement and configure cloud infrastructure resources, such as storage, networking, and compute.	**K3**
CO4	Analyze cloud security risks and implement security best practices in cloud environments.	**K4**
CO5	Evaluate and optimize the performance, cost, and scalability of c infrastructure.	**K5**
CO6	Design and automate cloud operations and infrastructure manage using Infrastructure as Code (IaC).	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	9	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**48**	**40**	**33**	**24**
Weighted percentage of Course contribution to POs	**15.87%**	**15.87%**	**25.40%**	**21.16%**	**17.46%**	**12.70%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC37P- Cloud Infrastructure and Operations Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC38P	Core-Practical	2	1	25	75	100
Programme Code: BVCUG2020							
Course Title	CASE STUDY-V						

Course Description

Evaluation of complex real-world scenarios to develop advanced analytical and problem-solving skills.

Course Objectives

1. Understand the Objective
2. Choose a Relevant Topic
3. Structure Your Case Study
4. Use Supporting Evidence
5. Format and Style
6. Review and Edit
7. Add Visuals

LIST OF AREAS

1. Mini Project
2. Internship

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI	U25IC39	Core-III	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	DATA MINING AND WAREHOUSING						

Course Description

This course introduces the fundamentals of data mining and data warehousing, focusing on techniques for data analysis, pattern discovery, and efficient data storage and retrieval for decision-making.

Course Objective

1. Understand the fundamentals of data mining, including concepts, techniques, and tools.
2. Learn how to clean, transform, and prepare data for mining and analysis.
3. Grasp the concepts of data warehousing, including ETL (Extract, Transform, Load) processes and data models.
4. Explore key data mining techniques such as classification, clustering, regression, and association rule mining.
5. Learn how to handle large-scale datasets and integrate them into data warehouses for analysis.
6. Familiarize with popular data mining and warehousing tools like SQL, R, Python, and specialized software.

Unit I

Introduction – Data mining – Data mining functionalities – kinds of patterns can be mined – classification – major issues. Data warehouse – A multidimensional data model – Data warehouse architecture.

Unit II

Data pre-processing – Data cleaning – Data Integration and Transformation – Data Reduction – Discretization and concept hierarchy generation – Data mining primitives – Data mining Task.

Unit III

Association Rule Mining – Mining single dimensional Boolean association rules from transactional databases – Classification and prediction – Issues regarding classification and prediction.

Unit IV

Cluster Analysis – A categorization of Major clustering methods - Partitioning methods- Hierarchical methods – Grid based methods -Model based clustering methods.

Unit V

Applications and Trends in Data Mining – Data mining system products and Research prototypes – Additional themes on Data mining – Social Impacts of Data Mining – Trends in Data mining-Mining Spatial Databases.

Text Book:

1. Data Warehouse and Data Mining: Concepts, Techniques, and Real-Life Applications - Dr. Jugnesh Kumar, BPB Publications, 1st Edition, 2024

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3-4
UNIT III: Book 1: Chapters 5-6
UNIT IV: Book 1: Chapters 7
UNIT V: Book 1: Chapters 8-9

Reference Books:

1. Data Mining and Data Warehousing: Principles and Practical Techniques - Parteek Bhatia, Cambridge University Press, 1st Edition, 2019
2. Building a Scalable Data Warehouse with Data Vault 2.0 - Dan Linstedt & Michael Olschimke, Morgan Kaufmann, 1st Edition, 2015

Web Reference:

1. https://www.coursera.org/specializations/data-mining
2. https://learn.microsoft.com/en-us/sql/ssms/data-mining/data-mining-in-sql-server
3. https://www.mkp.com/data-mining
4. https://www.edx.org/learn/data-mining
5. https://www.tutorialspoint.com/data_mining/index.htm

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the basic concepts of Data Mining and Warehousing.	**K1,K2**
CO2	Understand classification in data mining.	**K2**
CO3	Able to identify the major clustering methods.	**K1**
CO4	Get the knowledge about applications and trends in Data Mining.	**K2**
CO5	Develop Skills in Data Preprocessing and Cleaning	**K3**
CO6	Analyze and Interpret Data Mining Results	**K4,K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	9	3	3	0
CO3	3	9	9	9	3	3
CO4	3	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	3	3	9	9	9	9
Weightage	**30**	**30**	**48**	**40**	**33**	**24**
Weighted percentage of Course contribution to POs	**15.87%**	**15.87%**	**25.40%**	**21.16%**	**17.46%**	**12.70%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC39- Data Mining and Warehousing** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI	U25IC40E	Elective	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	DIGITAL MARKETING						

Course Description

This course covers the basics of digital marketing, including SEO, social media, email marketing, and online advertising strategies to effectively promote products and services online.

Course Objective

1. Understand the fundamentals of digital marketing and its key components such as SEO, SEM, and social media marketing.
2. Learn strategies to improve website visibility and ranking on search engines.
3. Master techniques to build brand awareness and engage with audiences on platforms like Facebook, Instagram, and LinkedIn.
4. Understand how to create effective email campaigns to nurture leads and increase conversions.
5. Develop skills to create compelling content that attracts and retains customers.
6. Learn how to analyze digital marketing performance using tools like Google Analytics to optimize campaigns.

UNIT I

Introduction-Objectives-Components-Advantages and limitations of Digital marketing.

UNIT II

Digital marketing channels-Tools-Online Advertising plat forms Types.

UNIT III

Web Presence.

UNIT IV

Social Media platforms for marketing.

UNIT V

Tools and Analytics: Email Marketing-Mobile Marketing tools & platforms-Google Analytics-Facebook analytics.

Text Books:

1. Digital Marketing - Dave Chaffey & Fiona Ellis-Chadwick, Pearson, 8th Edition, 2022

UNIT I: Book 1: Chapters 1
UNIT II: Book 1: Chapters 2-3
UNIT III: Book 1: Chapters 4
UNIT IV: Book 1: Chapters 6
UNIT V: Book 1: Chapters 7-8

Reference Books:

1. Digital Marketing: Strategic Planning & Integration - Annmarie Hanlon, SAGE Publications, 3rd Edition, 2025
2. Epic Content Marketing - Joe Pulizzi & Brian W. Piper, McGraw-Hill Education, 2nd Edition, 2023

Web Reference:

1. https://learndigital.withgoogle.com/digitalgarage.
2. https://academy.hubspot.com/
3. https://moz.com/blog
4. https://www.coursera.org/specializations/digital-marketing
5. https://neilpatel.com/blog/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Able to understand the key concepts of Digital Marketing.	**K2**
CO2	Able to understand advantages and limitations in Digital marketing.	**K2**
CO3	Able to identify the different types of digital marketing.	**K1**
CO4	Get the knowledge about applications and trends in digital marketing.	**K2**
CO5	Develop and Manage Email Marketing Campaigns	**K3,K5**
CO6	Analyze and Measure Digital Marketing Performance	**K4,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	3	3	1	0
CO3	3	9	9	3	3	1
CO4	3	3	9	9	9	3
CO5	1	3	9	9	9	9
CO6	1	3	9	9	9	9
Weightage	**26**	**30**	**42**	**34**	**31**	**22**
Weighted percentage of Course contribution to POs	**15.12%**	**17.44%**	**24.42%**	**19.77%**	**18.02%**	**12.79%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25ICE40- Digital Marketing** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI	U25IC41	Core-III	3	3	25	75	100
Programme Code: BVCUG2020							
Course Title	INTERNET OF THINGS						

Course Description

This course explores the Internet of Things (IoT), focusing on connected devices, sensors, communication technologies, and their applications in smart systems.

Course Objective

1. Learn the fundamental components and architecture of IoT systems, including sensors, networks, and data processing.
2. Explore various communication protocols used in IoT devices, such as MQTT, HTTP, and CoAP.
3. Understand the importance of securing IoT devices and networks, covering encryption, authentication, and risk management.
4. Learn how to collect, process, and analyze data from IoT devices for decision-making and automation.
5. Understand how to integrate IoT devices with cloud platforms for data storage, processing, and remote monitoring.
6. Gain practical experience in building simple IoT applications using development platforms and sensors.

UNIT I

Introduction to IoT: What is IoT, IoT architecture, Characteristics of IOT systems, Prevalent IoT architectures, IoT applications, Overview of different technologies involved for IoT realization.

UNIT II

History of IoT: The transition from mainframes and personal computing, Planet lab and origins of distributed computing; Robotics, AI and Cyber Computing Infrastructure; M2M communications; P2P networks; Universal identification and RFID.

UNIT III

IOT state of the art: The IoT ecosystem and landscape; IOT business models and its usage in various domains; IOT platforms; Security; Test methodologies and Risks.

UNIT IV

IoT Characteristics and use cases: Consumer and enterprise use cases.

UNIT V

IoT DOMAINS: Smart Home, Smart Buildings, smart cities, IoT in telecommunications, smart manufacturing, IoT in environment monitoring, smart vehicles, IoT in healthcare, smart farming, IoT in enterprises, smart transportation, smart energy, smart retail and logistics

Text Books:

1. Introduction to Internet of Things (IoT) – Ahmed Banafa, River Publishers, 1st Edition, 2023

UNIT I: Book 1: Chapters 1
UNIT II: Book 1: Chapters 2
UNIT III: Book 1: Chapters 3
UNIT IV: Book 1: Chapters 4
UNIT V: Book 1: Chapters 5

Reference Books:

1. Practical Internet of Things Networking: Understanding IoT Layered Architecture – Rolando Herrero, Springer, 1st Edition, 2023
2. New Frontiers in Cloud Computing and Internet of Things – Various authors, Springer, 1st Edition, 2022

Web Reference:

1. https://www.coursera.org/
2. https://www.udemy.com/
3. https://www.edx.org/
4. https://internetofthingsagenda.techtarget.com
5. https://www.ibm.com/internet-of-things

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the basic concepts and architecture of IoT	**K1,K2**
CO2	Gain hands-on experience with IoT devices and microcontrollers.	**K3**
CO3	Learn to connect IoT devices to networks and cloud platforms.	**K3**
CO4	Implement basic data processing techniques and analytics on data collected from IoT devices.	**K4**
CO5	Apply IoT security and privacy principles.	**K3**
CO6	Design and deploy IoT applications for real-world use cases.	**K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	3	9	9	3	3	1
CO3	3	9	9	9	3	3
CO4	1	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	1	3	9	9	9	9
Weightage	**20**	**30**	**48**	**40**	**33**	**25**
Weighted percentage of Course contribution to POs	**13.51%**	**20.27%**	**32.43%**	**27.02%**	**22.29%**	**16.89%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PSO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC41- Internet of Things** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI	U25IC42	Core-III	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	HARDWARE AND TROUBLESHOOTING						

Course Description

This course covers computer hardware components and provides hands-on training in system assembly, maintenance, and troubleshooting techniques.

Course Objective

1. Understand the function and purpose of key hardware components (CPU, RAM, motherboard, storage, etc.).
2. Learn how to safely assemble, disassemble, and replace hardware components.
3. Develop skills to identify and troubleshoot common hardware failures.
4. Learn preventive maintenance techniques, including cleaning and upgrading components.
5. Gain knowledge of BIOS/UEFI settings and troubleshoot boot failures.
6. Familiarize with software and hardware diagnostic tools for effective troubleshooting.

UNIT I

Introduction to PC Architecture: Study of PC-AT/ATX System, Pentium, Core, Core 2 Cord, Core 2 Duo, I3, I5,I7 Processor.

UNIT II

Basics of Processor and CPU Block Diagram of Computer and Computer Generation, Motherboards, Chipset and Controllers, BIOS and the Boot Process, Computer Memory.

UNIT III

Internal Components: IDE and SATA Devices: Hard Disk Drive and CD/DVDs Drives, Expansion Cards: LAN Card, IDE Card, VGA and SVGA Cards, Sound Card, Interface Cards, Internal Ports.

UNIT IV

External Components: Monitors:-LCD and LED Displays, Printers and Scanners: - Inkjet Printer, LaserPrinter, Photo Scanner, Documents Scanner, Bar Code Scanner, External Modem, Ports and Connectors, Batteries, Power supply, Pen Drives, SCSI interface devices.

UNIT V

Network Components: Introduction of Network Cable like UTP, STP, Fiber Optics, Hub, Unmanageable Switch, Manageable Switch, Router, Modem, Wi-Fi, Access Point, PCI Wireless Card.

Text Books:

1. “Complete A+ Guide to IT Hardware and Software" by Cheryl A. Schmidt and Christopher Lee, Pearson IT Certification, 8th Edition, 2022.

UNIT I: Book 1: Chapters 1
UNIT II: Book 1: Chapters 2-3
UNIT III: Book 1: Chapters 4
UNIT IV: Book 1: Chapters 5
UNIT V: Book 1: Chapters 6

Reference Books:

1. A+ Guide to Hardware" by Jean Andrews, Cengage Learning, 9th Edition, 2016.
2. "Computer Organization and Design RISC-V Edition: The Hardware Software Interface" by David A. Patterson and John L. Hennessy, Morgan Kaufmann, 2nd Edition, 2020.

Web Reference:

1. https://www.tomshardware.com
2. https://www.howtogeek.com
3. https://www.pcworld.com
4. https://support.microsoft.com
5. https://www.computerhope.com

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Identify fundamental hardware components and their functions.	**K1**
CO2	Explain the working principles of various computer hardware and peripherals.	**K2**
CO3	Apply troubleshooting techniques to diagnose common hardware issues.	**K3**
CO4	Analyze system errors and failures to determine effective solutions.	**K4**
CO5	Evaluate different troubleshooting methods and recommend the best approach.	**K5**
CO6	Design and implement a preventive maintenance plan for computer hardware.	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	9	9	3	3	1	0
CO3	3	9	9	9	3	1
CO4	1	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	1	3	9	9	9	9
Weightage	**26**	**30**	**42**	**40**	**31**	**22**
Weighted percentage of Course contribution to POs	**15.12%**	**17.44%**	**24.42%**	**23.26%**	**18.02%**	**12.79%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PSO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC42-Hardware and Troubleshooting** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI	U25IC43P	Core-Practical	3	3	25	75	100
Programme Code: BVCUG2020							
Course Title	DATA MINING LAB -WEKA						

Course Description

This lab course provides practical experience in data mining techniques using WEKA, focusing on data preprocessing, classification, clustering, and evaluation.

Course Objective

1. Learn the basic concepts of data mining, including classification, clustering, regression, and association rule mining.
2. Gain practical experience using Weka software for data preprocessing, model building, and evaluation.
3. Learn techniques for cleaning, normalizing, and transforming data to prepare it for mining in Weka.
4. Implement and evaluate various classification algorithms (e.g., Decision Trees, Naive Bayes) using Weka.
5. Explore clustering techniques (e.g., k-means) and association rule mining (e.g., Apriori) in Weka.
6. Learn to assess the performance of data mining models using cross-validation, confusion matrices, and accuracy measures.

List of Exercises

1. Create a table [Employee, Weather Table] with the help of Data Mining Tool Weka.
2. Apply Pre-Processing Technique to the Training data set of Table [Employee, Weather].
3. Normalize Table [Employee, Weather] data using Knowledge Flow.
4. Finding Association Rules for Buying Data (ApplyAprioriAlgorithm).
5. Construct Decision Tree for Table [Weather / Customer data] [Banking data / Employee data]
7. Apply Clustering technique on Tables.
8. Apply simple K-Means algorithm on Tables.

Text Book:

1. Data Warehouse and Data Mining: Concepts, Techniques, and Real-Life Applications - Dr. Jugnesh Kumar, BPB Publications, 1st Edition, 2024

   UNIT I: Book 1: Chapters 1
   UNIT II: Book 1: Chapters 2
   UNIT III: Book 1: Chapters 3
   UNIT IV: Book 1: Chapters 4
   UNIT V: Book 1: Chapters 5

Reference Books:

1. Data Mining and Data Warehousing: Principles and Practical Techniques - Parteek Bhatia, Cambridge University Press, 1st Edition, 2019
2. Building a Scalable Data Warehouse with Data Vault 2.0 - Dan Linstedt & Michael Olschimke, Morgan Kaufmann, 1st Edition, 2015

Web Reference:

1. https://www.cs.waikato.ac.nz/ml/weka/
2. https://waikato.github.io/weka-wiki/
3. https://www.kdnuggets.com/
4. https://www.tutorialspoint.com/weka/index.htm
5. https://machinelearningmastery.com/weka-for-machine-learning/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Identify core data mining techniques and their application in real-tim systems.	**K1**
CO2	Test and verify code functionality using VB.net and Weka/R tools.	**K2**
CO3	Apply text mining techniques to analyze and derive insights from data warehouses.	**K3**
CO4	Design and implement multi-dimensional data models using Oracle.	**K4**
CO5	Develop R-based programs for solving association rule problems.	**K3**
CO6	Implement clustering and classification algorithms, and assess their performance.	**K5/K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	3	9	3	3	1	0
CO3	3	9	9	9	3	1
CO4	1	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	1	3	9	9	9	9
Weightage	**20**	**30**	**42**	**40**	**31**	**22**
Weighted percentage of Course contribution to POs	**12.27%**	**18.40%**	**25.77%**	**24.54%**	**18.98%**	**13.50%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PSO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC43P-Data Mining Lab -Weka** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	U25IC44P	Core-Practical	3	2	25	75	100
Programme Code: BVCUG2020							
Course Title	MONGODB LAB						

Course Description

This lab course offers hands-on experience with MongoDB, focusing on CRUD operations, data modeling, indexing, and aggregation in a NoSQL environment.

Course Objective

1. Learn to install and configure MongoDB for local and cloud environments.
2. Understand how to design and structure data using collections and documents in MongoDB.
3. Perform basic Create, Read, Update, and Delete operations using MongoDB shell and drivers.
4. Master querying techniques to retrieve and filter data efficiently using MongoDB's query language.
5. Use MongoDB's aggregation framework to perform advanced data analysis and transformations.
6. Learn about indexing strategies to optimize query performance in MongoDB.

Lab Exercises

1. Install MongoDB on your system and connect to the database using MongoDB Compass.
2. Create a new MongoDB database, switch between multiple databases, and delete an existing database.
3. Perform Create, Read, Update, and Delete operations on a MongoDB collection.
4. Use filters to query data, apply sorting, and limit fields using projections.
5. Create, list, and drop indexes to optimize data retrieval performance.
6. Use aggregation pipelines to group, sort, and analyze data efficiently.
7. Design embedded and referenced schemas for product catalogs and orders.
8. Import data using mongo import, back up data with mongo dump, and restore it using mongo restore.
9. Implement authentication and create user roles with specific permissions.
10. Develop a mini-project such as a student management or inventory system using MongoDB as the backend database.

Text books

1. Mastering MongoDB 7.0 - Marko Aleksendric et al., Packt Publishing, 4th Edition, 2023

UNIT I: Book 1: Chapters 1
UNIT II: Book 1: Chapters 2
UNIT III: Book 1: Chapters 3
UNIT IV: Book 1: Chapters 4-6
UNIT V: Book 1: Chapters 7-9

Reference books:

1. MongoDB in Action, Third Edition - Manning Publications, 3rd Edition, 2023
2. MongoDB: The Definitive Guide - Shannon Bradshaw, Eoin Brazil & Kristina Chodorow, O'Reilly Media, 3rd Edition, 2019

Web Reference:

1. https://www.mongodb.com/docs
2. https://university.mongodb.com/
3. https://docs.mongodb.com/
4. https://www.w3schools.com/mongodb/
5. https://www.tutorialspoint.com/mongodb/

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Demonstrate practical skills in MongoDB installation and connectivity.	**K1,K2,K3**
CO2	Perform CRUD operations on MongoDB collections	**K3,K4**
CO3	Query data using filters, sorting, and projections.	**K3,K4,K5**
CO4	Design data models using embedded and referenced schemas.	**K3,K4,K5**
CO5	Implement MongoDB utilities for data management and backups.	**K3,K4,K5**
CO6	Develop a mini-project integrating MongoDB as a backend Database.	**K4,K5,K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	0	0
CO2	3	9	3	3	1	0
CO3	3	9	9	9	3	1
CO4	1	3	9	9	9	3
CO5	3	3	9	9	9	9
CO6	1	3	9	9	9	9
Weightage	**20**	**30**	**42**	**40**	**31**	**22**
Weighted percentage of Course contribution to POs	**12.27%**	**18.40%**	**25.77%**	**24.54%**	**18.98%**	**13.50%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PSO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC44P-Mongodb Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI	U25IC45P	Core-Practical	3	3	25	75	100
Programme Code: BVCUG2020							
Course Title	INTERNET OF THINGS LAB						

Course Description

This lab course provides practical experience in building IoT applications using sensors, microcontrollers, and communication protocols.

Course Objective

1. Interface and collect data from IoT sensors using Node-based platforms.
2. Implement data transfer protocols (e.g., MQTT, HTTP, or CoAP) for IoT devices.
3. Create a real-time IoT dashboard to display sensor data.
4. Execute basic processing of IoT data at the edge before sending it to the cloud.
5. Implement remote control of IoT devices using Node-based commands or APIs.
6. Apply basic encryption techniques to secure IoT communication.

LIST OF PROGRAMS

1. LED blinking using Arduino UNO
2. IR sensor with Arduino UNO
3. Ultrasonic with Arduino UNO
4. PIR sensor with Arduino UNO
5. Gas sensor with Arduino UNO
6. Touch sensor with NodeMCU ESP8266
7. Rain sensor with NodeMCU ESP8266
8. Soil sensor with NodeMCU ESP8266
9. DHT 11 sensor with NodeMCU ESP8266
10. Water sensor with NodeMCU ESP8266

Text Books:

1. Introduction to Internet of Things (IoT) – Ahmed Banafa, River Publishers, 1st Edition, 2023

UNIT I: Book 1: Chapters 3
UNIT II: Book 1: Chapters 4
UNIT III: Book 1: Chapters 5
UNIT IV: Book 1: Chapters 6
UNIT V: Book 1: Chapters 7

Reference Books:

1. Practical Internet of Things Networking: Understanding IoT Layered Architecture – Rolando Herrero,Springer, 1st Edition, 2023
2. New Frontiers in Cloud Computing and Internet of Things – Various authors, Springer, 1st Edition, 2022

Web Reference:

1. https://nodejs.org/en/docs/
2. https://www.ibm.com/blog/internet-of-things-node-js-tutorial/
3. https://github.com/topics/iot
4. https://www.w3schools.com/nodejs/
5. https://projects.raspberrypi.org/en/projects

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Recall the essential concepts of IoT architecture and node-level programming.	**K1**
CO2	Understand and develop IoT device applications using Node.js for real-time functionality.	**K2**
CO3	Interface sensors and actuators with IoT nodes to collect and process data.	**K3**
CO4	Analyze and implement communication protocols such as MQTT and HTTP in IoT systems.	**K4**
CO5	Evaluate and integrate IoT nodes with cloud platforms for data storage and visualization.	**K5**
CO6	Design and build advanced IoT-based projects for practical, real-world applications.	**K5/K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	1	0	0
CO3	3	9	9	3	1	0
CO4	1	3	9	9	3	1
CO5	0	3	3	9	9	9
CO6	0	1	3	9	9	9
Weightage	**16**	**28**	**28**	**31**	**22**	**19**
Weighted percentage of Course contribution to POs	**11.68%**	**20.44%**	**20.44%**	**22.63%**	**16.06%**	**13.74%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PSO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC45P- Internet of Things Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI	U25IC46P	Core-Practical	2	2	25	75	100
Programme Code: BVCUG2020							
Course Title	TABLEAU LAB						

Course Description

This lab course offers hands-on training in Tableau for data visualization, dashboard creation, and interactive data analysis.

Course Objective

1. Practice connecting Tableau to multiple data sources, such as Excel, SQL databases, or cloud services.
2. Create advanced visualizations (e.g., bullet charts, waterfall charts, or Pareto charts).
3. Use calculated fields to derive new insights from existing data.
4. Apply parameters to make visualizations interactive and dynamic.
5. Build an interactive dashboard with filters, actions, and storytelling features.
6. Learn techniques to improve workbook performance and manage large datasets.

Lab Exercises:

1. Explore the Tableau interface and identify components like Data Pane, Sheets, and Dashboards.
2. Connect to an Excel or CSV file and load data into Tableau.
3. Filter data to show only relevant information (e.g., filter by date or category).
4. Create basic visualizations like bar charts, line charts, and pie charts.
5. Sort and format data for better readability in visualizations.
6. Group data into categories (e.g., by region or sales).
7. Use calculated fields for simple arithmetic operations (e.g., total sales = quantity * price).
8. Create a simple map using geographic data (e.g., sales by country).
9. Build a basic dashboard by combining multiple charts and adding interactive filters.
10. Publish the dashboard to Tableau Public or Tableau Server for sharing.

Text Books:

1. Mastering Tableau 2023 – Marleen Meier, Packt Publishing, 4th Edition, 2023

UNIT I: Book 1: Chapters 1-2
UNIT II: Book 1: Chapters 3
UNIT III: Book 1: Chapters 4-5
UNIT IV: Book 1: Chapters 6
UNIT V: Book 1: Chapters 7-18

Reference Books:

1. Tableau 2023: Step-by-Step for Beginners – Joshua N. Milligan, Tableau Press, 1st Edition, 2022
2. Learning and Mastering Tableau for Work in 2023 – Robert D. Spencer, Independently Published, 1st Edition, 2023

Web Reference:

1. https://www.tableau.com/
2. https://www.tableau.com/learn/training
3. https://community.tableau.com/
4. https://www.datacamp.com/courses/tech:tableau
5. https://www.kaggle.com/learn/tableau

COURSE OUTCOME		
Upon successful completion of this Course, student will be able to		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Recall fundamental concepts of data visualization and its significance.	**K1**
CO2	Prepare and connect data from multiple sources in Tableau for analysis.	**K2**
CO3	Develop interactive dashboards and reports, utilizing filters and parameters.	**K3**
CO4	Analyze and design advanced visualizations, including heat maps, maps, and dual-axis charts.	**K4**
CO5	Evaluate and apply best practices to optimize dashboard performance.	**K5**
CO6	Design, build, and present insightful, data-driven solutions using Tableau.	**K6**

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	0	0	0
CO2	3	9	3	1	0	0
CO3	3	9	9	3	1	0
CO4	1	3	9	9	3	1
CO5	0	3	3	9	9	9
CO6	0	1	3	9	9	9
Weightage	**16**	**28**	**28**	**31**	**22**	**19**
Weighted percentage of Course contribution to POs	**11.68%**	**20.44%**	**20.44%**	**22.63%**	**16.06%**	**13.74%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO2 / K2	PO1, PO2, PO3, PO4	PO5, PO6	--	--
CO3 / K3	PO1, PO2, PSO3, PO4, PO5	PO6	--	--
CO4 / K4	PO1, PO2	PO2, PO5	PO3	PO4, PO6
CO5 / K5	PO1, PO2	PO5	PO2, PO6	PO3
CO6 / K6	PO1, PO2	PO6	PO5	--

The COs and POs for the **U25IC46P- Tableau Lab** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI	U25ICP47	Core-Practical	6	4	75	25	100
Programme Code: BVCUG2020							
Course Title	PROJECT						

Course Description

This course involves the development of a project to apply learned concepts, encouraging problem-solving, innovation, and practical implementation skills.

Course Objective

1. Identify the scope, goals, and deliverables of the project.
2. Develop a project plan with timelines, tasks, and resources.
3. Implement the project through design and coding (or creation).
4. Work in teams to solve problems and complete tasks.
5. Test the project for bugs and issues, and debug accordingly.
6. Prepare a project report and presentation to showcase the final work.

EXTRA CREDIT COURSE

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
V		Extra Credit		1			
Programme Code: BVCUG2020							
Course Title	ARTIFICIAL INTELLIGENCE						

Course Description:

This course provides a comprehensive introduction to Artificial Intelligence (AI), covering fundamental concepts, techniques, and applications. Students will explore key AI domains, including problem-solving, knowledge representation, machine learning, neural networks, natural language processing, and computer vision.

Course Objectives:

1. To introduce the fundamental concepts of Artificial Intelligence (AI) and its historical development.
2. To explore various problem-solving and search techniques used in AI, including uninformed and informed search algorithms.
3. To understand knowledge representation methods and reasoning techniques used in AI systems.
4. To provide an overview of machine learning approaches, including supervised, unsupervised, and reinforcement learning.
5. To examine real-world applications of AI in different domains such as robotics, natural language processing, and healthcare.
6. To analyze the societal and ethical implications of AI and its impact on human life.

UNIT I: Artificial Intelligence: AI Problems – Underlying Assumption – AI Technique – Level of the Model – Criteria of Success – Some General References. Problems, Problem Spaces, and Search: Defining the Problem as a State Space Search – Production Systems – Problem Characteristics – Production System Characteristics – Issues in the Design of Search Programs.

UNIT II: Heuristic Search Techniques: Generate and Test – Hill Climbing – Best-First Search – Problem Reduction – Constraint Satisfaction – Means-ends Analysis. Knowledge Representation Issues: Representations and Mappings – Approaches to Knowledge Representation – Issues in Knowledge Representation – The Frame Problem.

UNIT III: Using Predicate Logic: Representing Simple Facts in Logic – Representing Instance and ISA Relationships – Computable Functions and Predicates – Resolution – Natural Deduction - Representing Knowledge Using Rules: Procedural Versus Declarative Knowledge – Logic Programming – Forward Versus Backward Reasoning – Matching – Control Knowledge.

UNIT IV: Symbolic Reasoning under Uncertainty: Introduction to Non-monotonic Reasoning – Logics for Non-monotonic Reasoning – Implementation Issues – Augmenting a Problem-solver – Implementation Depth First Search – Implementation Breadth First Search. Statistical Reasoning: Probability and Baye's Theorem – Certainty Factors and Rule- based Systems – Bayesian Networks – Dempster-Shafer Theory – Fuzzy Logic.

UNIT V: Semantic Nets: Frames- Conceptual Dependency – Scripts – CYC. - Syntactic- Semantic Spectrum of Representation – Logic and Slot-and-Filler Structures – Other Representational Techniques.

TEXT BOOK(S):

1. Elaine Rich, Kevin Knight, Shiva Shankar B Nair, "Artificial Intelligence", Third Edition, Tata McGraw Hill, 2019.

UNIT I: Chapter 1 (Sec 1.1-1.6) & Chapter 2 (Sec 2.1-2.5)
UNIT II: Chapter 3 (Sec 3.1-3.6) & Chapter 4 (Sec 4.1- 4.4)
UNIT III: Chapter 5 (Sec 5.1-5.5) & Chapter 6 (Sec 6.1-6.5)
UNIT IV: Chapter 7 (Sec 7.1-7.6) & Chapter 8 (Sec 8.1- 8.5)
UNIT V: Chapter 9 (Sec 9.1, 9.2), Chapter 10 (Sec 10.1- 10.3), Chapter 11 (Sec 11.1-11.3)

REFERENCE BOOK(S):

1. Gerhard Welss, - Multi Agents Systems, Second Edition, 2013.
2. David L. Poole and Alan K. Mackworth, - Artificial Intelligence: Foundations of Computational Agents, Cambridge University Press, 2010.

WEB RESOURCE(S):

1. https://www.udemy.com/course/learn-basics-of-artificial-intelligence/
2. https://onlinecourses.swayam2.ac.in/cec21_cs08/preview

COURSEOUTCOMES		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Define the concept of Artificial Intelligence and explain its historical evolution and applications	K1
CO2	Demonstrate the ability to formulate problems and apply appropriate search techniques for problem-solving.	K2
CO3	Apply knowledge representation and reasoning methods to design intelligent systems.	K3
CO4	Differentiate between various machine learning techniques and implement basic supervised, unsupervised, and reinforcement learning models.	K4
CO5	Identify and analyze AI applications in different domains and assess their impact on industry and society.	K5
CO6	Evaluate the ethical and societal challenges associated with AI technologies and propose responsible AI solutions.	K4

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	1	3	3
CO2	9	9	3	3	3	1
CO3	9	9	3	9	3	1
CO4	9	3	9	3	9	1
CO5	3	3	9	9	9	3
CO6	1	3	3	3	3	9
Weightage	**40**	**30**	**28**	**28**	**30**	**18**
Weighted percentage of Course contribution to POs	**22.98%**	**17.24%**	**16.09%**	**19.09%**	**17.24%**	**10.34%**

Level of Correlation

COs / K - LEVELS	Level of Correlation			
	High	**Medium**	**Low**	**Zero**
CO1 / K1	PO1	PO2, PO5,PO6	PO3, PO4	--
CO2 / K2	PO1, PO2	PO3, PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO4	PO3, PO5	PO6	--
CO4 / K4	PO1, PO3, PO5	PO2, PO4	PO6	-
CO5 / K5	PO3, PO4, PO5	PO1, PO2	PO1	-
CO6 / K6	PO6	PO2, PO3, PO4, PO5	PO1	-

The COs and POs for the **U25IC- Artificial Intelligencein** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
VI		Extra Credit		1			
Programme Code: BVCUG2020							
Course Title	CYBER SECURITY FUNDAMENTALS						

Course Description:

This course introduces the basics of cyber security, covering common threats, protection techniques, security tools, network safety, and legal aspects to build foundational knowledge for securing digital systems.

Course Objectives:

1. **Understand basic cyber security concepts** and the importance of protecting digital assets.
2. **Identify common cyber threats** like malware, phishing, and hacking.
3. **Learn essential security tools** and techniques used for protection.
4. **Understand network security** and secure communication principles.
5. **Explore ethical, legal, and policy aspects** of cyber security.
6. **Develop awareness of current trends** and challenges in cyber security.

UNIT – I INTRODUCTION TO CYBER CRIME:
Types of Cyber Crime – Classification of Cyber Criminals – Tools used in Cyber Crime – Challenges – Strategies – Cryptocurrency – Bitcoin – Blockchain -Ransomware.

UNIT – II CYBER FORENSICS DEFINITION:
Disk Forensics – Network Forensics – Wireless Forensics – Database Forensics –Malware Forensics – Mobile Forensics – Email Forensics.

UNIT – III ETHICAL HACKING:
Essential Terminology, Hacking windows – Network hacking – Web hacking –Password hacking, Malware, Scanning, Cracking.

UNIT – IV DIGITAL EVIDENCE IN CRIMINAL INVESTIGATIONS:
The Analog and Digital World, Training and Education in digital evidence,Evidence Collection and Data Seizure: Why Collect Evidence, Collection Options,Obstacles, Types of Evidence, The Rules of Evidence, Volatile Evidence

UNIT – V INTRUSION:
Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software,Network based Intrusion detection Systems, Network based Intrusion PreventionSystems, Host based Intrusion prevention Systems

TEXT BOOK(S):

Dejey, Dr. Murugan, "Cyber Forensics", Oxford University Press, India, 2018.

UNIT I: Chapter 1 (Sec 1.1-1.6) & Chapter 2 (Sec 2.1-2.5)
UNIT II: Chapter 3 (Sec 3.1-3.6) & Chapter 4 (Sec 4.1- 4.4)
UNIT III: Chapter 5 (Sec 5.1-5.5) & Chapter 6 (Sec 6.1-6.5)
UNIT IV: Chapter 7 (Sec 7.1-7.6) & Chapter 8 (Sec 8.1- 8.5)
UNIT V: Chapter 9 (Sec 9.1, 9.2), Chapter 10 (Sec 10.1- 10.3), Chapter 11 (Sec 11.1-11.3)

REFERENCE BOOK(S):

1. ***Cybersecurity Fundamentals: A Real-World Perspective*** **Authors:** Kutub Thakur & Al-Sakib Khan Pathan **Edition:** 1st (Illustrated) **Published:** May 2020

2. ***Fundamentals of Cyber Security (Principles, Theory & Practices)*** **Authors:** Mayank Bhushan, Rajkumar Singh Rathore & Aatif Jamshed **Edition:** 1st **Published:** January 1, 2017

WEB RESOURCE(S):

1. https://www.w3schools.com/cybersecurity/index.php
2. https://intellipaat.com/blog/tutorial/ethical-hacking-cyber-security-tutorial/

COURSE OUTCOMES		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Describe cybercrime types, tools, challenges, and emerging technologies like blockchain.	K1
CO2	Explain various cyber forensic techniques for digital investigations.	K2
CO3	Demonstrate basic ethical hacking methods and tools.	K3
CO4	Identify and handle different types of digital evidence in investigations.	K4
CO5	Recognize intrusion methods and related security risks.	K5
CO6	Apply detection and prevention techniques against cyber threats.	K4

Mapping of COs with POs (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
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CO2	9	9	3	3	3	1
CO3	9	9	3	9	3	1
CO4	9	3	9	3	9	1
CO5	3	3	9	9	9	3
CO6	1	3	3	3	3	9
Weightage	**40**	**30**	**28**	**28**	**30**	**18**
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CO2 / K2	PO1, PO2	PO3, PO4, PO5	PO6	--
CO3 / K3	PO1, PO2, PO4	PO3, PO5	PO6	--
CO4 / K4	PO1, PO3, PO5	PO2, PO4	PO6	-
CO5 / K5	PO3, PO4, PO5	PO1, PO2	PO1	-
CO6 / K6	PO6	PO2, PO3, PO4, PO5	PO1	-

The COs and POs for the **U25IC- Cyber Security Fundamentals** course in the **B.Voc (Information and Communication Technology)** Programme is effectively matched by the Course In-charge.

Signature of the Course In-charge **Signature of the HoD**