KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029.

DEPARTMENT OF INFORMATION TECHNOLOGY

CURRICULUM AND SCHEME OF EXAMINATIONS (CBCS)

COURSE OUTCOMES (CO) OF

B.SC INFORMATION TECHNOLOGY

For the students admitted in the
Academic Year 2024-2025

DEPARTMENT OF INFORMATION TECHNOLOGY

Vision:

- To achieve excellent standards of quality education by keeping pace with rapidly changing technologies.
- To create technical manpower of global standards with capabilities of accepting new challenges in Information Technology.
- Integral Formation and Empowerment of students for social transformation through Information Technology.

Mission:

- To provide outstanding education and training to our graduate students for their productive careers in industry, academia, and government.
- To impart quality and value-based education to raise satisfaction level of all stakeholders.
- To empower students with academic excellence, knowledge and training.
- To enable critical thinking among students towards development in IT withreference to social transformation.
- To apply new developments in Information Management and provide all possible support to promote research & development.
- To serve as a platform whereby the student enrich their personalities to assume greater responsibilities.

PROGRAMME OUTCOMES (PO)

PO1 Enhance the skills and new computing technologies through practical and theoretical knowledge of computer science and software engineering.

PO2 Practice communication, problem solving and decision-making skills through the use of appropriate technology and with the understanding of the business environment.

PO3 Identify, design, and analyze complex computer systems and interpret the results from those systems

PO4 Configure and administer database servers to support contemporary business environments.

PO5 Apply the knowledge of mathematics, science and computing in the core information technologies.

PO6 Analyze the impact of computing on individuals, organizations, and society, including ethical, legal, security, and global policy issues.

PO7 Learn future technologies through acquired foundational skills and knowledge and employ them in new business environments.

PO8 Pursue higher educationor practice as computing professionals to contributeto the economic development of the region, state and nation.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1 Apply the knowledge of computing and mathematics appropriate to the discipline.

PSO2 Apply current techniques, skills, and tools necessary for computing practical and to integrate IT-based solutions into the user environment effectively.

PSO3 Use design and development principles in the construction of software systems of varying complexity.

PSO4 An ability to use knowledge in various domains to identify real-world problems and hence to provide solution to new ideas and innovations.

PSO5 Design, document and develop robust applications by considering human, financial and environmental factors using cutting edge technologies to address individual and organizational needs.

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)

COIMBATORE – 641 029

Programme Name : **B.Sc INFORMATION TECHNOLOGY [B.Sc IT]**

Curriculum and Scheme of Examination under CBCS

(Applicable to the students admitted during the Academic Year 2024-2025)

Semester	Part	Subject Code	Title of the Paper	Instruction hours/ cycle	Exam. Marks			Duration of Exam (hours)	Credits
					CIA	ESE	TOTAL		
I	I	24TML101	Language I @	6	25	75	100	3	3
	II	24ENG101	English-I	6	25	75	100	3	3
	III	24UIT101	**Core Paper 1**– Data Structures using C	5	25	75	100	3	4
	III	24UIT1CL	**Core Practical 1** – Programming Lab -Data Structures using C	5	40	60	100	3	2
	III	24UIT1A1	**Allied Paper 1**- Mathematical Foundations for Computer Science	6	25	75	100	3	5
	IV	24EVS101	Environmental Studies**	2	-	50	50	3	2
	Total			**30**	**-**	**-**	**550**	**-**	**19**
II	I	24TML202	Language II@	6	25	75	100	3	3
	II	24ENG202	English –II	6	25	75	100	3	3
	III	24UIT202	**Core Paper 2** – Logic System Design	4	25	75	100	3	3
	III	24UIT203	**Core Paper 3**- Object Oriented Programming with Java	3	25	75	100	3	2
	III	24UIT2CM	**Core Practical 2**-Programming Lab- Java	3	40	60	100	3	2
	III	24UIT2A2	**Allied Paper 2** – Operations Research	6	25	75	100		5
	IV	24VED201	Value Education- Moral and Ethics**	2	-	50	50	3	2
	Total			**30**	**-**	**-**	**650**	**-**	**20**
III	I	24TML303	Language III@	6	25	75	100	3	3
	II	24ENG303	English –III	6	25	75	100	3	3
	III	24UIT304	**Core Paper 4**– Operating System using Linux	5	25	75	100	3	5
	III	24UIT3CN	**Core Practical 3**– Programming Lab - Linux	5	40	60	100	3	3
	III	24UIT3A3	**Allied Paper 3**- Client / Server Technology	4	25	75	100	3	5
	IV	24UGC3S1	**Skill Based Subject 1**-Cyber Security	2	100	-	100	3	3
	IV	24TBT301/ 24TAT301/ 24UHR3N1	**Basic Tamil*/ Advanced Tamil**/Non-Major Elective 1****	2	-	75	75	3	2
	Total			**30**	**-**	**-**	**675**	**-**	**24**

IV	I	24TML404	Language IV@	6	25	75	100	3	3
	II	24ENG404	English – IV	6	25	75	100	3	3
	III	24UIT405	**Core Paper5**-.NET Programming and Oracle	5	25	75	100	3	5
	III	24UIT4CO	**Core Practical 4**- Programming Lab- .NET and Oracle	5	40	60	100	3	3
	III	24UIT4A4	**Allied Paper 4**- Embedded and Real time systems	4	25	75	100	3	5
	IV	24UIT4SL	**Skill Based Subject2 (Practical) –** R Programming Lab	2	40	60	100	3	3
	IV	24TBT402/ 24TAT402/ 24UWR4N2	**Basic Tamil***/**Advanced Tamil**** / **Non-Major Elective2****	2	-	75	75	3	2
	Total			**30**	**-**	**-**	**675**	**-**	**24**
V	III	24UIT506	**Core Paper 6** – Web Technology	6	25	75	100	3	5
	III	24UIT507	**Core Paper 7** –Software Engineering	6	25	75	100	3	5
	III	24UIT508	**Core Paper 8** – Computer Networks	6	25	75	100	3	5
	III	24UIT5CP	**Core Practical 5**-Programming Lab - Web Development and Testing Lab	5	40	60	100	3	3
	III	24UIT5E1	**Major Elective 1**	5	25	75	100	3	5
	IV		**EDC**	2	100	-	100	3	3
	-	24UIT5IT	Internship Training****	**Grade**					
	Total			**30**	**-**	**-**	**600**	**-**	**26**
VI	III	24UIT609	**Core Paper 9**-IoT using Python	6	25	75	100	3	5
	III	24UIT610	**Core Paper 10**- Wireless Adhoc Networks	6	25	75	100	3	5
	III	24UIT6CQ	**Core Practical 6**-Programming Lab- IoT using Python	6	40	60	100	3	3
	III	24UIT6E2	**Major Elective 2**	6	25	75	100	3	5
	III	24UIT6Z1	Project and Viva-Voce***	4 &&	20	80	100	3	5
	III	**24UBI6S3**	**Skill Based Subject 3– Basics of IPR**	2	25	75	100	3	3
	Total			**30**	**-**	**-**	**600**	**-**	**26**
	V	**24NCC $ / NSS / YRC / PYE / ECC / RRC / WEC101#**	**Co curricular Activities***	**-**	**50**	**-**	**50**	**-**	**1**
Grand Total				**-**	**-**	**-**	**3800**	**-**	**140**

Note :

CBCS – Choice Based Credit system
CIA– Continuous Internal Assessment
ESE– End of Semester Examinations

$ For those students who opt NCC under Cocurricular activities will be studying the prescribed syllabi of the UGC which will include Theory, Practical & Camp components. Such students who qualify the prescribed requirements will earn an additional 24 credits.

@ Hindi/Malayalam/ French/ Sanskrit – 24HIN/MLM/FRN/SAN101 - 404

***** - No End-of-Semester Examinations. Only Continuous Internal Assessment (CIA)

******- No Continuous Internal Assessment (CIA). Only End-of-Semester Examinations (ESE)

*** Project Report – 60 marks; Viva voce – 20 marks; Internal-20 marks

&& 4 Hours allotted for project will not be allocated for staff workload.

**** The students shall undergo Internship training / field work for a minimum period of 14 working days at the end of the fourth semester during summer vacation and submit the report in the fifth semester which will be evaluated for 100 marks by the concerned guide and followed by an Internal Viva voce by the respective faculty or HOD as decided by the department. According to their marks, the grades will be awarded as given below.

Marks %	Grade
85 – 100	O
70 – 84	D
60 – 69	A
50 – 59	B
40 – 49	C
< 40	U (Reappear)

Major Elective Papers (2 papers are to be chosen from the following 8 papers)

1. Data Communications
2. Mobile Computing
3. Cloud Computing
4. Data Mining
5. Artificial Intelligence
6. Big Data Analytics
7. Digital Image Processing
8. Soft Computing

Non-Major Elective Papers

1. Human Rights
2. Women's Rights
3. Consumer Affairs

Sub. Code & Title of the Extra Departmental Course (EDC) :

24UIT5XL: EDC - Advanced Excel Lab

 # List of Cocurricular Activities:

1. National Cadet Corps (NCC)
2. National Service Scheme (NSS)
3. Youth Red Cross (YRC)
4. Physical Education (PYE)
5. Eco Club (ECC)
6. Red Ribbon Club (RRC)
7. Women Empowerment Cell (WEC)

Note: In core/ allied subjects, no. of papers both theory and practical are included wherever applicable. However, the total credits and marks for core/allied subjects remain the same as stated below.

Tally Table:

S.No.	Part	Subject	Marks	Credits
1.	I	Language – Tamil/Hindi/Malayalam/ French/ Sanskrit	400	12
2.	II	English	400	12
3.	III	Core – Theory/Practical	1600	60
	III	Allied	400	20
		Electives/Project	300	15
4.	IV	Basic Tamil / Advanced Tamil (OR) Non-major electives	150	4
		Skill Based subject	300	9
		EDC	100	3
		Environmental Studies	50	2
		Value Education	50	2
5.	V	Cocurricular Activities	50	1
		Total	**3800**	**140**

- 25 % CIA is applicable to all subjects except JOC, COP and SWAYAM courses which are considered as extra credit courses.
- 100% CIA for Cyber Security and EDC paper.
- The students who complete any **MOOC On learning platforms like SWAYAM, NPTEL, Course era, IIT Bombay Spoken Tutorial etc.,** before the completion of the 5th semester and the course completion certificate should be submitted through the HOD to the Controller of Examinations. Extra credits will be given to the candidates who have successfully completed.
- An **Onsite Training** preferably relevant to the course may be undertaken as per the discretion of the HOD.
- Students who successfully complete **Naan Mudhalvan** courses in 3rd and 5th semester will be given 2 extra credits for each course. They are asked to submit the marks to Controller of Examinations through and undersigned by the HOD.

Semester	Naan Mudhalvan Course Title
III	AWS Academy Introduction to Cloud: Semester 1
V	AWS Academy Introduction to Cloud: Semester 2

Components of Continuous Internal Assessment

Components		Marks	Total
Theory			
CIA I	75	(75+75 = 150/10) 15	25
CIA II	75		
Assignment/Seminar		5	
Attendance		5	
Practical			
CIA Practical		25	40
Observation Notebook		10	
Attendance		5	
Project			
Review		15	20
Regularity		5	

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1-Remembering; **K2**-Understanding; **K3**-Applying; **K4**-Analyzing; **K5**-Evaluating

1. Theory Examination:

(i) CIA I & II and ESE: 75 Marks

Knowledge Level	Section	Marks	Description	Total
K1 Q1 to 10	A (Answer all)	10 x 1 = 10	MCQ	75
K1 – K5 Q11 to 15	B (Either or pattern)	5 x 5 = 25	Short Answers	
K2 – K5 Q16 to 20	C (Either or pattern)	5 x 8 = 40	Descriptive / Detailed	

2. ESE Practical Examination:

Knowledge Level	Section	Marks	Total
K3	Experiments	50	60
K4	Record Work	10	
K5			

3. ESE Project Viva Voce:

Knowledge Level	Section	Marks	Total
K3	Project Report	60	80
K4	Viva voce	20	
K5			

Sub. Code: 24UIT101

Programme Code: 12	**B.Sc. Information Technology**			
Title of the paper : **Core Paper 1 –** Data Structures using C				
Batch	Hours / Week	Total Hours	Credits	Skill Development
2024 – 2025	**5**	**75**	**4**	

Course Objectives

1. To impart adequate knowledge on the need of programming languages and problem-solving techniques.
2. To develop an in-depth understanding of functional and logical concepts of C Programming.
3. To provide exposure to data structures through C programming.
4. To familiarize with the searching and sorting techniques using C Language.

Course Outcomes (CO)

K1 to K5	CO1	Remember various computer Hardware and Software programming constructs.
	CO2	Understand the fundamentals of C programming.
	CO3	Apply the right data representation formats based on arrays, structures and unions.
	CO4	Analyze, implement, test and debug data structure programs.
	CO5	Evaluate the usage of different searching and sorting techniques.

Sub. Code: 24UIT1CL
Sub. Code: 24UIT1CL

Programme Code: 12	**B.Sc. Information Technology**			
Title of the paper : **Core Practical 1 – Data Structures using C**				
Batch	Hours/Week	Total Hours	Credits	Skill Development
2024 – 2025	**5**	**75**	**2**	

Course Objectives

1. To introduce the field of programming using C language.
2. To learn problem solving techniques using C.
3. To enhance the analyzing and problem-solving skills for data structure programming using C.

Course Outcomes (CO)

K1 to K5	CO1	Understand basic Structure of the C-Programming, declaration and usage of variables.
	CO2	Apply Arithmetic operator, Conditional operator, logical operator, relational operators and other C constructs for developing programs.
	CO3	Develop C programs using decision making, branching, looping constructs.
	CO4	Develop programs using the Arrays, structures, functions, pointers and Strings
	CO5	Implement files and command line arguments.

Sub. Code: 24UIT202

Programme Code: 12	**B.Sc. Information Technology**			
Title of the paper : **Core Paper 2 -** Logic System Design				
Batch	Hours/Week	Total Hours	Credits	Skill Development
2024 – 2025	**4**	**60**	**3**	

Course Objectives

1. To gain an in-depth knowledge about the different types of number systems and number conversions.
2. To learn the concepts of Multiplexers, Flip-Flops and Registers.
3. To impart the knowledge about Input /Output devices, Interrupt handling and Priority Interrupt.

Course Outcomes (CO)

K1 to K5	CO1	Remember the binary number system and Boolean algebra.
	CO2	Understand the simplification of Boolean functions and Combinational Logic.
	CO3	Apply the rules of ASL in simplifying the expressions.
	CO4	Analyze the concept of registers, counters, memory unit and ASM.
	CO5	Evaluate the usage and applications digital circuits.

Sub. Code: 24UIT203
Sub. Code: 24UIT203

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Paper 3 – Object Oriented Programming with Java**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**3**	**45**	**2**	

Course Objectives

1. To develop a greater understanding of the issues involved in programming language design and object-oriented paradigms.

2. To impart adequate knowledge on the need of object-oriented programming languages.

3. To enhance problem solving and programming skills in Java by implementing the object-oriented concepts.

Course Outcomes (CO)

K1 to K5	CO1	Remember the history of java and core java fundamentals.
	CO2	Understand the control statements of java programming and object oriented programming fundamentals.
	CO3	Analyze the java packages, interfaces features and handle exceptions.
	CO4	Apply the concepts multi-thread programming and java I/o basics to solve real-world problems.
	CO5	Evaluate the applet and event handling using java.

Sub. Code: 24UIT2CM

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Practical 2 – Programming Lab - Java**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**3**	**45**	**2**	

Course Objectives

1. To understand and apply Object oriented features and OOPs concepts in Java.
2. To apply the concept of polymorphism and inheritance.
3. To develop applications using Console I/O and File I/O.

Course Outcomes (CO)

K3 to K5	CO1	Creating simple programs to familiarize java programming
	CO2	Apply the basic concepts of Object-Oriented Programming
	CO3	Solve the programs using functions and inheritance.
	CO4	Develop and Implement programs using applet and events
	CO5	Implement database connectivity

Sub. Code: 24UIT304

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Paper 4 – Operating System using Linux**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**5**	

Course Objectives

1. To impart adequate knowledge on the Operating Systems.
2. To develop an in-depth understanding Process and memory management.
3. To provide exposure to Linux.
4. To familiarize with the basic difference between CLI OS & GUI OS.

Course Outcomes (CO)

K1 to K5	CO1	Understand the fundamentals of computer operating system.
	CO2	Remember various Process Management programming constructs
	CO3	Apply the right Memory Management representation formats.
	CO4	Implement the Disk Management concepts.
	CO5	Discussion about Linux.

Sub. Code: 24UIT3CN

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Practical 3 – Programming Lab – Linux**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**3**	

Course Objectives

1. To introduce the field of Linux.
2. To learn Shell variables and environments.
3. To enhance the analyzing and problem-solving skills using shell script

Course Outcomes (CO)

K3 to K5	CO1	Understand basic LINUX commands.
	CO2	Apply shell commands for control statements.
	CO3	Develop basic shell programs.
	CO4	Develop programs using the functions.
	CO5	Implement files using arguments.

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Sub. Code: 24UIT3A3
Sub. Code: 24UIT3A3

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Allied Paper 3 – Client / Server Technology**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**4**	**60**	**5**	

Course Objectives

1. To know fundamentals of client server technology.
2. To gain the knowledge of client server data bases.
3. To Outline current and emerging trends in layered architecture.
4. To Analyze power of management skills in training and testing.
5. To understand about the future of client / server.

Course Outcomes (CO)

K1 to K5	CO1	Understand the basic concepts of client server Technology.
	CO2	Perceive knowledge about databases in client /server method.
	CO3	Understanding the applications, components and layered technology
	CO4	Apply and Identifying testing and training in client/ server applications
	CO5	Understanding the future techniques in client /server model

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Paper 5 - .NET Programming and Oracle**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**5**	

Course Objectives

1. To understand the .Net Framework components.
2. To integrate variables and functions in developing .Net applications.
3. To learn the basic concepts of database.
4. To understand the concepts of DDL and DML.

Course Outcomes (CO)

K1 to K5	CO1	Understand the properties and methods of the various tools.
	CO2	Apply the concept of .NET in developing windows applications.
	CO3	Analyze the database connectivity using ADO.NET.
	CO4	Remembering the concept of Database.
	CO5	Applying various DDL, DML statements, Joins, Queries and PL / SQL statements.

Sub. Code: 24UIT4CO

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Practical 4 – Programming Lab – .NET and Oracle**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**3**	

Course Objectives

1. To become familiar with the tools and operations of VB.Net
2. To get a simple understanding of windows- based programming.
3. To gain knowledge in developing real time applications.

Course Outcomes (CO)

K3 to K5	CO1	Applying the appropriate tools, methods and events for developing the applications.
	CO2	Implementing the syntax and functions in developing the real time applications.
	CO3	Analyzing the database applications with ADO.NET
	CO4	Develop menu-based program for text manipulation,
	CO5	Implement Web applications using ASP .NET

Sub. Code:

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Allied Paper 4 – Embedded and Real time systems**				
Batch	Hours/Week	Total Hours	Credits	Entrepreneurship
2024 – 2025	**4**	**60**	**5**	

Course Objectives

1. To teach the architecture and instruction set of different Microprocessors.
2. To learn the architecture of ARM, and embedded programs.
3. To understand the architectures of Real Time systems.

Course Outcomes (CO)

K1 to K5	CO1	Remember the Embedded system design process and ARM Processor.
	CO2	Understand the Bus-Based Computer Systems.
	CO3	Apply the Processes and Operating Systems.
	CO4	Analyze the Processes, Operating Systems and multiprocessors.
	CO5	Evaluate the usage of networks and design techniques.

Sub. Code: 24UIT506

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Paper 6 – Web Technology**				
Batch	Hours/Week	Total Hours	Credits	Entrepreneurship
2024 – 2025	**6**	**90**	**5**	

Course Objectives

1. To acquire the knowledge about web programming and scripting languages.
2. To learn the basic concepts of webpage design using HTML.
3. To gain an insight of developing dynamic webpage by using CSS and DHTML.
4. To develop the ability to create a well-formed and Valid XML documents.
5. To enhance the skills to create and deploy the web applications.

Course Outcomes (CO)

K1 to K5	CO1	Remember the concepts of HTML for designing web pages.
	CO2	Understand the concepts of DHTML and CSS to create dynamic web pages.
	CO3	Apply PHP and Ajax for developing real time web applications.
	CO4	Analyze and validate the web pages by using Java script.
	CO5	Evaluate the Applications and usage of static and dynamic web pages.

Sub. Code: 24UIT507

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Paper 7 – Software Engineering**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**6**	**90**	**5**	

Course Objectives

1. To assist the students in understanding the basic theory of software engineering.
2. To teach about various testing and debugging techniques.
3. To gain knowledge about quality control and to develop good quality software.

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamentals of software engineering concepts.
	CO2	Understand common life cycle processes such as waterfall model, spiral model, prototyping model and evolutionary models.
	CO3	Applythe principles and techniques of software engineering in the architectural design, detail design, and implementation of software applications.
	CO4	Analyze the developed software using different testing concepts.
	CO5	Evaluate the usage of Reengineering and Reverse Engineering.

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Paper 8 - Computer Networks**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**6**	**90**	**5**	

Course Objectives

1. To learn the terminology and concepts of the OSI reference model and TCP/IP reference model.
2. To identify the key issues for the realization of the LAN/WAN/MAN network architectures.
3. To understand a basic knowledge of the use of cryptography and different techniques keys used for Encryption and Decryption.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic structure of ISO/OSI reference model.
	CO2	Understanding the knowledge of the use of Cryptography.
	CO3	Apply the concept of routing algorithms.
	CO4	Analyzing Digital Signatures Symmetric-Key Signatures and Public-Key Signatures.
	CO5	Evaluate the applications and usage of Internet Protocols.

Sub. Code: 24UIT5CP

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Practical 5 –Programming Lab – Web Development and Testing Lab**				
Batch **2024 – 2025**	Hours/Week **5**	Total Hours **75**	Credits **3**	Entrepreneurship

Course Objectives

1. To develop the ability to build web applications using various technologies like
2. HTML,CSS, PHP and Ajax and construct the test cases.
3. To create dynamic web pages and validate it using Java script.
4. To design and implement real time applications by applying the concepts of PHP and Ajax.
5. To learn about the concepts of assert, verification, wait commands.

Course Outcomes (CO)

K3 to K5	CO1	Recollect the concept of designing web pages using HTML and validate it using Java script.
	CO2	Understand the concepts of CSS and DHTML to create dynamic web pages and implement the concepts of assert and verify
	CO3	Develop the webpage using the concepts of PHP and Ajax.
	CO4	Create web pages using XHTML and Cascading Style Sheets and apply essential characteristics of tool for test automation
	CO5	Build dynamic web pages using JavaScript and evaluate different strategies for Generating system test cases

Sub. Code: 24UIT609

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Paper 9 – IoT Using Python**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**6**	**90**	**5**	

Course Objectives

1. To learn the architecture of Internet of Things and connected world.
2. To learn about various IoT related protocols.
3. To Explore on use of various hardware and sensing technologies to build IoT applications.
4. To learn the available cloud services and communication API's for developing smart cities.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic syntax of Python Programming
	CO2	Understand physical design of Internet of Things.
	CO3	Apply the usage of Internet of Things in various real-life applications.
	CO4	Analyze programming Raspberry pi with Python.
	CO5	Evaluate the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Paper 10 – Wireless Ad Hoc Networks**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**6**	**90**	**5**	

Course Objectives

1. To explain fundamental principles of Ad-hoc Networks.
2. To discuss a comprehensive understanding of Ad-hoc network protocols
3. To outline current and emerging trends in Ad-hoc Wireless Networks.
4. To analyze energy management in ad-hoc wireless networks.

Course Outcomes (CO)

K1 to K5	CO1	Understand the Design Goals of Protocols.
	CO2	Remember various Routing Protocols for Ad-hoc constructs.
	CO3	Apply the right Multicast Routing networks.
	CO4	Implement the Transport Layer and Security Protocols.
	CO5	Discussion on the Quality of Service and Energy Management.

Sub. Code: 24UIT6CQ

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Core Practical 6 – Programming Lab – IoT Using Python**				
Batch	Hours / Week	Total Hours	Credits	Employability
2024 – 2025	**6**	**90**	**3**	

Course Objectives

1. To develop applications using various IoT Techniques.
2. To learn the basic constructs in Python programming and to apply them for developing IOT applications.
3. To implement various smart applications using IoT.

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Course Outcomes (CO)

K3 to K5	CO1	Remember the techniques for effective design of IoT Applications with Raspberry pi.
	CO2	Understand the basic constructs of Python Programming.
	CO3	Deploy IoT applications and connect to the Cloud.
	CO4	Apply the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
	CO5	Analyze and evaluate protocols used in IOT.

Sub. Code: 24UIT6Z1

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Pape*r: **Project and Viva-Voce *****				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**4**	**60**	**5**	

Course Objectives

On successful completion of all the above courses

1. To get the knowledge about selecting the task based on their course skills.
2. To get the knowledge about analytical skill for solving the selected task.
3. To gain confidence for implementing the task.
4. To gain confidence for solving the real time problems.

Course Outcomes (CO)

K3 to K5	CO1	Apply the programming skill for solving the project.
	CO2	Analyze the task to collect the necessary information about the system.
	CO3	Evaluating the project based on the software.
	CO4	Apply testing techniques to test the different modules of the project.
	CO5	Implement the Project in the user environment.

UIT -53

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Elective – Data Communication**				
Batch **2024 – 2025**	Hours/Week **5**	Total Hours **75**	Credits **5**	Employability

Course Objectives

1. To learn the terminology and concepts of the OSI reference model and TCP/IP reference model.
2. To identify the key issues for the realization of the LAN/WAN/MAN network architectures.
3. To understand a basic knowledge of the use of cryptography and different techniqueskeys used for Encryption and Decryption.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic structure of ISO/OSI reference model.
	CO2	Understanding the knowledge of the use of Cryptography.
	CO3	Apply the concept of routing algorithms.
	CO4	Analyzing Digital Signatures Symmetric-Key Signatures and Public-Key Signatures.
	CO5	Evaluate the applications and usage of Internet Protocols.

Programme Code: 12	**B.Sc. Information Technology**			
Title of the paper : **Elective–Mobile Computing**				
Batch **2024 – 2025**	Hours / Week **5**	Total Hours **75**	Credits **5**	Employability

Course Objectives

1. To explain fundamental of mobile computing.
2. To discuss a comprehensive understanding of TCP/IP protocols
3. To outline current and emerging trends in Telecommunication systems.
4. To analyze energy management in ad-hoc wireless networks.
5. To understand about the operating systems used in mobile platforms.

Course Outcomes (CO)

K1 to K5	CO1	Understand the several communication access techniques and determine the functionality of MAC.
	CO2	Perceive knowledge about TCP and IP method
	CO3	Illustrate technical format, addressing and transmission strategies of packets
	CO4	Apply and Identifying a routing protocol for given Adhoc Networks Evaluate
	CO5	Understanding the platforms and mobile operating system techniques

UIT -55

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Elective – Cloud Computing**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**5**	

Course Objectives

1. To teach the basics of cloud computing.
2. To understand the broad perspective of cloud architecture
3. To gain the knowledge of cloud services and cloud security.

Course Outcomes (CO)

K1 to K5	CO1	Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud.
	CO2	Understand the core issues of cloud computing such as security, privacy, and interoperability.
	CO3	Apply the appropriate technologies and approaches for the related issues.
	CO4	Analyze the appropriate cloud computing solutions and recommendations according to the applications used.
	CO5	Evaluate the Risk, Security and data loss prevention in cloud.

UIT -56

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Elective - Data Mining**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**5**	

Course Objectives

1. To introduce the basic concepts of Data Mining algorithms, methods and tools.
2. To develop and apply critical thinking, problem-solving, and decision-making skills.
3. To discover interesting patterns, analyze supervised and unsupervised models and Estimate the accuracy of the algorithms.

Course Outcomes (CO)

K1 to K5	CO1	Remembering the data mining principles and techniques.
	CO2	Understanding the concept of raw data processing using data mining algorithms.
	CO3	Applying data mining algorithms to build analytical applications.
	CO4	Analyzing large amount of data to extract patterns and to solve problems.
	CO5	Evaluate the performance of various algorithms by comparing different approaches.

Unit V **(15 Hours)**

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Elective – Artificial Intelligence**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**5**	

Course Objectives

1. To understand the basic concepts of Artificial Intelligence (AI) and identify the AI problems and domains.

2. To provide search techniques to solve the problems.

3. To represent and access the domain specific knowledge.

Course Outcomes (CO)

K1 to K5	CO1	Remember the techniques of Artificial Intelligence in Problem Solving.
	CO2	Understand the nature of AI problems and task domains of AI.
	CO3	Apply the appropriate search procedures to solve the problems by using best algorithms.
	CO4	Analyze and select the suitable knowledge representation method.
	CO5	Evaluate the techniques of representing knowledge using rules.

Unit IV **(15 Hours)**

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: Elective – **Big Data Analytics**				
Batch	Hours/Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**5**	

Course Objectives

1. To learn the basic concepts of Big Data and its technologies.
2. To learn about NoSQL and Big data Management
3. To gain knowledge about Hadoop and HDFS.
4. To learn about web mining, graph mining and social network mining.

Course Outcomes (CO)

K1 to K5	CO1	Remember big data and use cases from selected business domains
	CO2	Understand NoSQL big data management
	CO3	Apply map-reduce analytics using Hadoop.
	CO4	Analyze Graph Mining, Web Mining and Social Network Mining.
	CO5	Evaluate the usage of web mining in social networks.

UIT -59

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Elective – Digital Image Processing**				
Batch **2024 – 2025**	Hours/Week **5**	Total Hours **75**	Credits **5**	Employability

Course Objectives

1. To understand the basic fundamental concept of an image
2. To know the concepts of Image techniques, Sharpe and filtering ideas
3. To gain the knowledge about image patterns, structures and image compressions

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic image concepts.
	CO2	Understand the image sharpens enhancement and compression models.
	CO3	Apply various image techniques like edge linking and boundary detection.
	CO4	Analyze basic requirements of image processing like structure, compressionand resolution.
	CO5	Evaluate the usage of object recognition and Interpretation methods.

UIT -60

Programme Code: 12	**B.Sc. Information Technology**			
Title of the paper : **Elective–Soft Computing**				
Batch	Hours / Week	Total Hours	Credits	Employability
2024 – 2025	**5**	**75**	**5**	

Course Objectives

1. To Explain fundamental principles of soft computing.
2. To Discuss about the Fuzzy Logic, Various fuzzy systems and their functions
3. To Gain knowledge about the neural networks
4. To Apply and understand the perceptron and genetic algorithms

Course Outcomes (CO)

K1 to K5	CO1	Learn about soft computing techniques and their applications
	CO2	Knowledge about the Fuzzy Logic, Various fuzzy systems and their functions
	CO3	Analyze the Neural Networks, architecture, functions and various algorithms involved
	CO4	Understand perceptron and counter propagation networks.
	CO5	Apply and use of Genetic algorithms, its applications and advances

Sub. Code: 24UGC3S1

Sub. Code: 24UGC3S1

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Skill Based Subject 1 – Cyber Security**				
Batch **2024 – 2025**	Hours/Week **2**	Total Hours **30**	Credits **3**	**Skill Development**

Course Objectives

1. The course introduces the basic concepts of Cyber Security.
2. To develop an ability to understand about various modes of Cyber Crimes and Preventive measures.
3. To understand about the Cyber Legal laws and Punishments.

Course Outcomes (CO)

K1	CO1	To Understand the Concepts of Cybercrime and Cyber Frauds
K2	CO2	To Know about Cyber Terrorism and its preventive measures
K3	CO3	To Analyze about the Internet, Mobile Phone and E-commerce security issues
K4	CO4	To Understand about E-mail and Social Media Issues
K5	CO5	To Describe about various legal responses to Cybercrime

UIT -78

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Skill Based Subject 2 – R Programming Lab**				
Batch **2024 – 2025**	Hours/Week **2**	Total Hours **15**	Credits **3**	Skill Development

Course Objectives

- To acquire programming skills in core R Programming
- To acquire Object-oriented programming skills in R Programming.
- To develop the skill of designing graphical-user interfaces (GUI) in R Programming

Course Outcomes (CO)

K3 to K5	CO1	Familiarize with the constructs and running of R programs
	CO2	Apply control structures of R for several suitable problems
	CO3	Demonstrate the working of various data structures supported by R
	CO4	Understand the role of R in data handling and visualization
	CO5	Recognize the type of problem and solve it using R

UIT -63 **Sub. Code: 24UBI6S3**

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Skill Based Subject 3 – BASICS OF INTELLECTUAL PROPERTY RIGHT'S**				
Batch	Hours/Week	Total Hours	Credits	Skill Development
2024 – 2025	**2**	**15**	**3**	

Course Objectives

- To create awareness about recent trends in IPR and Innovation
- To explore the basic concepts IPR
- To focus upon trademarks, copyrights, patents, industrial designs and traditional knowledge.
- To learn more about managing IP rights and legal aspects.

Course Outcomes (CO)

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

K1 ↑	CO1	Know about basic concepts of IPR and patent
	CO2	Understand copyrights, industrial designs and geographical indication of goods.
	CO3	Differentiate between trademarks and trade secrets
	CO4	Acquire knowledge on protection of traditional knowledge and plant varieties.
K5 ↓	CO5	Manage and protect IP Rights

UIT -82

Sub. Code: 24UIT5XL

Programme Code: 12	**B.Sc. Information Technology**				
Title of the Paper: **Extra Departmental Course (EDC) – Advanced Excel Lab**					
Batch	Semester	Hours /Week	Total Hours	Credits	Employability
2024 – 2025	**VI**	**2**	**30**	**3**	

Course Objectives

1. To include advanced functions in Excel.
2. To understand the concepts of Range, Pivot Chart and Mathematical Functions in Excel.
3. To introduce the basic concepts of Data Validation and Data Sorting.

Course Outcomes (CO)

K3 to K5	CO1	Apply Mathematical and Logical Functions.
	CO2	Analyze the use of Range Function.
	CO3	Implement the spreadsheet using Excel Tools.
	CO4	Apply Statistical and Reference functions.
	CO5	Create a Chart for the Table data.

UIT -65

Sub. Code: 24UIT5XL

Sub. Code: 24EVS101

Programme Code: 12	**B.Sc. Information Technology**				
Title of the Paper: **Part – IV - Environmental Studies**					
Batch	Semester	Hours/Week	Total Hours	Credits	Skill Development
2024 – 2025	**I**	**2**	**30**	**2**	

Course Objectives

1. The course will provide students with an understanding and appreciation of the complex interactions of man, health and the environment. It will expose students to the multi-disciplinary nature of environmental health sciences.

2. To inculcate knowledge and create awareness about ecological and environmental concepts, issues and solutions to environmental problems.

3. To shape students into good "Eco citizens" thereby catering to global environmental needs.

4. This course is designed to studyabout the types of pollutants including gases, chemicals petroleum, noise, light, global warming and radiation as well as pollutant flow and recycling and principles of environmental pollution such as air, water and soil.

5. The course will address environmental stress and pollution, their sources in natural and workplace environments, their modes of transport and transformation, their ecological and public health effects, and existing methods for environmental disease prevention and remediation.

Course Outcomes

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

K1 ↕ K5	CO1	Understand how interactions between organisms and their environments drive the dynamics of individuals, populations, communities and ecosystems
	CO2	Develop an in-depth knowledge on the interdisciplinary relationship of cultural, ethical and social aspects of global environmental issues
	CO3	Acquiring values and attitudes towards complex environmental socio-economic challenges and providing participatory role in solving current environmental problems and preventing the future ones
	CO4	To gain inherent knowledge on basic concepts of biodiversity in an ecological context and about the current threats of biodiversity
	CO5	To appraise the major concepts and terminology in the field of environmental pollutants, its interconnections and direct damage to the wildlife, in addition to human communities and ecosystems

UIT -66

Sub. Code: 24VED201

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Value Education – Moral and Ethics**				
Batch	Hours/Week	Total Hours	Credits	Skill Development
2024 – 2025	**2**	**30**	**2**	

Course Objectives

1. To impart Value Education in every walk of life.
2. To help the students to reach excellence and reap success.
3. To impart the right attitude by practicing self-introspection.
4. To portray the life and messages of Great Leaders.
5. To insist the need for universal brotherhood, patience and tolerance.
6. To help the students to keep them fit.
7. To educate the importance of Yoga and Meditation.

Course Outcomes (CO)

After completing the course, the students will be able to:

K1 to K5	CO1	Will be able to recognize Moral values, Ethics, contribution of leaders, Yoga and its practice.
	CO2	Will be able to differentiate and relate the day to day applications of Yoga and Ethics in real life situations.
	CO3	Can emulate the principled life of great warriors and take it forward as a message to self and the society.
	CO4	Will be able to Analyse the Practical outcome of practicing Moral values in real life situation.
	CO5	Could Evaluate and Rank the outcome of the pragmatic approach to further develop the skills.

Sub. Code: 24UHR3N1

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Part IV - Non - Major Elective 1 - Human Rights**				
Batch	Hours/Week	Total Hours	Credits	Skill Development
2024 – 2025	**2**	**30**	**2**	

Course Objectives

1. To prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development.
2. To impart education on national and international regime on Human Rights.
3. To sensitive students to human suffering and promotion of human life with dignity.
4. To develop skills on human rights advocacy
5. To appreciate the relationship between rights and duties
6. To foster respect for tolerance and compassion for all living creature.

UIT -67

Course Outcomes (CO)

K1 to K5	CO1	To understand the hidden truth of Human Rights by studying various provisions in the Constitution of India.
	CO2	To acquire overall knowledge regarding the Feminist perspectives in the Liberative Empowerment of Women.
	CO3	To gain knowledge about various gender roles and stereotypes involved in the comprehension of gender equality and women's rights.
	CO4	To comprehend the legal provisions and policies that foreground the safety of children in the society and to promote awareness.
	CO5	To gain enhanced knowledge about sexual and gender minorities to recognize, celebrate and acknowledge the diversified forms of gender expressions and rights.

UIT -68

Sub. Code: 24UWR4N2

Sub. Code: 24UWR4N2

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Part IV- Non- Major Elective 2 - Women's Rights****				
Batch	Hours/Week	Total Hours	Credits	Skill Development
2024 – 2025	**2**	**30**	**2**	

Course Objectives

1. To know about the laws enacted to protect women against violence.
2. To impart awareness about the hurdles faced by women.
3. To develop a knowledge about the status of all forms of women to access to justice.
4. To create awareness about women's rights.
5. To know about laws and norms pertaining to protection of women.
6. To understand the articles which enables the women's rights.
7. To understand the Special Women Welfare laws.
8. To realize how the violence against women puts an undue burden on healthcare services.

Course Outcomes (CO)

After Completion of the Course the student will be able to

K1 to K5	CO1	Appraise the importance of Women's Studies and incorporate Women's Studies with other fields
	CO2	Analyze the realities of Women Empowerment, Portrayal of Women in Media, Development and Communication
	CO3	Interpret the laws pertaining to violence against Women and legal consequences
	CO4	Contribute to the study of the important elements in the Indian Constitution, Indian Laws for Protection of Women
	CO5	Spell out and implement Government Developmental schemes for women and create awareness on modernization and impact of technology on Women

Teaching Methods: **UIT -96**

Programme Code: 12	**B.Sc. Information Technology**			
Title of the Paper: **Part IV- Non- Major Elective 3 – Consumer Affairs**				
Batch **2024 – 2025**	Hours/Week **2**	Total Hours **30**	Credits **2**	**Skill Development**

Course Objectives

1. To familiarize the students with their rights and responsibilities as a consumer.
2. To understand the procedure of redress of consumer complaints.
3. To know more about decisions on Leading Cases by Consumer Protection Act.
4. To get more knowledge about Organizational set-up under the Consumer Protection Act.
5. To impart awareness about the Role of Industry Regulators in Consumer Protection.
6. To understand Contemporary Issues in Consumer Affairs.

Course Outcomes (CO)

K1 to K5	CO1	Able to know the rights and responsibility of consumers.
	CO2	Understand the importance and benefits of Consumer Protection Act.
	CO3	Applying the role of different agencies in establishing product and service standards.
	CO4	Analyse to handle the business firms' interface with consumers.
	CO5	Assess Quality and Standardization of consumer affairs