DEPARTMENT OF COMPUTER SCIENCE

B.Sc. (INFORMATION TECHNOLOGY)

(Students admitted during 2020-2021 Onwards)

(Under CBCS with Outcome Based Education (OBE) Pattern)

SYLLABUS

I & II SEMESTER

GOBI ARTS & SCIENCE COLLEGE

(Govt. Aided Autonomous Co-educational Institution, Affiliated to Bharathiar University, Coimbatore, Accredited with 'A' Grade by NAAC (4th cycle) and Recognised as a STAR College by DBT, Government of India)

KARATTADIPALAYAM POST,

GOBICHETTIPALAYAM - 638453

ERODE DISTRICT.

GOBI ARTS & SCIENCE COLLEGE (Autonomous)

Vision

Social and Economic upliftment of the people of this area through value based quality Education.

Mission

Committed to serve the society with humility and trust, devoid of exploitation; to impart value based higher education, particularly to the socially and economically deprived sections of this area; to make students of this institution worthy citizens of our glorious motherland.

DEPARTMENT OF COMPUTER SCIENCE

Vision

To inculcate better programming skills among rural area students.

Mission

To impart value based technical education and educate students towards the design and development of software products for the benefit of computer industry and society.

GOBI ARTS & SCIENCE COLLEGE (AUTONOMOUS): GOBICHETTIPALAYAM

SCHEME OF EXAMINATIONS - B.Sc. (INFORMATION TECHNOLOGY) (20 BATCH)

No.	Course Code	Part	Course	Total Hours	Hrs/ Exam	Maximum Marks		Total Marks	Credits
						CIA	EOS		
			SEMESTER - I						
1	20U1TM01	I	TAMIL - I	90	3	30	70	100	3.0
2	19U2EN01	II	ENGLISH - I	90	3	30	70	100	3.0
3	19UAIT01	III	MAJOR CORE : FUNDAMENTALS OF INFORMATION TECHNOLOGY	60	3	30	70	100	3.5
4	19UAIT02	III	OFFICE AUTOMATION TOOLS	60	3	30	70	100	3.5
5	19UBIT03	III	ALLIED CORE : MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE	90	3	30	70	100	5.0
6	19UAITP1	III	MAJOR CORE PROGRAMMING LAB - I : (OFFICE AUTOMATION TOOLS)	60	3	30	70	100	2.0
7	19U4HE01	IV	i) HUMAN EXCELLENCE PAPER - I : BASICS OF YOGIC LIFE	15	3	30	70	100	1.0
			SEMESTER - II						
8	20U1TM02	I	TAMIL – II	90	3	30	70	100	3.0
9	19U2EN02	II	ENGLISH – II	90	3	30	70	100	3.0
10	19UAIT04	III	MAJOR CORE : COMPUTER ORGANIZATION AND ARCHITECTURE	60	3	30	70	100	3.5
11	19UAIT05	III	PROGRAMMING IN C	60	3	30	70	100	3.5
12	19UBIT06	III	ALLIED CORE : COMPUTER ORIENTED NUMERICAL METHODS	90	3	30	70	100	5.0
13	19UAITP2	III	MAJOR CORE PROGRAMMING LAB - II : (C)	60	3	30	70	100	2.0
14	19U4HE02	IV	i) HUMAN EXCELLENCE PAPER - II : SUBLIMATION AND SOCIAL WELFARE	15	3	30	70	100	1.0
15	19U4HEP1	IV	PRACTICAL - I : YOGA PRACTICAL – I	15		100		100	1.0
16	19U4FN01	IV	ii) FOUNDATION SUBJECT - A : GENERAL AWARENESS		1.5		100	100	1.0
			SEMESTER - III						
17	19UAIT07	III	MAJOR CORE : OBJECT ORIENTED PROGRAMMING WITH C++	60	3	30	70	100	3.5
18	20UAIT08	III	DATA STRUCTURES	60	3	30	70	100	3.5
19	19UAIT09	III	INTRODUCTION TO INFORMATION SYSTEMS	60	3	30	70	100	3.5
20	19UAIT10	III	OPERATING SYSTEM	60	3	30	70	100	3.5
21	19UBIT01	III	ALLIED CORE : COMPUTER ORIENTED STATISTICAL METHODS	60	3	30	70	100	5.0
22	19UAITP3	III	MAJOR CORE PROGRAMMING LAB - III : (C++)	60	3	30	70	100	2.0
23	19UAITP4	III	MAJOR CORE PROGRAMMING LAB – IV : (DATA STRUCTURES IN C)	60	3	30	70	100	2.0
24	19U4HE03	IV	i) HUMAN EXCELLENCE PAPER - III : VIRTUES OF LIFE	15	3	30	70	100	1.0
25		IV	ii) FOUNDATION SUBJECT – B		3		100	100	2.0

Contd…

			SEMESTER - IV						
26	19UAIT11	III	MAJOR CORE : RELATIONAL DATABASE MANAGEMENT SYSTEMS	75	3	30	70	100	4.5
27	19UAIT12	III	VISUAL PROGRAMMING	75	3	30	70	100	4.5
28	19UAIT13	III	CLIENT/SERVER COMPUTING	75	3	30	70	100	4.0
29		III	ALLIED OPTIONAL :	90	3	30	70	100	5.0
30	19UAITP5	III	MAJOR CORE PROGRAMMING LAB - V : (RDBMS)	60	3	30	70	100	2.0
31	19UAITP6	III	MAJOR CORE PROGRAMMING LAB - VI : (VISUAL PROGRAMMING)	60	3	30	70	100	2.0
32	19U4HE04	IV	i) HUMAN EXCELLENCE PAPER - IV : PERSONALITY DEVELOPMENT	15	3	30	70	100	1.0
33	19U4HEP2	IV	PRACTICAL - II : YOGA PRACTICAL – II	15		100		100	1.0
34		IV	ii) FOUNDATION SUBJECT – B		3		100	100	2.0
35		V	CO-CURRICULAR ACTIVITIES						1.0
			SEMESTER - V						
36	19UAIT14	III	MAJOR CORE : JAVA PROGRAMMING	60	3	30	70	100	4.5
37	20UAIT15	III	PYTHON PROGRAMMING	60	3	30	70	100	4.5
38	19UAIT16	III	COMPUTER NETWORKS	60	3	30	70	100	4.5
39	19UAIT17	III	SOFTWARE ENGINEERING	60	3	30	70	100	4.5
40	19UAITP7	III	MAJOR CORE PROGRAMMING LAB - VII : (JAVA PROGRAMMING)	60	3	30	70	100	2.0
41	20UAITP8	III	MAJOR CORE PROGRAMMING LAB – VIII : (PYTHON PROGRAMMING)	60	3	30	70	100	2.0
42		III	MAJOR OPTIONAL :	90	3	30	70	100	4.0
			SEMESTER - VI						
43	19UAIT18	III	MAJOR CORE : WEB DESIGN	90	3	30	70	100	4.5
44	19UEIT01	III	MAJOR SKILL BASED PAPER : COMPUTER GRAPHICS	90	3	30	70	100	4.5
45	19UAITP9	III	MAJOR CORE PROGRAMMING LAB - IX : (WEB DESIGN)	60	3	30	70	100	2.5
46	19UEITP1	III	MAJOR SKILL BASED PRACTICAL : PROGRAMMING LAB - X : (COMPUTER GRAPHICS)	60	3	30	70	100	2.5
47	19UAIT19 19UAITPA 19UAITV1	III III III	MAJOR CORE : PROGRAMMING WITH PHP PROGRAMMING LAB - XI : (PHP) **(OR)** PROJECT WORK	90 60 150	3 3	30 30 30	70 70 70	100 100 100	4.5 2.5 7.0

CREDITS:
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PART I : 6 PART II : 6 PART III : MAJOR : 100
ALLIED: 20
---> 120
PART IV : 11 PART V : 1 TOTAL : 144

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1-Remember; K2- Understanding; K3- Apply; K4-Analyze; K5- Evaluate

I. END OF SEMESTER (EOS) EXAMINATIONS:

1. Part I, II & III-Theory: 70 Marks

Knowledge Level	Section	Marks	Description	Total
K1	A (Answer All)	15 × 1 = 15	MCQ	70
K2	B (Either or Pattern)	5 × 5 = 25	Short answers	
K3 & K4	C (Answer 3 out of 5)	3 × 10 = 30	Descriptive/Detailed	

2. Practical Examinations: 70 Marks

Knowledge Level	Section		Total
	Practical	Record work	
K3	60	10	70
K4			
K5			

II. CONTINUOUS INTERNAL ASSESSMENT (CIA):

1. Test – I & II: 30 Marks (Theory)

Knowledge Level	Section	Marks	Description	Total
K1	A (Answer All)	10 × 1 = 10	MCQ	30
K2	B (Answer 2 out of 3)	2 × 5 = 10	Short answers	
K3 & K4	C (Answer 1 out of 2)	1 × 10 = 10	Descriptive/Detailed	

2. Practical Internal Assessment: 30 Marks

Knowledge Level	Section		Total
	Test	Lab Performance	
K3	20	10	30
K4			
K5			

Components of Continuous Internal Assessment (CIA)

Components		Calculation	CIA Total
Test 1	30	$\frac{\text{Test 1 + Test 2}}{2}$	30
Test 2	30		

PROGRAMME SPECIFIC OBJECTIVES:

The students will be able to do, on successful completion of programme,

1. Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
2. Obtain employment in industry/academia and possess skills to identify, critically access, analyze and solve problems related to information technology.
3. Flourish in the career through continual learning, pursue higher education and research.
4. Acquire moral value, kinship and the spirit of compassion and committed to ethical society and the environment.
5. Exhibit professional skills in ethical way and demonstrate community living and cherish nation building initiatives.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1: Understand the principles and perceptions of information technology and to apply ethical, legal and social principles for information technology professional.

PSO2: Identify theoretical foundations and to model and design the computational systems with appropriate algorithmic principles.

PSO3: Analyze and devise the problem, propose feasible solutions using computing facilities and augment the skills towards post graduate and research.

PSO4: Ability to apply the concepts of computer and practices via emerging technologies and software development tools.

PSO5: Equip students to find, analyze and flourish the field of information technology at multiple levels for implementing innovative solutions that cater to the dynamic nature of information technology industries.

Programme Code:	B.Sc.	**Programme Title:**	Information Technology	
Course Code:	19UAIT01	**Course Title:**	**Batch:**	2019
Total Hours:	60	Fundamentals of Information Technology	**Semester:**	I
			Credits:	3.5

Course Objective

The course aims

- To effectively communicated Information Technology to a range of audiences.
- To grown professionally through self-study, continuing education and professional development.
- To evaluates and implement technologies that ensure availability of information.

Course Outcomes (CO)

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

Knowledge Level	CO Number	Course Outcome
K1,K2,K3	**CO1**	Remember the basic knowledge of generations & classifications of computers & I/O devices.
K1,K2,K3	**CO2**	Understand about primary & secondary memory concepts.
K1,K2,K4	**CO3**	Apply the programming paradigms using algorithm and flowchart.
K1,K2,K3	**CO4**	Analyze the basic concepts of operating system.
K1,K2,K4	**CO5**	Analyze the basis of multimedia & internet.

K1 – Remember; **K2** – Understanding; **K3** – Apply; **K4** – Analyze; **K5** - Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	Computer Basics-Introduction – Evolution of Computers – Generations of Computer – Classification of Computers – The Computer System – Applications of Computers – Input Output Media : Introduction – Types of Input Devices – Keyboard, Mouse, *Touch Screen*, Speech Recognition, Digital Camera - Types of Output Devices – Printer – Dot Matrix Printer, Computer Monitor – CRT.	**12**
II	Computer Memory And Storage – Introduction – Memory Hierarchy – Random Access Memory (RAM) – Read Only Memory (ROM) – Types of Secondary Storage Devices – Magnetic Disk – Types Of Magnetic Disk – *Floppy Disk* - Hard Disk - Optical Disk – Mass Storage Devices**.**	**12**
III	Computer Programming And Languages – Introduction – Algorithm – Flowchart – Pseudo Code – Program Control Structures – Programming Paradigms – Programming Languages – Generations Of Programming Languages.	**12**
IV	Computer Software – Introduction – Categories of Software – Operating System – Introduction – Types of Operating System – Functions of Operating System.	**12**

V	Multimedia Essentials – Introduction – Building Blocks of Multimedia – Multimedia System – Multimedia Applications – Virtual Reality – The Internet: Introduction – Evaluation of Internet – Basic Internet Terms – Getting Connected to Internet.	**12**

Text Book:

Rohit Khurana**, "***Introduction to Information Technology",* Third Edition, ITL Education Solutions Limited, Pearson Education, 2008.

Reference Books:

1. V. Rajaram, "*Introduction to Information Technology*", First Edition, Prentice Hall India, 2006.
2. Chanchal Mittal, "*Fundamentals of Information Technology*", Sixth Edition, Pragati Prakashan, 2006.
3. Pradeep K.Sinha, Priti Shinha, "*Computer Fundamentals*", Third Edition, BPB Publications, 2003.

E-references:

1. https://www.tutorialspoint.com/computer_fundamentals/
2. http://people.bu.edu/baws/computer%20fundamental.html
3. https://en.wikiversity.org/wiki/Introduction_to_Computers

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	H	M	H
CO2	H	S	M	M	M
CO3	H	S	S	H	S
CO4	M	H	M	M	S
CO5	H	H	H	H	S

S-Strong; H-High; M- Medium; L-Low

Programme Code:	B.Sc.	Programme Title:	Information Technology	
Course Code:	19UAIT02	Course Title:	Batch:	2019
Total Hours:	60	Office Automation Tools	Semester:	I
			Credits:	3.5

Course Objective

The course aims

- To acquire basic knowledge in Linux environments and its applications in the area of business and other works.
- To learn how to get started with Writer and identifying the features on the application window.
- To learn to design an image using GIMP.
- To creating formulas to calculate data using Calc layout and prepare presentation using impress tool.

Course Outcomes (CO)

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

Knowledge Level	CO Number	Course Outcome
K2, K4	**CO1**	Understand the basic knowledge of Linux and Working with files and directories.
K1, K2, K4	**CO2**	Impart the usage of writer application for creating and formatting document using writer.
K1, K2	**CO3**	Understand the knowledge about the Open office Calc and construct formulas, including the use of build in functions, absolute and relative reference.
K1, K2, K3	**CO4**	Ability to manage images using GIMP tool.
K1, K2	**CO5**	Acquire knowledge about the Impress and to develop presentation skills in Impress.

K1 – Remember; **K2** – Understanding; **K3** – Apply; **K4** – Analyze; **K5** – Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	**LINUX:** Basic of Linux – Getting started with Linux, Working with K Desktop Environment, Working with Files and Directories.	**12**
II	**Writer:** Getting started with OPenOffice.org Writer; Editing Documents in Writer, Formatting the Document.	**12**
III	**Calc:** Getting started with OpenOffice.org Calc, Working with Functions, *Calc interface* and Operators, Working with the OpenOffice.Org Calc Layout.	**12**
IV	**GIMP:** Introducing GIMP, Working with Tools, Working with Layers and Text.	**12**
V	**Impress:** Getting started with OpenOffice.org Impress, Working with Presentations - *Presentation using templates.*	**12**

Text Book:

Vikas Gupta, *"Linux and Open Office Course Kit"*, First Edition, Dreamtech Press, 2010. (Unit I-V)

Reference Books:

1. Andy Channelle, *"Beginning Open Office 3: Form Novice to Professional"*, First Edition, Apress, 2009.
2. Greg M.Perry, *"Sams Teach Yourself Open office.org All In One"*, First Edition, Prentice Hall, 2004.
3. Jeffery A.Riley, *"Introduction to Open office.org"*, First Edition, Prentice Hall, 2009.
4. Gurdy Leete, Ellen Finkelstein, Mary Leete, ***"****Open office.org for dummies",* First Edition, Wiley publishing Inc, 2004.

E-references:

1. https://www.linode.com/docs/tools-reference/introduction-to-linux-concepts/
2. https://www.libreoffice.org/discover/what-is-opendocument/
3. https://documentation.libreoffice.org/en/english-documentation/calc/

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	H	S	H
CO2	S	H	S	H	S
CO3	S	S	H	M	S
CO4	H	S	H	M	S
CO5	M	S	H	S	M

S - Strong; H - High; M - Medium; L - Low

Programme Code:	B.Sc.	Programme Title:	Information Technology	
Course Code:	19UAIT03	Course Title:	Batch:	2019
Total Hours:	90	Mathematical Foundation for Computer Science (Common for IT, CT)	Semester:	I
			Credits:	5.0

Course Objective

This course aims

- To provide the students with specific knowledge about matrices and sets.
- To study about concepts of relations, Graphs and the logical operations in Propositional calculus.
- To improve the students with problem solving skills.

Course Outcomes (CO)

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

Knowledge Level	CO Number	Course Outcome
K1,K2,K5	CO1	Understand the basic concepts of matrices; remember determinants and evaluate inverse matrix.
K1,K2,K3	CO2	Understand the basic concepts of set theory remember the inclusion and exclusion principles and apply it to solve the real world problems.
K1,K2,K4	CO3	Know the concepts of relations, types, properties, set operations and analyze the problems.
K1,K2,K3, K4,K5	CO4	Understand and remember the concepts of graphs, subgraphs, analyze, apply and evaluate its storage representation in memory.
K1,K2,K4, K5	CO5	Learn the concepts of propositional calculus, remember, analyze and evaluate simple mathematical logical problems.

K1 – Remember; **K2** – Understanding; **K3** – Apply; **K4** – Analyze; **K5** - Evaluate

SYLLABUS

Unit	Content	No. of Hours
I	MATRICES**:** Definition – Types of Matrices – Addition & Subtraction of Matrices – Scalar multiple of a matrix – Matrix Multiplication – Determinant of a Matrix – Inverse of a matrix.	18
II	SET THEORY: Introduction – Sets & its Elements – Set Description – Types of Sets – Basic set operations – Laws of set theory – Duality – The inclusion & exclusion principle.	18
III	RELATIONS**:** Introduction – Definition of Cartesian Product of sets – Binary relation – *Set operations on relations* – Types of relations – Partial Order Relation – Equivalence Relations – Composition of relations.	18
IV	GRAPH THEORY: Introduction – Definition of Graph, Undirected Graph, Multi Graph, Walk, Path, Circuit, Connected Graphs, Distance & Diameter, Cut Points & Bridges – Types of Graphs – Sub graph – Representation of Graphs in Computer memory.	18

V	MATHEMATICAL LOGIC: Introduction – Propositional calculus – Basic Logical Operations: Conjunction, Disjunction, Negation, Conditional Statements, and Bi conditional statements – Tautologies - *Contradiction* – Algebra of statements.	**18**

Text Books:

1. N. Ch. S. N.Iyengar, "*Matrices*", First Edition, Anmol Publications Pvt. Ltd., 1998. (Unit I).
2. J.K Sharma, "*Discrete Mathematics*", Second Edition, Macmillan India Ltd., 2005. (Unit II-V).

Reference Books:

1. A.R.Vasishtha, A.K.Vasishtha, "*Matrices*", Forty sixth Edition, Krishna Prakashan Media (P) Ltd, 2014.
2. T.Veerarajan, "*Discreta Mathematics with Graph Theory and Combinatorics*", First Edition, Tata McGraw Hill Education Pvt Ltd., 2007.
3. Seymour Lipschutz, Marc Larsa Lipson, "*Discreta Mathematics",* Third Edition, McGraw Hill Education Pvt Ltd, Third Edition, 2013.

E-references:

1. https://en.wikipedia.org/wiki/The_Matrix
2. https://www.geeksforgeeks.org/set-theory/
3. https://www.cs.odu.edu/~cs381/cs381content/relation/order/order.html
4. https://en.wikipedia.org/wiki/Graph_theory
5. http://www.newworldencyclopedia.org/entry/Mathematical_logic

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	H	M	H
CO2	S	S	S	H	S
CO3	H	M	M	M	H
CO4	M	H	S	H	M
CO5	H	S	H	H	H

S-Strong; H-High; M- Medium; L-Low

Programme Code:	B.Sc.	Programme Title:	Information Technology	
Course Code:	19UAITP1	Course Title:	Batch:	2019
Total Hours:	60	Programming Lab – I: (Office Automation Tools) (Common for BCA & IT)	Semester:	I
			Credits:	2.0

Course Objective

The course aims

- To acquire basic knowledge in Linux environment and its applications in the area of business and other work
- To learn how to get started with Writer and identifying the features on the application window.
- To learn to design an image using GIMP.
- To create formulas to calculate data using Calc layout and prepare presentation using impress tool.

Course Outcomes (CO)

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

Knowledge Level	CO Number	Course Outcome
K4,K5	CO1	Impart the usage of Writer application for creating and formatting documents.
K3,K5	CO2	Perform arithmetic calculations in open office Calc
K3, K5	CO3	Construct and apply formulas, including the use of built-in functions, absolute and relative reference
K3,K4	CO4	Ability to manage images using GIMP application.
K3	CO5	Acquire the knowledge about the Impress and to develop presentation skills using Impress.

K1 – Remember; **K2** – Understanding; **K3** – Apply; **K4** – Analyze; **K5** - Evaluate

SYLLABUS

1. Create an open Office Writer application with 10 lines and perform various task such as Bold, Italic, Underline, Font-Size, Color, Background color, Line Spacing, Header & Footer, Page Numbering, Bullets & Numbering and Change Case.
2. Design an Invitation Card in Writer.
3. Design a Time Table in Writer.
4. Perform Mail-Merge for many companies in different cities through Writer.
5. Maintain a worksheet of Student Mark List for each semester in Open Office Calc.
6. Create a Chart for Student Mark List in a worksheet in Calc.
7. Maintain the sales details for the company for six days in a week for the branches and perform the following operations in Calc.
   a. Sales details Day wise
   b. Sales details Branch wise
   c. Sales details Product wise
   d. Highest Sales details in Product wise.
8. Create Consolidated Mark sheet for three semesters using Calc.
9. Develop a table for Saving Scheme in Calc and calculate the interest amount using the principle amount, number of years and rate of interest.
10. Design a Greeting card using GIMP.

11. Create a Rainbow using GIMP.
12. Design sun using GIMP.
13. Using GIMP create Planet and Saturn.
14. Design a presentation about the college in Open Office Impress.
15. Design a presentation for product advertisement in Impress.
16. Design a presentation for the Newspaper in Impress.

Text Book:

Vikas Gupta, ***"Linux and Open Office Course Kit"***, First Edition, Dreamtech press, 2010. (Unit I-V)

Reference Books:

1. Andy Channelle, ***"Beginning Open Office 3: Form Novice to Professional"***, First Edition, Apress, 2009.
2. Greg M.Perry, ***"Sams Teach Yourself Open Office. Org All In One"***, First Edition, Prentice Hall, 2004.
3. Jeffery A.Riley, ***"Introduction To Open Office.Org"***, First Edition, Prentice Hall, 2009.
4. Gurdy Leete, Ellen Finkelstein, Mary Leete, ***"Open Office.Org For Dummies",*** First Edition, Wiley publishing Inc, 2004.

E-references:

1. https://www.linode.com/docs/tools-reference/introduction-to-linux-concepts/
2. https://www.libreoffice.org/discover/what-is-opendocument/
3. https://documentation.libreoffice.org/en/english-documentation/calc/

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	M	H
CO2	M	M	M	H	M
CO3	S	S	S	H	S
CO4	H	H	M	S	S
CO5	S	M	H	S	S

S-Strong; H-High; M- Medium; L-Low

Programme Code:	B.Sc.	Programme Title:	Information Technology	
Course Code:	19UAIT04	Course Title:	Batch:	2019
Total Hours:	60	Computer Organization and Architecture	Semester:	II
			Credits:	3.5

Course Objective

The course aims

- To make the students to understand the concepts in computer hardware devices, registers and memory etc.
- To know the concept of pipelining and vector processing.
- To understand the memory hierarchy.

Course Outcomes (CO)

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

Knowledge Level	CO Number	Course Outcome
K1,K2,K3	CO1	Perform conversions among different number systems, became familiar with basic logic gates and understand Boolean algebra.
K1,K2,K3	CO2	Learn and understand about the simplify simple Boolean functions by using basic Boolean properties & design of combinational circuits such as MUX, DEMUX, Encoder and Decoder etc.
K1,K2,K4	CO3	Understand and Designing of sequential Circuits such as Flip-flops, Registers and Counters.
K1,K2,K3	CO4	dy and Understand the basic computer organization, design and micro-operations.
K1,K2,K4	CO5	rning various methods and techniques of memory organization.

K1 – Remember; **K2** – Understanding; **K3** – Apply; **K4** – Analyze; **K5** - Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	CENTRAL PROCESSOR ORGANIZATION: ALU and Bus Organization – General Register Organization – Stack Organization – Instruction formats – Addressing modes – data Transfer and Manipulation – Program control.	**12**
II	PIPELINE AND VECTOR PROCESSING: Parallel Processing – Pipelining Arithmetic Pipeline – Instruction Pipeline and memory interleaving. MICROPROGRAM CONTROL: Control memory – Address Sequencing – micro instruction format – Design of control Unit	**12**
III	INPUT – OUTPUT ORGANIZATION: Peripheral Devices – Input – Output Interface – Asynchronous Data transfer: Strobe control, handshaking, asynchronous serial transfer, UART - Priority Interrupt – DMA – IOP: CPU –*IOP communication*	**12**

IV	COMPUTER ARITHMETIC: Introduction – Addition and Subtraction: Addition and Subtraction with signed – Magnitude Data, Addition and Subtraction with signed – 2's complement Data – Multiplication Algorithm: Hardware Implementation for signed – Magnitude Data – division Algorithm: H/W implementation for signed – Magnitude Data – Floating – Point Arithmetic operations: Addition and Subtraction	**12**
V	MEMORY ORGANIZATION: Memory Hierarchy – Auxiliary memory – Associative memory – Cache memory – Virtual Memory – *Memory Management H/W.*	**12**

Text Book:

M.Morris Mano**, "***Computer System Architecture"*, Third Edition, Prentice Hall of India, 2011. (Unit I-V).

Reference Books:

1. V. Vijayendran, "*Digital Fundamentals*", First Edition, S. Viswanathan Publishers Pvt Ltd, 2009.
2. Thomas C.Bartee, "*Digital Computer Fundamentals*", Sixth Edition, Tata McGraw Hill, 1988.
3. Donald P Leach, Albert Paul Malvino, Goutam Saha, "*Digital Priniciples And Applications*", Seventh Edition, Tata McGraw Hill, 2011.
4. John P. Hayes, "*Computer Architecture And Organization",* Third Edition, Tata McGraw Hill, 2012.

E-references:

1. http://en.wikipedia.org/wiki/computer_architecture.
2. https://en.wikiversity.org/wiki/Computer_architecture_and_organization
3. https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	L	M	M
CO2	S	M	M	M	M
CO3	M	H	M	M	H
CO4	M	M	H	H	M
CO5	H	L	M	M	H

S-Strong; H-High; M- Medium; L-Low

Programme Code:	B.Sc.	Programme Title:	Information Technology	
Course Code:	19UAIT05	Course Title:	Batch:	2019
Total Hours:	60	Programming in C (Common for CS, BCA, IT, CT)	Semester:	II
			Credits:	3.5

Course Objective

The course aims

- To provide a comprehensive study of the procedure oriented concept using C programming language.
- To facilitates the students to elaborately study about C programming techniques.
- To implement these techniques to solve the variety of real-time problems.

Course Outcomes (CO)

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

Knowledge Level	CO Number	Course Outcome
K1,K2,K5	CO1	Remember and understand the basic data types, operators and to write & compile simple programs.
K1,K2,K5	CO2	Understand the conditional statements & loops in programs.
K1,K2,K3, K5	CO3	Understand and apply the concept of arrays & functions and design the application programs.
K1,K2,K3, K4,K5	CO4	Analyze the usage of structures, unions, pointers and make them to efficiently access the memory.
K3,K4,K5	CO5	Understand and evaluate the file operations and write programs to handle the data using files.

K1 – Remember; **K2** – Understanding; **K3** – Apply; **K4** – Analyze; **K5** - Evaluate

	SYLLABUS	
Unit	Content	No. of Hours
I	C FUNDAMENTALS: Overview of C, Constants, Variables and Data Types, Operators and Expressions, Data Input and Output Operators – Simples Programs.	12
II	CONTROL STATEMENTS: If Statements, switch, Conditional Operator, While, do..While, for statements, break, continue, Storage Classes – Programs.	12
III	ARRAY AND FUNCTIONS: One and Multi dimensional arrays, Handling of Character Strings – Programs. USER DEFINED FUNCTIONS: Programs - *Simple Function.*	12
IV	STRUCTURE AND POINTERS: Structures and Unions – Programs. POINTERS: Introduction, Pointer Expressions, Pointers and Arrays, Pointers and Character Strings, Pointers and Functions, Pointers and Structure – Programs - *Simple Pointers.*	12

V	File and the preprocessor: File Management in C – Programs, Concept of Dynamic Allocation of Memory and Linked List, The Preprocessor.	**12**

Text Book:

E. Balagurusamy, "*Programming in Ansi C*", Second Edition, Tata McGraw Hill Publications, 2003. (Unit – I to V)

Reference Books:

1. Ashok N. Kamthane, "*Programming in C"*, Second Edition, Pearson, 2006.
2. Herbert Schildt, *"C: The Complete Reference*", Fourth Edition, Tata McGraw-Hill, 2008.
3. Shubhnandan S, Jamual, "*Programming in C*", First Edition, Pearson, 2014.
4. Subburaj R, "*Programming in C"*, First Edition, Vikas Publishing, 2012.

E-references:

1. https://www.cprogramming.com/reference/
2. https://en.cppreference.com/w/c/language
3. https://developerinsider.co/best-c-programming-book-for-beginners/

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	S	S
CO2	S	S	M	S	S
CO3	S	S	H	S	H
CO4	S	S	S	S	H
CO5	H	S	S	S	H

S-Strong; H-High; M- Medium; L-Low

Programme Code:	B.Sc.	Programme Title:	Information Technology	
Course Code:	19UBIT06	Course Title:	Batch:	2019
Total Hours:	90	Computer Oriented Numerical Methods (Common for CS, BCA, IT, CT)	Semester:	II
			Credits:	5.0

Course Objective

The course aims

- To provide students with specific knowledge and skills relevant to their disciplines and careers to find accurate solution to the given problem.
- To accurate solutions for Interpolation, Numerical Differentiation and Integration.
- To numerical solution of ordinary differential equations.

Course Outcomes (CO)

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

Knowledge Level	CO Number	Course Outcomes
K1, K2,K3	CO1	Understand the basics of numerical Algebraic and Transcendental Equations; remember and solve the problems.
K1, K2,K3	CO2	Understand and solve simultaneous Linear Algebraic Equations using various methods.
K1 K3,K4	CO3	Remember the concepts of interpolation; analyze and apply it for numerical differentiation.
K2,K3,K4,K5	CO4	Choose, formulate and implement appropriate numerical methods for solving integration problems.
K2,K3,K4,K5	CO5	Understand, analyze and evaluate various methods of Ordinary Differential Equations.

K1 – Remember; **K2** – Understanding; **K3** – Apply; **K4** – Analyze; **K5** – Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	**The Solution of Numerical Algebraic and Transcendental Equations:**– Bisection method – Iteration Method – Newton-Raphson method – The method of false position.	**18**
II	**The Solution of Simultaneous Linear Algebraic Equation**:– Gauss Elimination method – *Gauss Jordon Elimination Method* - Triangularization Method – Gauss Seidal method – Gauss – Jacobi method.	**18**
III	**Interpolation:**– Newton forward interpolation formula – Newton backward interpolation formula – LaGrange's formula. Numerical Differentiation – Newton's Forward Difference formula – *Newton's backward difference formula.*	**18**
IV	**Numerical Integration:**– Trapezoidal rule – Simpson's One –third rule – Simpson's three – eighths rule.	**18**

V	**Numerical solution of ordinary differential equations:**– Taylor method – Euler method – Euler Modified Method – Runge-Kutta method – Predictor Corrector Methods – Adam's Method – Milne Methods.	**18**

Text Book:

P. Kandasamy, K.Thilagavathi, K.Gunavathi ,"*Numerical Methods*", First Edition, Chand & Company Ltd, New Delhi, 2005. (Unit I-V).

Reference Books:

1. V.Rajaraman, "*Computer Oriented Numerical Methods*", Third Edition, PHI Learning Private Limited, 2011.
2. S.Sastry, "*Introductory Methods of Numerical Analysis* ", Fifth Edition, PHI Learning Private Limited, 2012.
3. E.V.Krishnamurthy, S.K.Sen, "*Numerical Algorithms*", Third Edition, Affilited East-West Press Private Limited, 1986.

E-references:

1. https://onlinecourses.nptel.ac.in/noc18_ma03/preview
2. https://en.wikibooks.org/wiki/Numerical_Methods/Equation_Solving
3. http://mathworld.wolfram.com/NumericalIntegration.html

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	S	S
CO2	S	M	H	H	H
CO3	H	H	H	S	H
CO4	S	H	H	S	M
CO5	S	S	H	H	M

S-Strong; H-High; M- Medium; L-Low

Programme Code:	B.Sc.	**Programme Title:**	Information Technology	
Course Code:	19UAITP2	**Course Title:**	**Batch:**	2019
Total Hours:	60	Programming Lab – II: (C) (Common for CS, BCA, IT, CT)	**Semester:**	II
			Credits:	2.0

Course Objective

The course aims

- To provide a comprehensive study of the procedure oriented concept using C programming language.
- To facilitates the students to elaborately study about C programming techniques.
- To implement these techniques to solve the variety of real-time problems.

Course Outcomes (CO)

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

Knowledge Level	CO Number	Course Outcome
K1,K2,K5	**CO1**	Remember basic data types, operators and to write simple programs using them.
K1,K2,K5	**CO2**	Understand the conditional statements & loops for creating programs.
K1,K2,K3, K5	**CO3**	Apply the concept of arrays & functions and design the application programs.
K1,K2,K3, K4,K5	**CO4**	Analyze the usage of structures, pointers and use them efficiently to solve problems.
K3,K4, K5	**CO5**	Evaluate the file operations and write programs to handle the data using file concept.

K1 – Remember; **K2** – Understanding; **K3** – Apply; **K4** – Analyze; **K5** – Evaluate

SYLLABUS
1. Write a C program to calculate the sum of digits of a given number. 2. Write a C program to find a factorial for given number. 3. Write a C program to print the Fibonacci series.
4. Write a C program to find the Ramanujam number. 5. Write a C program to print the numbers between some interval which divisible by four.
6. Write a C program to find the Maximum and Minimum value in a array. 7. Write a C program to sort a given number. 8. Write a C program to add two matrices. 9. Write a C program for converting numbers into words.
10. Write a C program to find and count number of vowels in a word or string. 11. Write a C program for sorting string in a alphabetical order. 12. Write a C program to find the roots of a Quadratic Equation.
13. Write a C program for swapping two values using pointers. 14. Write a C program to print Electricity Bill using File. 15. Write a C program to Maintain Student Mark List using Structure.

Text Book:

E. Balagurusamy, "*Programming in Ansi C*", Second Edition, Tata McGraw Hill Publications, 2003.

Reference Books:

1. Ashok N. Kamthane, "*Programming in C"*, Second Edition, Pearson, 2006.
2. Herbert Schildt, *"C: The Complete Reference*", Fourth Edition, Tata McGraw Hill Publications, 2008.
3. Shubhnandan S, Jamual, "*Programming in C*", First Edition, Pearson, 2014.
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1. https://www.cprogramming.com/reference/
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Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	S	S
CO2	S	S	M	S	S
CO3	S	S	H	S	H
CO4	S	S	S	S	H
CO5	H	S	S	S	H

S-Strong; H-High; M- Medium; L-Low

Question Paper Pattern

(Common for Major, Allied, Allied Optional and Major Optional Papers)

For EOS Examinations: 70 Marks

The Question Paper is to be divided into THREE Sections.

Section-A Carries 15 Marks, Section-B Carries 25 Marks and Section-C Carries 30 Marks.

Section-A Contains 15 Multiple Choice Questions. (15 x 1 = 15 Marks)

Three Questions from each unit. (Q. No: 1 to 15)

Section-B Contains 5 Either or Choice Questions. (5 x 5 = 25)

Each Question carries 5 Marks. Both (a) and (b) from the same unit.

Q. No.: 16 (a) or (b) to 20(a) or (b)

Section-C Contains 5 Questions out of which, 3 Questions are to be answered. (3 x 10 = 30)

Each Question carries 10 Marks. One Question from each unit. Q. No.: 21 to 25

For CIA Examinations: 30 Marks

Section-A: 10 Multiple Choice Questions. (10 x 1 = 10)

Section-B: Two Questions out of Three. (2 x 5 = 10)

Section-C: One Question out of Two. (1 x 10 = 10)