

MANAKULA VINAYAGAR INSTITUTE OF TECHNOLOGY

(Autonomous Institution)



CURRICULUM & SYLLABUS

BACHELOR OF COMPUTER APPLICATIONS

REGULATIONS 2025 (R - 2025) FOR

BCA

(With effect from academic year 2025-2026)

BCA CURRICULUM

FIRST SEMESTER

S.No	Course Code	Title of the Course	Marks			Credits (T+P)	Hours/Week		
			IA	ESM	Total		L	T	P
THEORY COURSE									
1	25UVAT11	Understanding India	40	60	100	2	4	-	-
2	25UVAT12	Environmental Sciences	40	60	100	2	4	-	-
INTEGRATED COURSE									
3	25UBCI11	Digital Logic Fundamentals	50 (T25+P25)	50 (T35+P15)	100	4 (3+1)	3	-	2
4	25UBCI12	Multimedia and Animation	50 (T25+P25)	50 (T35+P15)	100	4 (3+1)	3	-	2
INTEGRATED COURSE – SKILL ENHANCEMENT COURSE									
5	25USEI11	Office Management Tools	50 (T25+P25)	50 (T25+P25)	100	3 (2+1)	2	-	2
MULTIDISCIPLINARY COURSE									
6	25UBCO22	Chemistry in everyday life	40	60	100	3	4	-	-
EMPLOYABILITY ENHANCEMENT COURSE									
7	25UEET11	Modern Indian Languages I – Podhu Tamil - I	40	60	100	2	4	-	-

BCA SYLLABUS (2025-2026)

SEMESTER I

Year	I	Course Code: 25UBCI11	Credits	4
Sem.	I		Course Title: Digital Logic Fundamentals	Hours
			Category	C
Course Prerequisites, if any	NIL			
Internal Assessment Marks: 50	End Semester Marks: 50		Duration of ESA (Theory): 03 hrs. Duration of ESA (Practical): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Understand and describe the principles of digital systems and binary number operations • Apply Karnaugh mapping to simplify Boolean expressions and optimize digital circuits • Analyze and design basic combinational circuits using various digital components • Synthesize and evaluate synchronous sequential circuits using storage elements and HDL • Design and implement various types of registers and counters using HDL 			
Unit No.	Course Content			Hours
Theory Component				
Unit I	Introduction Digital Systems - Binary Numbers –Conversions - Types – Codes - Storage and Registers - Binary Logic - Boolean Algebra - Theorems and Properties - Functions- Canonical and Standard Forms - Other Logic Operations - Digital Logic Gates - Integrated Circuits			9
Unit II	Gate-Level Minimization Introduction - The Map Method - Four-Variable K-Map - Product-of-Sums Simplification - Don't-Care Conditions - NAND and NOR Implementation - Other Two-Level Implementations - Exclusive-OR Function - Hardware Description Language			9
Unit III	Combinational Logic Introduction - Combinational Circuits - Analysis Procedure - Design Procedure - Binary Adder–Subtractor - Decimal Adder - Binary Multiplier - Magnitude Comparator – Decoders – Encoders – Multiplexers - HDL Models of Combinational Circuits.			9

Unit IV	Synchronous Sequential Logic Introduction - Sequential Circuits - Storage Elements: Latches - Storage Elements: Flip-Flops- Analysis of Clocked Sequential Circuits - Synthesizable HDL Models of Sequential Circuits - State Reduction and Assignment - Design Procedure	9
Unit V	Registers and Counters Registers - Shift Registers - Ripple Counters - Synchronous Counters - Other Counters - HDL for Registers and Counters	9
Practical Component		
List of Exercises	<ol style="list-style-type: none"> 1. Binary to Decimal and vice-versa 2. Decimal to Hexadecimal and Vice-Versa 3. Digital Logic Gates 4. Simplification of Boolean Functions 5. Combinational Logic Circuits <ol style="list-style-type: none"> a) Code Converters b) Arithmetic (Adders, Subtractors, Multipliers, Comparators) c) Data Handling (Multiplexers, Demultiplexers, Encoders & Decoders) 6. Combinational Logic Circuit Design 7. Binary Adder-Subtractor Simulation 8. Decimal Adder Simulation 9. Binary Multiplier Simulation 10. Sequential Circuit Storage Elements: Flip-Flop Simulation 	30
Recommended Learning Resources		
Print Resources	<ol style="list-style-type: none"> 1. M. Morris Mano, Michael D. Ciletti, "Digital design With an Introduction to the Verilog HDL", Sixth Edition, Pearson, 2018. 2. M. Rafiquzzaman, "Fundamentals of Digital Logic and Microcomputer Design", Fifth Edition, John Wiley & Sons, Inc., 2009. 	

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		15
Assignment		5
Attendance		5
Practical	Demo & Viva	25
Total		50

Year	I	Course Code: 25UBCI12 Course Title: Multimedia And Animation	Credits	4
Sem.	I		Hours	75
			Category	C
Course Prerequisites, if any	Nil			
Internal Assessment Marks: 50	End Semester Marks:50		Duration of ESA (Theory): 03 hrs. Duration of ESA (Practical): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Describe the various elements and aspects of multimedia and Animation • Learn to work with text and images • Learn to work with audio processing tools • Learn to work with video editing tools • To make an animated movies using Animation and rendering tools 			
Unit No.	Course Content			Hours
Theory Component				
Unit I	Multimedia Overview Presentation and production – Characteristics– Hardware and software requirements – Uses– Analog and Digital Representations – OS Support –Hardware Support –Multimedia Extensions			9
Unit II	Text and Image Types of Text – Unicode Standard – Font – Text Compression – File Formats – Image Data Representation – Image Acquisition and Processing – Binary and Color Image Processing – Image File Formats			9
Unit III	Audio Types and Properties of sound - Components of audio – Digital Audio - Synthesizers – Musical Instrument Digital Interface (MIDI) – Digital Audio Processing – Speech – Sound Card – Audio File Formats			9
Unit IV	Video Analog Video - Signal Representation - Digital Video - Digital Video Processing - Recording and Storage Formats - File formats - Editing - Video Processing Software			9

Unit V	Animation Uses – Traditional Animation – Principles of Animation – Computer Based Animation – 3D animation – Rendering Algorithms – Animation File Formats and Software	9
Practical Component		
List of Exercises	<ol style="list-style-type: none"> 1. Design a multimedia presentation on a topic of your choice. Include text, images, audio, and video elements. 2. Identify the essential tools and equipment needed to create high-quality multimedia content. 3. Choose an existing multimedia project or create one, and develop a promotional strategy for it. 4. Create a simple document, such as a poster or brochure, with varying fonts, sizes, and styles. 5. Perform basic image processing tasks like resizing, cropping, and applying colour filters to the image using image editing software. 6. Set up a simple audio system that includes a microphone, amplifier, audio mixer, and loudspeaker. 7. Design a visual representation of the flow of video signals from an analog video camera to a digital format. 8. Create a short tutorial video demonstrating basic editing functions of a chosen video editing software. 9. Create a storyboard for a 3D animation project. Outline key scenes, characters, and movements. 10. Design an interactive web animation prototype. Use any animation software to create a sample animation that responds to user interactions on a webpage. 	30
Print Resources	<ol style="list-style-type: none"> 1. Ranjan Parekh, “Principles of Multimedia”, Second Edition, Tata McGraw Hill, 2013. 2. Tay Vaughan, “Multimedia Making It Works”, Eighth Edition, Tata McGrawHill, 2013. 	

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		15
Assignment		5
Attendance		5
Practical	Demo & Viva	25
Total		50

Year	I	Course Code: 25UBCO22 Course Title: Chemistry In Everyday Life	Credits	3
Sem.	I		Hours	45
			Category	A
Course Prerequisites, if any	NIL			
Internal Assessment Marks: 40	End Semester Marks: 60		Duration of ESA (Theory): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Learn about food adulteration, food additives and artificial sweeteners, saccharin, cyclamate and aspartate in the food industries • Understand the chemistry of soaps and detergents and their action • Know about the ingredients in commonly used cosmetics and perfumes • Gain knowledge about glasses and ceramics and their properties • Learn the nature of the plastics used in everyday life and natural substitution for plastic 			
Unit No.	Course Content		Hours	
Theory Component				
UNIT I	Food additives Functional food additives and its importance, food adulteration, detection of food adulterations, food safety laws and fssai regulations. Food colours-permitted and non-permitted – Flavours – natural and synthetic, artificial sweeteners, toxic effect of additives.		9	
UNIT II	Soaps and Detergents Soaps and Detergents – saponification, classification, cleansing action of soap, manufacturing process, additives, fillers, flavours, bleaching agents and enzymes used in commercial detergents, environmental hazards.		9	
UNIT III	Cosmetics and perfumes Cosmetics and perfumes – classification, ingredients and regulations, bathing oils, face creams, talcom powder, skin products, hair dyes, shaving cream, shampoo, conditioners, nail polish, deodorants, antiperspirants, oral hygiene products, toxic effect of cosmetics.		9	
UNIT IV	Glasses and ceramics Glasses and ceramics – classification, manufacturing process, composition and properties of glasses, soda glass, borosilicate glass, coloured glass, photosensitive glass, armoured glass, safety glass, Important clays and feldspar, plasticity of clay, ceramic and its types, white pottery,		9	

	glazing, applications	
UNIT V	Plastics in daily use Plastics in daily use. Polymerization process (brief). Thermosetting and thermoplastic polymers. Use of PET, HDPE, PVC, LDPE, PP, PS, ABS, and others. Recycling of plastics. Biodegradable plastics. Environmental Hazards of plastics. Paper news print, writing paper, paper boards, cardboards. Organic materials, wood, cotton, Jute, coir – International Universal recycling codes and symbols for identification.	9
Reference Books		
1. Food – The Chemistry of its components, T.P. Coultate,. Royal Society of Chemistry London, 2001. 2. Engineering Chemistry, Shashi Chowla, DanpatRai& Co., 2017. 3. Industrial Chemistry, B.K. Sharma, Krishna Prakashan Publishers, 2012. 4. Understanding Chemistry, CNR Rao, Universities Press, 1999. 5. Engineering Chemistry, Jain and Jain, Darpat Rai Publication, 17th Ed., 2015. 6. Chemistry of cosmetics, Kumari R, Prestige publications, 2018.		

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		25
Assignment		5
Attendance		5
Activity	Presentations	5
Total		40

Year	I	Course Code:25UEET11	Credits	2
Sem.	I	Course Title: Modern Indian Language (பொதுத்தமிழ்-I)	Hours	30
			Category	A
Course Prerequisites, if any	தமிழ் மொழியை அறிந்திருத்தல்			
Internal Assessment Marks: 40	End Semester Marks: 60		Duration of ESA (Theory): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> தமிழ் இலக்கியங்களை அறிமுகப்படுத்துதல் தமிழ்மொழியைப் பிழையின்றி எழுதக் கற்பித்தல் மொழி அறிவு இலக்கண அறிவை வளர்த்தல் இலக்கிய வரலாற்று பின்புலங்களைக் கற்பித்தல் மொழி சார்ந்த வேலைவாய்ப்புப் பயிற்சி அளித்தல் 			
Unit No.	Course Content		Hours	
Theory Component				
I	கவிதைகள்: <ul style="list-style-type: none"> பாரதியார் - எங்கள் நாடு (முதல் மூன்று பாடல்கள்) பாரதிதாசன் - தமிழின் இனிமை (முதல் ஐந்து பாடல்கள்) வாணிதாசன் - என் வேலை (முதல் நான்கு பாடல்கள், ப.92) நா.காமராசன் - வானவில் (கறுப்பு மலர்கள், ப.50) மீனாட்சி பிள்ளைக்கூடம் (கொடி விளக்கு, பக்.136,137) 		6	
II	புனைகதைகள் மற்றும் நாடகங்கள்: <ul style="list-style-type: none"> புனைகதை மற்றும் நாடகம் - அறிமுகம் -வரலாறு தி.ஜானகிராமன் - பாயசம் பாமா - கிசும்புக்காரன் திலகவதி- கல்மரம் கே.ஏ. குணசேகரன் - பேயோட்டம் 		6	
III	சிற்றிலக்கியங்கள்: <ul style="list-style-type: none"> சிற்றிலக்கியமும் பக்தி இலக்கியம் - அறிமுகம் - வரலாறு தமிழ்விடுதலாது - தமிழின் சிறப்பு (கண்ணி 70 முதல் 100 வரை) முக்கூடற்பள்ளு - பள்ளியர் ஏசல் (முதல் 10 பாடல்கள்) குற்றாலக்குறவஞ்சி - மலை வளம் (வானரங்கள் களிகொடுத்து (முதல் கொல்லிமலை வரை) நந்திக்கலம்பகம் - தலைவன் நெஞ்சொடு கிளத்தல் (பாடல் எண்கள் 10, 25) கலிங்கத்துப்பரணி - பேய் பாடியது (முதல் பத்து பாடல்கள்) 		6	
IV	பக்தி இலக்கியம்: <ul style="list-style-type: none"> திருநாவுக்கரசர் - (திருநல்லூர்த் திருத்தாண்டகம் (பாடல் 6380 - 84), காரைக்கால் அம்மையார் - அற்புதத் திருவந்தாதி (5 பாடல்கள், 44 முதல் 48 வரை) நம்மாழ்வார் - பெரிய திருவந்தாதி (முதல் 10 பாடல்கள்), ஆண்டாள் - திருப்பாவை (முதல் ஐந்து பாடல்கள்) 		6	

	<ul style="list-style-type: none"> • திருமூலர் - திருமந்திரம் (பாடல் 251 முதல் 255 வரை) • வள்ளலார்-பிள்ளைசிறு விண்ணப்பம் (முதல் 5 பாடல்கள்) • குணங்குடிமஸ்தான் - நிராமயக் கண்ணி (கண்ணி 21 முதல் 30 வரை), எச்.ஏ.கிருட்டிணப்பிள்ளை-இரட்சணிய யாத்திரீகம் - குருதரிசனப் படலம் (15 பாடல்கள்) 	
v	மொழித்திறன்: <ul style="list-style-type: none"> • மொழித்திறன், பிழையின்றி எழுதுதல் • எழுத்துப்பிழை, சொற்பிழை • தொடர்பிழை, மரபுப்பிழை • அகரவரிசைப்படுத்துதல் • வல்லினம்மிகும், மிகாஇடங்கள் 	6

அலகு வாரியாக மாணாக்கர் செயல்பாடுகள்	
<ol style="list-style-type: none"> 1. கவிதை எழுதுதல் 2. சிறுகதை எழுதுதல் 3. கவிதைப் போட்டியில் பங்கு பெறுதல் 4. பக்தி இலக்கியம் குறித்து குழுவாகக் கலந்துரையாடல் 5. சிற்றிலக்கியம் குறித்து வினாடி வினா நடத்துதல் 	
அடிப்படைப் பாட நூல்கள்	
<ol style="list-style-type: none"> 1. பாலசுப்பிரமணியம். சிற்பி., பத்மநாபன். நீல., புதிய தமிழ் இலக்கிய வரலாறு, சாகித்திய அகாதெமி, 2013. 2. அருணாச்சலம். மு., தமிழ் இலக்கிய வாலாறு, தி பார்க்கர் பதிப்பகம், சென்னை. 	
நோக்கு நூல்கள்	
<ol style="list-style-type: none"> 1. வரதராசன். மு., தமிழ் இலக்கிய வரலாறு, சாகித்திய அகாதெமி, 2015. 2. பக்தி இலக்கியம் உரையுடன் கூடிய மூல நூல்கள். 3. சிற்றிலக்கியம் மூல நூல்கள் 4. விமலானந்தம். மது.ச., தமிழ் இலக்கிய வரலாறு, பாரி நிலையம், சென்னை. 5. தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், 2022 	

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		25
Assignment		5
Attendance		5
Activity	Presentations	5
Total		40

Year	I	Course Code: 25USEI11 Course Title: Office Management Tools	Credits	3
Sem.	I		Hours	75
			Category	C
Course Prerequisites, if any	Nil			
Internal Assessment Marks: 50	End Semester Marks: 50		Duration of ESA (Theory): 03 hrs. Duration of ESA (Practical): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Understand the basics of office management tools • Able to create and format document using Word Processor • Able to store and analyse data using Spreadsheet • Skills to create and deliver effective presentations • Able to design and manage data using database 			
Unit No.	Course Content			Hours
Theory Component				
Unit I	Exploring Office Working in the program environment changing program settings customizing the ribbon and quick access toolbar - Working with Files -Creating and saving files- opening moving and closing files -viewing files in different ways			9
Unit II	Word Processor Making text changes- finding and replacing text spelling and grammar- Quickly formatting text -creating and modifying list - presenting information in tables –word art-document background-page layout - printing documents			9
Unit III	Spreadsheet Spreadsheet – Workbook Window – Formatting Cells / Worksheet – Working with Formula, Function and Charts – Filtering data			9
Unit IV	Presentation Working with Slides – Work with Slide Text – Formatting Slides – Adding – Custom Animations and Transitions			9
Unit V	Database Understanding Database Concepts – Exploring tables-forms-queries-reports			9

Practical Component		
List of Exercises	<ol style="list-style-type: none"> 1. Design a personalized business card, including your name, contact information, and any relevant details, using shapes and text boxes. 2. Develop a professional resume showcasing your skills, education, and work experience. Utilize appropriate formatting for headings and bullet points. 3. Develop a newsletter layout with multiple columns, images, and articles. 4. Create a personal budget spreadsheet that includes income, expenses, and a summary of the financial situation. Utilize Excel's functions for calculations. 5. Develop a grade tracker for a semester, including columns for subjects, grades, and credits. Calculate the GPA using Excel formulas. 6. Build a photo album slideshow with captions. Apply slide transitions for smooth navigation between images. 7. Create an interactive quiz presentation. Include questions on different slides, and use hyperlinks to navigate to correct or incorrect answers. 8. Present the findings of a scientific experiment. Include graphs, charts, and visuals to illustrate the experiment process and results. 9. Create tables for student details, courses, and grades. 10. Design a database to manage inventory for a small business 	30
Recommended Learning Resources		
Print Resources	<ol style="list-style-type: none"> 1. Joyce Cox, Joan Lombert, Curtis Fyre, "Step by Step, Microsoft Office Professional 2010", First Edition, 2010. 	

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		15
Assignment		5
Attendance		5
Practical	Demo & Viva	25
Total		50

Year	I	Course Code: 25UVAT11 Course Title: Understanding India	Credits	2
Sem.	I		Hours	30
			Category	A
Course Prerequisites, if any	NIL			
Internal Assessment Marks: 40	End Semester Marks: 60		Duration of ESA (Theory): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Understanding the Geography of India Social Structure • Provide an introduction to Indian knowledge systems, showcasing the intellectual, scientific, and cultural contributions of ancient • Explore the Indian Constitution as a living document • Interpret India's political system through different lenses—traditional, modern, and contemporary 			
Unit No.	Course Content		Hours	
Theory Component				
UNIT I	Geography of India India on the map of the world and its neighbouring countries - Geographical diversities		6	
UNIT II	History of India India's Freedom Struggle - An introduction to Indian knowledge systems		6	
UNIT III	Communicating Culture Oral narratives: Myths, tales and folklore - To the Tribal Cultures of India		6	
UNIT IV	Indian Social Structure Continuity and change of the Indian Social Structure: Caste, Community, Class and Gender		6	
UNIT V	Understanding Indian Polity The evolution of State in India: Nature and origin - Interpretating India: Traditional, Modern and Contemporary - Constitution as a living document		6	
Text books				
<ol style="list-style-type: none"> 1. Ramesh Dutta Dikshit, Political Geography: Politics of Place and Spatiality of Politics, Macmillan Education, 2020. 2. Mohanta, Basant Kumar and Vipin Kumar Singh ed. (2012), Traditional Knowledge System and Technology in India, Pratibha Prakashan. 3. House India Private Limited, 25 Oct. 2021. 4. J Sai Deepak. India That Is Bharat: Coloniality, Civilization, Constitution. New Delhi, Bloomsbury, 2021. 				

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		25
Assignment		5
Attendance		5
Activity	Presentations	5
Total		40

Year	I	Course Code: 25UVAT12 Course Title: Environmental Sciences	Credits	2
Sem.	I		Hours	30
			Category	A
Course Prerequisites, if any	NIL			
Internal Assessment Marks: 40	End Semester Marks: 60		Duration of ESA (Theory): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Understand basic environmental concepts and ecosystems. • Learn about natural resources and their conservation. • Identify types and effects of pollution. • Understand environmental laws and policies. • Promote sustainable development and renewable energy. • Develop awareness and responsibility toward environmental protection. 			
Unit No.	Course Content			Hours
Theory Component				
UNIT I	Multidisciplinary nature of environmental studies Definition, scope and importance; Need for public awareness- Environmental ethics: Issues and possible solutions - Environment Protection Act			5
UNIT II	Natural Resources, Renewable and Non-renewable Resources Forest resources: Use and over-exploitation, deforestation, Timber extraction- Water resources: Use and over-utilization of surface and ground water, floods, drought, dams-benefits and problems- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture- Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources-Land resources: Land as a resource, land degradation, soil erosion and desertification.			7
UNIT III	Ecosystems Concept of an ecosystem- Structure and function of an ecosystem - Energy flow in the ecosystem- Food chains, food webs and ecological pyramids- Characteristic features, structure and function of <ol style="list-style-type: none"> a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems 			6

UNIT IV	<p>Biodiversity and its conservation</p> <p>Introduction – Definition: genetic, species and ecosystem diversity- Biogeographical classification of India, India as a mega-diversity nation- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic values- Hot-spots of biodiversity- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.</p>	6
UNIT V	<p>Environmental Pollution</p> <p>Definition, cause, effects and control measures of:</p> <p>a. Air pollution b. Water pollution c. Soil pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards</p> <p>Solid waste management: Causes, effects and control measures of urban and industrial wastes- Disaster management: floods, earthquake, cyclone and landslides.</p>	6
TEXT BOOKS		
<p>1. Odum, E. P., Barrett G., W., 2011, Fundamentals of Ecology, 5ed., Cengage Learning. ISBN-13: 978-8131500200</p> <p>2. Sharma, P. D., 2011. Ecology and Environment, Rastogi Publications. ISBN-13: 978-8171339655</p>		

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		25
Assignment		5
Attendance		5
Activity	Presentations	5
Total		40

BCA CURRICULUM

SECOND SEMESTER

S.NO	Course Code	Title of the Course	Marks			Credits	Hours/Week		
			IA	ESM	Total		L	T	P
THEORY COURSE									
1	25UVAT22	Digital Technologies	40	60	100	2	4	-	-
INTEGRATED COURSE									
2	25UBCI21	Problem Solving & Programming Fundamentals	50 (T25+P25)	50 (T35+P15)	100	4 (3+1)	3	-	2
3	25UBCI22	Digital Marketing	50 (T25+P25)	50 (T35+P15)	100	4 (3+1)	3	-	2
INTEGRATED COURSE – SKILL ENHANCEMENT COURSE									
4	25USEI21	Python Programming	50 (T25+P25)	50 (T25+P25)	100	3 (2+1)	2	-	2
MULTIDISCIPLINARY COURSE									
5	25UBCO25	Basic Mathematics	40	60	100	3	4	-	-
EMPLOYABILITY ENHANCEMENT COURSE									
6	25UEET21	Modern Indian Languages I – Functional English I	40	60	100	2	4	-	-
PRACTICAL COURSE									
7	25UVAP21	Health & Wellness, Yoga Education, Sports and Fitness	60	40	100	2	-	-	4

SEMESTER - II

Year	I	Course Code:25UBCI21	Credits	4
Sem.	II	Course Title: Problem Solving & Programming Fundamentals	Hours	75
			Category	C
Course Prerequisites, if any	NIL			
Internal Assessment Marks: 50	End Semester Marks:50		Duration of ESA (Theory): 03 hrs. Duration of ESA (Practical): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Analyze problems and develop top-down designs • Write, compile, and debug basic programs • Implement logic with conditionals and loops • Manipulate arrays of various dimensions • Design and implement functions with recursion 			
Unit No.	Course Content			Hours
Theory Component				
Unit I	Introduction to Computer Problem-Solving Problem-solving Aspect – Top-down Design – Implementation of Algorithms – Program Verification – Efficiency of Algorithms – Analysis of Algorithms			9
Unit II	Basic programming constructs Basic Data types (Numerical, String) – Variables – Expressions – I/O statements – Compile and Run – Debugging			9
Unit III	Decision Making – Branching & Looping Decision making – Relational Operators – Conditional statement, Looping Statements – Nested loops – Infinite loops – Switch Statements			9
Unit IV	Array Techniques Array Manipulation – Different operations – One dimensional Array – Two-dimensional Array – Multi-dimensional Array – Character – Arrays and Strings			9
Unit V	Modular solutions Introduction to Functions – Importance of Design of Functions – Arguments – Parameters – Return Values – Local and Global Scope – Recursion			9

Practical Component		
List of Exercises	<ol style="list-style-type: none"> 1. Program to array counting, array order reversal & find the maximum number in a set. 2. Program for removal of duplicates from an ordered array & to partition an array. 3. Program to find the kth smallest element. 4. Program to exchange the values of two variables without using a third variable. 5. Program that takes a list of numbers as input and counts the total number of elements in the list. 6. Program to compute the factorial of a given integer. 7. Program to compute the sine of an angle (in degrees) using a series expansion. 8. Program to generate the Fibonacci sequence up to a specified limit. 9. Program that takes an integer as input and reverses its digits. 10. Program that converts a number from one base to another (e.g., binary to decimal, decimal to binary). 	30
Recommended Learning Resources		
Print Resources	<ol style="list-style-type: none"> 1. R. G. Dromey, “How to Solve it by Computer”, Pearson Education India, Thirteenth Edition, 2013. 2. Allen B. Downey, “Think Python: How to Think like a Computer Scientist”, Third Edition, O’Reilly Publishers, 2020. 	

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		15
Assignment		5
Attendance		5
Practical	Demo & Viva	25
Total		50

Year	I	Course Code:25UBCI22 Course Title: Digital Marketing	Credits	4
Sem.	II		Hours	75
			Category	C
Course Prerequisites, if any	NIL			
Internal Assessment Marks: 50	End Semester Marks:50		Duration of ESA (Theory): 03 hrs. Duration of ESA (Practical): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Understand the fundamental components and strategies of Digital Marketing • Develop and implement effective SEO and SEM strategies • Apply the various types of email marketing and automation techniques • Utilize social media platforms to create engaging content and successful campaigns • Analyze and adapt Digital Marketing strategies based on comprehensive data analytics 			
Unit No.	Course Content		Hours	
Theory Component				
Unit I	Introduction to Online Market Online Market space- Digital Marketing Strategy- Components - Opportunities for building BrandWebsite - Planning and Creation - Content Marketing.		9	
Unit II	Search Engine Optimisation Search Engine optimisation - Keyword Strategy- SEO Strategy - SEO success factors -On-PageTechniques - Off-Page Techniques. Search Engine Marketing – SEMcomponents- PPC advertising		9	
Unit III	E- Mail Marketing Types of E- Mail Marketing - Email Automation – Integrating Email - Email campaign - Mobile Marketing - Location based - Context based - SMS Campaigns - Profiling and targeting		9	
Unit IV	Social Media Marketing Social Media Channels- Leveraging social media for brand conversations and buzz. Benchmark social media campaigns. Engagement Marketing- Creating Loyalty drivers - Influencer Marketing		9	
Unit V	Digital Transformation Digital Transformation & Channel Attribution- Analytics- Ad-words, Email, Mobile, social media, Web Analytics - Changing your strategy based on analysis- Recent trends in Digital marketing		9	

Practical Component		
List of Exercises	<ol style="list-style-type: none"> 1. Create a content calendar for a month, detailing blog post topics, social media posts, and email newsletters. 2. Optimize an existing webpage (or a sample webpage) by updating meta titles, meta descriptions, headers, and including relevant keywords in the content. 3. Create a simple email campaign for a product launch or promotional event using an email marketing tool. 4. Select a brand and analyze its social media presence across three different platforms (e.g., Facebook, Instagram, Twitter). 5. Analyze a mock digital marketing report with data from various channels (AdWords, email, social media). 	30
Recommended Learning Resources		
Print Resources	Puneet Singh Bhatia, “Fundamentals of Digital Marketing, Pearson Education”, First Edition, 2017.	

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		15
Assignment		5
Attendance		5
Practical	Demo & Viva	25
Total		50

Year	I	Course Code: 25UBCO25 Course Title: Basic Mathematics	Credits	3
Sem.	II		Hours	45
			Category	A
Course Prerequisites, if any	NIL			
Internal Assessment Marks: 40	End Semester Marks:60	Duration of ESA (Theory): 03 hrs.		
Course Outcomes	<ul style="list-style-type: none"> • Understand basic matrix concepts and operations. • Understand linear equations and characteristic equations using matrices. • Apply root–coefficient relations to solve equations. • Apply differentiation rules to standard functions. • Use differentiation techniques and evaluate standard integrals. 			
Unit No.	Course Content			Hours
Theory Component				
Unit I	Matrices Matrices-Elementary Concepts - Evaluation of Determinant of a square matrix - Types of Matrices-Sum and product of Matrices-Inverse of a square matrix of order 2 and order 3 - Rank of Matrix.			9
Unit II	Application of Matrices Consistency of a system of linear non- homogeneous equations (statement only)- simple problems characteristic equation of a square matrix – evaluation of eigen values – Cayley Hamilton Theorem (statement only) – verification and computing inverse using Cayley Hamilton Theorem			9
Unit III	Theory of Equations Relation between roots and coefficients - solution of equations under simple given conditions - Formation and solution of equations with imaginary and surd roots.			9
Unit IV	Differential Calculus Differential coefficient of $f(x)$ with respect to x - rules for differentiation- Differential coefficient of standard functions - Trigonometric and Inverse Trigonometric functions.			9
Unit V	Differential Calculus (continued) Logarithmic differentiation- Differentiation of one function with respect to another. Integral Calculus Integration as the inverse process of differentiation- integration of standard functions.			9
NOTE : EXCLUDING THE PROOF OF THEOREMS AND PROPERTIES				
Text Books				
1. Manicavachgam Pillay, T. K., T. Natarajan, and K. S. Ganapathy. Algebra Vol. II. Chennai: S.Vishwanthan printers and publishers Pvt. Ltd., 2006. Chapter 2 Sections: 1-				

5,7,8,11,16.

2. Manicavachgam Pillay, T.K., T. Natarajan, and K.S. Ganapathy. Algebra Vol. I. Chennai: S. Vishwanthan printers and publishers Pvt. Ltd., 2006. Chapter 6 Sections: 1, 9, 10, and 11.
3. Narayanan S., and T.K. Manicavachgam Pillay. Calculus Vol. I. Chennai: S. Vishwanthan printers and publishers Pvt. Ltd., 2004. Chapter 7 Sections: 1-3, 10, 4.1, 4.2, and 7.
4. Narayanan S., and T.K. Manicavachgam Pillay, Ancillary Mathematics: Book II. Chennai: S. Vishwanthan printers and publishers Pvt. Ltd., 2004. Chapter 1 Sections: 1.1 - 6.1.

References

1. Vittal, P.R. Allied Mathematics. Chennai: Margham Publications, 2002.
2. Narayanan S., R. Hanumantha Rao, T.K. Manicavachgam Pillay, and P. Kandaswamy. Ancillary Mathematics Vol. I. Chennai: S. Vishwanthan printers and publishers Pvt. Ltd., 2007.

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		25
Assignment		5
Attendance		5
Activity	Presentations	5
Total		40

Year	I	Course Code: 25UEET21 Course Title: Modern Indian Language (Functional English - I)	Credits	2
Sem.	II		Hours	30
			Category	A
Course Prerequisites, if any	Nil			
Internal Assessment Marks: 40	End Semester Marks:60		Duration of ESA (Theory): 03 hrs.	
Course Outcomes	<ul style="list-style-type: none"> • Develop fluency and confidence in their English language abilities • Apply grammar rules effectively in their spoken and written communication, making them efficient communicators in English. • Express their ideas confidently and articulately. • Explore and express their creativity through the study of prose, poetry, and literature. • Be proficient in the English language and also connect language skills to their respective subjects. 			
Unit No.	Course Content		Hours	
Theory Component				
Unit I	MulkRaj Anand:The Lost Child-Abdul Kalam:My Early days-Essential English Grammar:Units 1 to 14		6	
Unit II	William Wordsworth:The Affliction of Margaret - Oscar Wilde:The Model Millionaire - Essential English Grammar:Units 15 to 33		6	
Unit III	A J Cronin:The Two Gentlemen of Verona - Kamala Das:Punishment in Kindergarten - Essential English Grammar:Units 34 to 48		6	
Unit IV	Larry Collins & Dominique Lapierre:The Second Crucifixion - Sylvia Plath:Mirror - Essential English Grammar:Units 49 to 63		6	
Unit V	Group discussions; Listening Skills; Note-making		6	
Prescribed Text References:				
<ul style="list-style-type: none"> • Pillai, Radhakrishna G and Geetha Rajeevan. Impressions-1: A Multi-skill Course in English. Cambridge University Press, 2010. • Murphy, Raymond. Essential English Grammar. Cambridge University Press, 2012. 				

Recommended Reading

- Craven, Miles and Kristin Donnalley Sherman.Q: Skills for Success: Listening and Speaking (Advanced).Oxford University Press, 2019.
- Dev, Anjana Neira. Academic Writing and Composition. Pinnacle, 2015.
- Hamp-Lyons, Lizand Ben Heasley. Study Writing: A Course in Writing Skills for Academic Purposes. Cambridge University Press, 2006.
- Hancock, Mark. English Pronunciation in Use. Cambridge University Press, 2017.
- Richards, Jack C. And David Bohlke. Speak Now: Communicate with Confidence 3. Oxford University Press, 2014.

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		25
Assignment		5
Attendance		5
Activity	Presentations	5
Total		40

Year	I	Course Code:25USEI21 Course Title: Python Programming	Credits	3
Sem.	II		Hours	75
			Category	C
Course Prerequisites, if any	Basic Knowledge in Programming Concepts			
Internal Assessment Marks:50	End Semester Marks: 50	Duration of ESA (Theory): 03 hrs. Duration of ESA (Practical): 03 hrs.		
Course Outcomes	<ul style="list-style-type: none"> • Understand the basics of writing Python code • Implement programs using lists, tuples and dictionaries • Understand the use of control structures • Ability to write programs using packages • Understand the file manipulation 			
Unit No.	Course Content		Hours	
Theory Component				
Unit I	Introduction, Data types Introduction to Python – Advantages of using Python – Executing Python Programs – Python’s Core data types – Numeric Types – String Fundamentals		9	
Unit II	Lists, Tuples, Dictionaries Lists: list operations, list slices – list methods – list loop – mutability – aliasing – cloning lists – list parameters; Tuples: tuple assignment – tuple as return value; Dictionaries: operations and methods; advanced list processing – list comprehension		9	
Unit III	Control Flow, Functions, Modules Python Statements: Assignments – Expressions – If condition – While and For Loops. Functions: Definition, Calls – Scopes – Arguments – Recursive Functions– Functional Programming tools Classes and Object-Oriented programming with Python – modules and Packages: Purpose, using packages – Exception Handling with Python		9	
Unit IV	Packages Packages: NumPy, Pandas, Scikit learn – Machine learning with Python – Cleaning up, Wrangling, Analysis, Visualization - Matplotlib package – Plotting Graphs		9	
Unit V	File Handling Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions		9	

Practical Component		
List of Exercises	<ol style="list-style-type: none"> 1. Exchange the values of two variables 2. Finding minimum among n variables 3. Perform Simple sorting 4. Generate Students marks statement 5. Find square root, GCD, exponentiation 6. Sum the array of numbers 7. Perform linear search, binary search 8. Perform Matrix operations using NumPy 9. Perform Data frame operations using Pandas 10. Use Matplotlib on dataset and visualise 11. Perform Word count, copy file operations 	30
Recommended Learning Resources		
Print Resources	<ol style="list-style-type: none"> 1. Mark Lutz, “Learning Python”, Fifth Edition, O’Reilly, 2013. 2. Daniel Liang, “Introduction to programming using Python”, First Edition, Pearson, 2021. 3. Wes Mc Kinney, “Python for Data Analysis”, O’Reilly Media, 2012. 4. Tim Hall and J-P Stacey, “Python 3 for Absolute Beginners”, First Edition, Apress, 2009. 5. Magnus Lie Hetland, “Beginning Python: From Novice to Professional”, Second Edition, Apress, 2005. 	

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		15
Assignment		5
Attendance		5
Practical	Demo & Viva	25
Total		50

Year	I	Course Code:25UVAP21		Credits	2
Sem.	II	Course Title: Health & Wellness, Yoga Education, Sports And Fitness		Hours	30
				Category	B
Course Prerequisites, if any	Nil				
Internal Assessment Marks: 60	End Semester Marks:40		Duration of ESA (Practical): 03 hrs.		
Course Outcomes	<ul style="list-style-type: none"> • Define health and wellness and explain the factors affecting them. • Describe the role of balanced diet and nutrition in healthy living. • Explain the importance of wellness, physical fitness, and healthy habits. • Understand the basic concepts and benefits of yoga in daily life. • Perform basic yoga and fitness activities for overall well-being. 				
Unit No.	Course Content			Hours	
Theory Component					
Unit I	Health&Wellness Define and differentiate health and wellness - Components of health wellness and their relationship between physical activity - Local, demographic, societal issues and factors affecting health and wellness. Diet and nutrition for health & wellness - Essential components of balanced diet for healthy living with specific reference to the role of carbohydrates, proteins, fats, vitamins & minerals - malnutrition, under nutrition and over nutrition.			6	
Unit II	Management ofhealthandwellness Meaning & importance of various dimensions of wellness. Relationship of physical fitness in achieving wellness. Drugs, doping and wellness. Role of diet and exercise in health management.			6	
Unit III	Yogaeducation Meaning and definition of yoga and its aims and objectives - Basic principles of yoga and its importance in our daily life - Yoga for mental attitude - Mind, body, breath and emotional level for higher plan of living.			6	
Unit IV	Yogapractices Types and limbs of yoga - Yoga postures – Asana - Breathing Practices – Pranayama - Relaxation-Meditation - Mudra.			6	
Unit V	Fitnessactivities Types of fitness activities - Outdoor activities – Basic movement patterns. Indoor activity – Aerobics/Dance Fitness, Resistance Training for fitness.			6	

References

1. Physical Activity and Health by Claude Bouchard, Steven N. Blair, William L. Haskell.
2. Mental Health Workbook by Emily Attached & Marzia Fernandez, 2021.
Mental Health Workbook for Women: Exercises to Transform Negative Thoughts and Improve WellBeing by Nashay Lorick, 2022
3. Lifestyle Diseases: Lifestyle Disease Management, by C. Nyambichu & Jeff Lumiri, 2018.
4. Physical Activity and Mental Health by Angela Clow & Sarah Edmunds, 2013.
5. The Fitness Mindset by Brian Keane
6. Health Promotion: Mobilizing Strengths to Enhance Health, Wellness, and Well-being [1 ed.] F.A. Davis Company.
7. Yoga RX: A Step-by-Step Program to Promote Health, Wellness, and Healing for
8. Common Ailments, Broadway.
9. Advanced Hatha Yoga: Classic Methods of Physical Education and Concentration [1 ed.]. Inner Traditions.
10. Yoga and Physical Education, National Council of Educational Research and Training (NCERT), India
11. Wealth First: Winning at Weight Loss and Wellness
12. Administration of Health and Physical Education Programme. Bucher, Charles A.
13. Treaties of Hygiene and Pubhe Health, Ghosh, B.N.
14. Principles of Public Health Administration 2003, Hanlon, John J.
15. The School Health and Health Education. Turner, C.E.
16. Health Education (National Education Association of UTA), Moss et al.
17. The School Health Education (Harber and Brothers, New York), Nemir A
18. Nutrition Encyclopedia, edited by Delores C.S. James, The Gale Group, Inc.
19. The Stone Age Health Programme: Diet and Exercise as Nature Intended. Angus and Robertson, Boyd-Eaton S. et al (1989)
20. Stress, How Your Diet can Help: The Practical Guideto Positive Health Using Diet, Vitamins, Minerals, Herbs and Amino Acids, Thorons, Terras S. (1994).

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Practical		35
Attendance		10
Record		10
Viva		05
Total		60

Year	I	Course Code:25UVAT22 Course Title: Digital Technologies	Credits	2
Sem.	II		Hours	30
			Category	A
Course Prerequisites, if any	Nil			
Internal Assessment Marks: 40	End Semester Marks:60	Duration of ESA (Theory): 03 hrs.		
Course Outcomes	<ul style="list-style-type: none"> • Get introduced to the digital systems and its building blocks • Understand how the Digital Communication happens and to Learn the advantages and disadvantages including Cybersecurity • Learn the day-to-day digital activities and the initiatives on Digital India. • Acquire knowledge on current Technologies and Trends in Digital Space <p>Explore the applications on the state of the art in Digital Technologies</p>			
Unit No.	Course Content		Hours	
Theory Component				
Unit I	Introduction: Digital Systems - Information & Communication Technology - ICT Tools. Computer Architecture – Software – Hardware - Operating System - Algorithms - Flowcharts		6	
Unit II	Communication Systems: Transmission Media - Computer Networks – Internet - Web Browsers - Search Engines - Messaging, Email - Social Media – Online Ethics. Cybersecurity: Threats, Significance, Challenges, Precautions, Safety Measures. Cyber Crime Awareness.		6	
Unit III	Digital India & e-Governance: Initiatives - Unified Payment Interface - Aadhar online services - Credit / Debit Cards - e-Wallets – Mobile and Internet Banking – NEFT / RTGS / IMPS - Online Payments&PoS.		6	
Unit IV	Emerging Technologies & Applications: (Basic introduction only). Overview of Artificial Intelligence, Cloud Computing, Big Data, Internet of Things, Virtual Reality, 5G, 3D Printing		6	
Unit V	Case Studies: Any one case study on the emerging technologies and report submission by the candidates.		6	

Practical Component		
List of Exercises	<ol style="list-style-type: none"> 1. Operating System Installation and configuration 2. Application Software Installation and configuration 3. Hardware understanding and minor troubleshooting 4. Networking, cabling, configuration 	
Recommended Learning Resources		
Print Resources	<ol style="list-style-type: none"> 1. Pramod Kumar, Anuradha Tomar, R. Sharmila, “Emerging Technologies in Computing - Theory, Practice, and Advances”, First Edition, Chapman and Hall / CRC, 2021. 2. V. Rajaraman, “Introduction to Information Technology”, PHI, 2018. 3. E. Balagurusamy, “Fundamentals of Computers”, Third Edition, Tata Mc GrawHill, Second Edition, 2011. 4. Behrouz A. Forouzan, “Data Communications and Networking”, Fourth Edition, McGraw Hill, 2007. 5. Rajkumar Buyya, James Broberg, and Andrzej Gosciniński, “Cloud Computing- Principals and Paradigms”, Wiley, 2011. 6. Stuart Russel and Peter Norvig, “Artificial Intelligence - A Modern Approach”, Third Edition, Pearson Education, 2010. 7. Samuel Greengard, “Internet of Things”, The MIT Press, 2015. 8. C.S.V. Murthy, “E- Commerce – Concept, Models & Strategies”, Himalaya Publishing House, 2015. 9. Hurwith, Nugent Halper, Kaufman, “Big Data for Dummies”, First Edition, Wiley & Sons, 2013. 	

EVALUATION

Assessment Methodology	Assessment Tools	Marks
Test		25
Assignment		5
Attendance		5
Activity	Presentations	5
Total		40