

			TEACHING & EVALUATION SCHEME THEORY PRACTICAL	L	Т	Р					
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTMA101N	BS	Mathematics - I	60	20	20	0	0	3	1	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

- 1. The student will have ability to:
- 2. To introduce the students with the Fundamentals of the Differential, Integral, Vector Calculus and NumericalAnalysis.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

- 1. understand and apply the basics of differential calculus;
- 2. understand, apply the techniques of matrices and analyze the system of linear equations;
- 3. apply the techniques of approximation to the root finding problems;
- 4. construct and solve the differential equations of first order;

Syllabus:

UNIT I

Differential Calculus:Rolle's theorem, mean value theorem, expansion of functions of one variable, Taylors series Maclaurin series.

UNIT II

Partialdifferentiation: Eulers theorem, total differentiations, maxima and minima of functions of two variables only.

UNIT III

Matrices: Matrices, determinants, rank, normal form, Systems of linear equations and their solutions.

UNIT IV

Numerical methods for solving nonlinear equations:

Method of bisection, secant method, false position, Newton-Raphson's method, fixed point method and their convergence.

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10HRS

9 HRS

7HRS



			TEACHING & EVALUATION SCHEM THEORY PRAC				ME CTICAL	L	Т	Р	
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTMA101N	BS	Mathematics - I	60	20	20	0	0	3	1	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

UNIT V

8HRS

Formation of differential equations, solution of differential equation of first order and first degree: separation of variable, homogeneous equations, reducible to homogeneous equations, linear equations, reducible to linear equations.

Text Books:

- T. M. Apostol, Calculus, Volume I, 2nd Ed, Wiley, 1967.
- T. M. Apostol, Calculus, Volume II, 2nd Ed, Wiley, 1969.
- B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi.
- Erwin Kreyszig, Advanced Engineering Mathematics, 10th Ed, John Wiley Publisher.
- M.D. Raisinghania, Ordinary and Partial Differential Equations, 14th Ed, S. Chand.

References:-

- R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 5th Ed, Wiley, 1999.
- J. Stewart, Calculus: Early Transcendentals, 5th Ed, Thomas Learning (Brooks/ Cole), Indian Reprint, 2003.
- G.F. Simmons, Differential Equations with Applications and Historical Notes, 2ndEd, CRC Press.
- M.K Jain, S.R.K Iyengar and R.K Jain, Numerical methods for scientific and engineering computation (Fourth Edition), New Age International (P) Limited, New Delhi, 2004.

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			_	TEACHING & EVALUATION SCHEME THEORY PRACTICA		L	Т	Р			
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTEC 104	BEC	Digital Logic & Circuit Design	60	20	20	30	20	3	1	2	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

The objective of this course is to:

- 1.Use of Boolean algebra and Karnaugh Map to simplify logic function.
- 2.Describe the operation of different Combinational and Sequential Logic Circuits.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

- 1.Design an optimal digital logic circuit to meet the given specifications.
- 2.Evaluate the performance of the given digital logic circuit based on specific criteria for reliable system implementation.

Syllabus:

UNIT I

10HRS

9HRS

Number System: Introduction to number systems: Decimal, Binary, Octal and Hexadecimal, Base Conversion. Signed Binary Numbers: Signed magnitude, 1's Complement and 2's Complement representation and their arithmetic operations, 32-bit Floating point representation , Codes: Types of code, Binary code, BCD, Gray code, Excess-3. BCD Addition, Code Conversion, Error Detecting and Correcting code: Even and Odd Parity, Hamming code.

UNIT II

Boolean algebra and Logic gates: Introduction to logic gates, Boolean Laws, De-morgan's theorem, Consensus theorem, Implementation using logic gates, Simplification of Boolean Expression using Boolean Laws, Canonical and Standard (SOP and POS) forms. Universal gates, NAND-NOR implementation of logic functions. Karnaugh Maps (K-maps), Minimization of logic functions using K-map. Don't Care Conditions..

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			TEACHING & EVALUATION THEORY			N SCHEM PRAC	L	Т	Р		
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTEC 104	BEC	Digital Logic & Circuit Design	60	20	20	30	20	3	1	2	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

UNIT III

Combinational logic: Arithmetic circuits- Half adder, Full adder, Half subtractor, Full subtractor, Parallel Adder, BCD adder, Multiplexer, De-multiplexer, Encoder and Decoder. Design of Combinational circuits using Multiplexer and Decoder.

UNIT IV

Sequential logic: Introduction, Asynchronous and Synchronous Sequential circuits, Latches and Flip Flops: SR, D, JK and T. Characteristic equation, Characteristic and Excitation table. Master-Slave Flip-flop, Race around conditions, Flip flop conversion.

UNIT V

Applications of Flip-flop:

Shift Register: SISO, SIPO, PISO, PIPO, Left and Right Shift Register, Bidirectional Shift Register. **Counter:** Ring counter, Johnson Counter, Asynchronous Up/down counter, Synchronous Up/down counters: State diagram, state table and realization, Mod-N Counter.

Text Books:

- 1.M. Morris Mano, "Digital Logic and Computer Design", Pearson Education, 2016.
- 2.S Salivahanan and S Arivazhagan: Digital Circuits and Design,4th Edition,

VikasPublishing House, 2012.

Reference Books:

- 1. A. Anand Kumar, "Fundamentals of Digital Circuits", 4th Edition, PHI,2016.
- 2. Floyd and Jain, "Digital Fundamentals", 10th Edition, Pearson Education India, 2011.
- 3. Roland J.Tocci, Widmer, Moss, "Digital Systems Principles and Applications", 10th Edition, Pearson 2009.
- 4. Stephen Brown, ZvankoVranesic, "Fundamentals of Digital Logic Design", 3rd Edition, McGraw Hill, 2017.

List of Practical's:

1. To study the operation of various logic gates and verify their truth tables.

- 2. To verify De morgans theorem
- 3. To verify the versatility of NAND and NOR gates
- 4. To compare and verify standard SOP/POS expression with minimized Boolean form using K-map.
- 5. To design and verify Adder and subtractor circuits.

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8HRS

8HRS



			TEACHING & EVALUATION SCHEME THEORY PRACTICAL					L	LT		
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTEC 104	BEC	Digital Logic & Circuit Design	60	20	20	30	20	3	1	2	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

- 7. To realize 4-bit parallel adder circuit.
- 8. To design and verify encoder and decoder circuits using ICs.
- 9. To verify the truth table of different flip flops.
- 10. To verify the functionality of shift register.
- 11. To verify the functionality of counter circuit.

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				TEACHING & EVALUATION SCHEME					Т	Р	
			TH	EORY		PRAC	TICAL				
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS 101M	BEC	Introduction to Computer Science and Engineering	60	20	20	0	0	2	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

- 1. To introduce the fundamentals concepts of Computer system.
- 2. Understanding the basic concepts and features of various kinds of Operating systems.
- 3. Learning the Concepts of Office Automation Tools.
- 4. To provide knowledge of Networking, Internet, Communication and security.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

- 1. Understand the basic terminologies of Computer System.
- Gain knowledge about various kinds of Operating Systems and their features. 2.
- Learn the Concepts of Office Automation Tools. 3.
- Understand Networking, Internet, Communication and Security. 4.

Syllabus:

Unit-I

Introduction: Introduction to Computers, Hardware and Software, Classification and History of Computers, Functions of the different Units, Applications of Computers, Representation of data and information, Machine language, Assembly Language, High level Language, Number System and Conversion.

Unit-II

Introduction to Operating System: Definitionof Operating System, Types and Functions of Operating Systems, Free and Open-Source Software.

Introduction to Database Management System: Introduction, File Oriented Approach and Database, importance and applications of DBMS.

Unit-III

Introduction to Computer Network: Introduction, importance of Computer Network, LAN, MAN, WAN,

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8HRS

6HRS

8HRS

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			_	TEACHING & EVALUATION SCHEME THEORY PRACTICAL				L	Т	Р	
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS 101M	BEC	Introduction to Computer Science and Engineering	60	20	20	0	0	2	0	0	3

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Networking Devices, World Wide Web, Web Browser, viruses, worms, malware, Use of Antivirus software, Good Computer Security Habits.

Unit-IV

Introduction to HTML: HTML Documents, SGML, Basic structure of an HTML document, Text Elements, Tag Elements, Special Character elements, Image tags, HTML Table tags and lists, Anchor tag, Name tag, Hyperlinks - FTP/HTTP/HTTPS, Static and Dynamic Web Pages.

Unit-V

Office Automation Tools: Introduction to Microsoft Word, Elements of word Processing and Working Objectives, MSWord Screen and its Components, Features of word, Introduction to MS-Excel, MS-Excel Screen and Its Components, Features of Excel, Manipulation of cells, Formatting of Spreadsheet and Cells, Formulas and Functions, Introduction to MS-PowerPoint, MS-PowerPoint Screen and Its Components, Features of PowerPoint, Working with MS-PowerPoint, Preparation of Slides, Creation of Presentation, Slide Manipulation and Slide Show, Presentation of the Slides.

Text Books:

- 1. E Balagurusamy, "Fundamentals of Computers ",TMH.
- 2. Silakari and Shukla, "Basic Computer Engineering ", Wiley India.
- 3. V. Rajaraman, Neeharika Adabala, "Fundamentals of Computers", PHI
- 4. Ajoy Kumar Ray and Tinku Acharya," Basic Computer Engineering", PHI.
- 5. P K Sinha , "Fundamentals of Computers", BPB Publications.

References:

1. J. P. Tremblay and R.B. Bunt, "An Introduction of Computer Science –An Algorithmic Approach", TMH.

- 2. Faithe Wempen, "Computing Fundamentals: Introduction to Computers", Wiley.
- 3. Norton, Peter, "Introduction to Computers", Fourth revised ,Mc-Graw-Hill.
- 4. Reema Thareja, "Fundamental of Computers", Oxford University Press.

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8HRS



				TEACHING & EVALUATION S THEORY			ME CTICAL	L	Т	Р	
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS102M	DCC	Introduction to Design Thinking	60	20	20	30	20	2	0	2	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

The student will have ability to:

1. The objective of this Course is to provide the new ways of creative thinking and Learn the innovation cycle of Design Thinking process for developing innovative products which useful for a student in preparing for an engineering career.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

- 1. Compare and classify the various learning styles and memory techniques and Apply them in their engineering education.
- 2. Analyze emotional experience and Inspect emotional expressions to better understand users while designing innovative products.
- 3. Develop new ways of creative thinking and Learn the innovation cycle of Design Thinking process for developing innovative products.
- 4. Propose real-time innovative engineering product designs and Choose appropriate frameworks, strategies, techniques during prototype development.
- 5. Perceive individual differences and its impact on everyday decisions and further create a better customer experience.

Syllabus:

UNIT I An Insight to Learning

Understanding the Learning Process, Kolb's Learning Styles, Assessing and Interpreting. Remembering Memory- Understanding the Memory process, Problems in retention, Memory enhancement techniques.

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B.Tech (CSE)
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SEMESTER-I

		TEACHING & EVALUATION S THEORY				ME CTICAL	L	Т	Р		
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS102M	DCC	Introduction to Design Thinking	60	20	20	30	20	2	0	2	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

UNIT II Emotions: Experience & Expression

Understanding Emotions: Experience & Expression, Assessing Empathy, Application with Peers. Basics of Design Thinking- Definition of Design Thinking, Need for Design Thinking, Objective of Design Thinking, Concepts & Brainstorming, Stages of Design Thinking Process (explain with examples) – Empathize, Define, Ideate, Prototype, Test.

UNIT III Being Ingenious & Fixing Problem

Understanding Creative thinking process, Understanding Problem Solving, Testing CreativeProblem Solving.

Process of Product Design- Process of Engineering Product Design, Design Thinking Approach, Stages of Product Design, Examples of best product designs and functions, Assignment – Engineering Product Design.

UNIT IV Prototyping & Testing

What is Prototype? Why Prototype? Rapid Prototype Development process, Testing, SampleExample, Test Group Marketing.

Celebrating the Difference- Understanding Individual differences & Uniqueness, Group Discussion and Activities to encourage the understanding, acceptance and appreciation of Individual differences.

UNIT V Design Thinking & Customer Centricity

Practical Examples of Customer Challenges, Use of Design Thinking to Enhance CustomerExperience, Parameters of Product experience, Alignment of Customer Expectations with Product Design.

 $\label{eq:Feedback} \begin{array}{l} \mbox{Feedback, Re-Design \& Re-Create-Feedback loop, Focus on User Experience, Address} \\ \mbox{Legends: } L \mbox{-} Lecture; T \mbox{-} Tutorial/Teacher Guided Student Activity; } P \mbox{-} Practical; C \mbox{-} Credit; \\ \end{array}$

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7HRS

8HRS

9HRS





			TEACHING & EVALUATION SCHEM THEORY PRACT				ME CTICAL	L	Т	Р	
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Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

"ergonomic challenges, User focused design, rapid prototyping & testing, final product, Final Presentation – "Solving Practical Engineering Problem through Innovative Product Design & Creative Solution".

Text Books:

- 1. -E Balaguruswamy (2022), Developing Thinking Skills (The way to Success), Khanna BookPublishing Company.
- 2. -----
- 3. -----
- 4. -----

References:

- 1. -E Balaguruswamy (2022), Developing Thinking Skills (The way to Success), Khanna BookPublishing Company.
- 2. -----
- 3. -----
- 4. -----

List of Practical:

- 1.Write a Love/Breakup Letter relating to any product covering its positive & negative features, strength, and fix, enhance and rethink.
- 2.Write the Design Thinking Steps i.e.. Empathize, Define the problem, Ideate, Prototype and Test relating to the product you choose.
- 3.Understand a real-world problem and try solving it through an Empathy Map
- 4. Write a persona of any celebrity or personal.
- 5.Understand the way advertisement make use of storytelling. Pick a particular advertisement and make a presentation on it, covering character, plot, conflict, climax, resolution.
- 6.Develop a collage using four/five pictures, do storyboarding based on the collage.
- 7. Develop a low-level prototype like Paper Prototype
- 8. Find a problem statement and perform testing on it using certain testing technique.

9. Demonstra	tte a project using design	thinking process.
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			TEACHING & EVALUATION THEORY			r	ME CTICAL	L	Т	Р	
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS102M	DCC	Introduction to Design Thinking	60	20	20	30	20	2	0	2	3

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10. Demonstrate the tools and techniques used in design thinking.

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			TEACHING & EVALUATION SCHI THEORY PRA				ME CTICAL	L	Т	Р	
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS103M	DCC	Computer System Organization	60	20	20	30	20	3	0	2	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To understand the basic model of a modern computer with its various processing units.

- 2. To impart knowledge on CPU and it's processing of programs.
- 3. To provide the information for hardware utilization methodology.
- 4. To impart knowledge of Multiprocessor and inter-process communication.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to:

- 1. Understand the architecture of a modern computer.
- 2. Explain the functional behavior of CPU and its other processing units.
- 3. Knowledge of the Peripherals of a Computer System.
- 4. Give the information to speed-up the working of Computer System.

Syllabus

UnitI

Computer Basics: Von Newman model, CPU, Memory, I/O, Bus, Memory registers, Program Counter, Accumulator, Instruction register, Micro-operations, Register Transfer Language, Instruction cycle, Instruction formats and addressing modes.

UnitII

Control Unit Organization: Hardwired control unit, Micro-programmed control unit, Control Memory, Address Sequencing, Micro Instruction formats, Micro program sequencer, Microprogramming. **Arithmetic and Logic Unit**: Arithmetic Processor, Addition, subtraction, multiplication, and division, Floating point, and decimal arithmetic.

Unit-III

Input Output Organization: Modes of data transfer – program controlled, interrupt driven and direct memory access, Interrupt structures, I/O Interface, Asynchronous data transfer, I/O

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10HRS Program

9HRS



			_	TEACHING & EVALUATION SCHEME THEORY PRACTICAL				L	Т	Р	
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BTCS103M	DCC	Computer System Organization	60	20	20	30	20	3	0	2	4

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processor, Data transferring approaches and modes.

Unit-IV

Memory organization: Memory Hierarchy, Cache Memory - Organization and types of cache mappings, Virtual memory, Memory Management Hardware.

Unit-V

Multiprocessors: Pipeline and Vector processing, Instruction and arithmetic pipelines, Vector and array processors, Interconnection structure and inter-processor communication.

Text Books:

- 1. M. Morris Mano, Computer System Architecture, Fourth edition, Pearson Education, 2015.
- 2. William Stallings, Computer Organization and Architecture, Seventh Edition, PHI, 2009.
- 3. Andrew S. Tanenbaum, Structured Computer Organization, Sixth Edition, Pearson Education, 2016.
- 4. John P. Hayes, Computer Architecture and Organizations, Third edition, Mc-Graw Hills, New Delhi, 2017

References:

- 1. John L. Hennessy and David A. Patterson, Computer Architecture a quantitative approach, Fourth Edition, Elsevier, 2007.
- 2. Ramesh Gaonkar, Microprocessor Architecture, Programming and Applications with 8085, fifth Edition, Prentice Hall, 2015.
- 3. Nicholas Carter, Computer Architecture (Schaum's), Third Edition, TMH, 2012.
- 4. Carl Hamacher, Computer Organization, Fifth Edition, TMH, 2002.

List of Experiments:

- 1. Study of peripherals, components of a Computer System.
- 2. Write a C program for sum of two binary numbers.
- 3. Write a C program for multiplication of two binary numbers.
- 4. Write a C program to implement Booth's algorithm for multiplication.
- 5. Write a C program to implement Restoring Division Algorithm.

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8HRS



				TEACHING & EVALUATION SCHE THEORY PRAC				L	Т	Р	
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS103M	DCC	Computer System Organization	60	20	20	30	20	3	0	2	4

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- 6. Write the working of 8085 simulator GNUsim8085 and basic architecture of 8085 along with small introduction.
- 7. Study the complete instruction set of 8085 and write the instructions in the instruction set of 8085 along with examples.
- 8. Write an assembly language code in GNUsim8085 to implement data transfer instruction.
- 9. Write an assembly language code in GNUsim8085 to store numbers in reverse order in memory location.
- 10. Write an assembly language code in GNUsim8085 to add two 8 bit numbers stored in memory and also storing the carry.

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			TEACHI	NG & EVA EORY	LUATION		ME CTICAL	L	Т	Р	
COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS107M	SEC	Program development using C	0	0	0	30	20	0	0	2	1

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

The student will have ability to:

- 1. Identify situations where computational methods and computers would be useful.
- 2. Given a computational problem, identify and abstract the programming task involved.
- 3. Approach the programming tasks using techniques learned and write pseudo-code.
- 4. Choose the right data representation formats based on the requirements of the problem.
- 5. Use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.
- 6. Write the program on a computer, edit, compile, debug, correct, recompile and run it.
- 7. Identify tasks in which the numerical techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

- 1. Understand the basic terminologies used in computer programming.
- 2. Proficient in using the basic constructs of C, to develop a computer program.
- 3. Understand the use of functions, pointers, arrays and files in programming.
- 4. Understand the fundamentals of procedure-oriented programming and be able to apply it in computer program development.

Syllabus:

UNIT I Introduction to Programming Languages: Evolution of Programming 7HRS Languages, Structured Programming, The Compilation Process, Object Code, Source Code, Executable Code, Operating Systems, Interpreters, Linkers, Loaders, Fundamentals Of Algorithms, Flowcharts.

UNIT II Introduction to 'C' Language: Character Set. Variables and 10HRS

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	COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
	BTCS107M	SEC	Program development using C	0	0	0	30	20	0	0	2	1

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> Identifiers, Built-In Data Types. Variable Definition, Arithmetic Operators and Expressions, Constants And Literals, Simple Assignment Statement, Basic Input/ Output Statement, Decision Making Within A Program, Conditions, Relational Operators, Logical Connectives, If Statement, If-Else Statement, Loops: While Loop, Do While, For Loop. Nested Loops, Switch Statement.

- UNIT III Arrays and Pointers: Array Manipulation; Searching, Insertion, 8HRS Deletion of an Element from an one dimensional Array; Finding the Largest/Smallest Element in an Array; Two Dimensional Arrays, Addition/Multiplication of Two Matrices, Transpose of a Square Matrix, Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Pointer Arrays.
- **UNIT IV Functions:** Modular Programming and Functions, Prototype of a **7HRS** Function: Parameter List, Return Type, Function Call, Block Structure, Call by Reference, Call by Value, Recursive Functions and Arrays as Function Arguments
- **UNIT V** Structure: Structure Variables, Initialization, Structure Assignment, 8HRS Structures and Arrays: Arrays of Structures.

Text Books:

- 1. Gottfried BS Programming with C, TMH publications.
- 2. David Griffiths, "Head First C: A Brain-Friendly Guide" O Reilly Media Inc. 2011.
- 3. Allen B. Tucker, "Programming Languages", Tata McGraw Hill.
- 4. Tennence W.Pratt, "Programming languages design and implementation", Prentice Hall of India.

References:

- 1. Herbert Schildt "C: Complete Reference", Tata McGraw Hill 2000.
- 2. Yashwant Kanetkar, "Let us C", BPB Publication, 16th Edition 2018.
- 3. Fundamentals of Programming Languages, R. Bangia, Cyber Tech .
- 4. Greg Perry and Dean Miller, "C Programming Absolute Beginner's Guide 3rd Edition", Que Publishing 2013.

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List of Experiments:

- 1. Write a C program to display "This is my first C Program".
- 2. Write a C program to calculate area and circumference of a circle.
- 3. Write a C program to perform addition, subtraction, division and multiplication of two numbers.
- 4. Write a program to calculate simple and compound interest.
- 5. Write a program to swap values of two variables with and without using third variable.
- 6. Write a program to display the size of every data type using "sizeof" operator.
- 7. Write a program to illustrate the use of unary prefix and postfix increment and decrement operators.
- 8. Write a program to input two numbers and display the maximum number.
- 9. Write a program to find the largest of three numbers using ternary operators.
- 10. Write a program to find the roots of quadratic equation.
- 11. Write a program to input name, marks of 5 subjects of a student and display the name of the student, the total marks scored, percentage scored and the class of result.
- 12. Write a Program to Check Whether a Number is Prime or not.
- 13. Write a program to find the largest and smallest among three entered numbers and also display whether the identified largest/smallest number is even or odd.
- 14. Write a program to find the factorial of a number.
- 15. Write a program to check number is Armstrong or not.
 - a. (Hint: A number is Armstrong if the sum of cubes of individual digits of a number is equal to the number itself).
- 16. Write a program to check whether a number is Palindrome or not.
- 17. Write a program to generate Fibonacci series.
- 18. Write a program to find GCD (greatest common divisor or HCF) and LCM (least common multiple) of two numbers.
- 19. Write a Program to Search an element in array.
- 20. Write a Program to perform addition of all elements in Array.
- 21. Write a Program to find the largest and smallest element in Array.
- 22. Write a Program for deletion of an element from the specified location from Array.
- 23. Write a Program to access an element in 2-D Array.
- 24. Write a program for addition of two matrices of any order in C.

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COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS107M	SEC	Program development using C	0	0	0	30	20	0	0	2	1

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- 25. Write a Program to multiply two 3 X 3 Matrices.
- 26. Write a program to add, subtract, multiply and divide two integers using user-defined type function with return type.
- 27. Write a program to generate Fibonacci series using recursive function.
- 28. Write a program to find the sum of all the elements of an array using pointers.
- 29. Write a program to swap value of two variables using pointer.
- 30. Write a program to add two numbers using pointers.
- 31. Write a program to input and print array elements using pointer.
- 32. Write a program to create a structure named company which has name, address, phone and noOfEmployee as member variables. Read name of company, its address, phone and noOfEmployee. Finally display these members" value.
- 33. Write a program to read RollNo, Name, Address, Age & average-marks of 12 students in the BCT class and display the details from function.
- 34. Write a program to add two distances in feet and inches using structure.

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COURSE CODE	CATEGORY	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				CREDITS
BTCS101M(P)	SEC	Introduction to Computer Science and Engineering Lab	0	0	0	0	50	0	0	2	1

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

- 5. To introduce the fundamentals concepts of Computer system.
- 6. Understanding the basic concepts and features of various kinds of Operating systems.
- 7. Learning the Concepts of Office Automation Tools.
- 8. To provide knowledge of Networking, Internet, Communication and security.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

- 5. Understand the basic terminologies of Computer System.
- Gain knowledge about various kinds of Operating Systems and their features. 6.
- 7. Learn the Concepts of Office Automation Tools.
- Understand Networking, Internet, Communication and Security. 8.

Syllabus:

Unit-I

Introduction: Introduction to Computers, Hardware and Software, Classification and History of Computers, Functions of the different Units, Applications of Computers, Representation of data and information, Machine language, Assembly Language, High level Language, Number System and Conversion.

Unit-II

Introduction to Operating System: Definitionof Operating System, Types and Functions of Operating Systems, Free and Open-Source Software.

Introduction to Database Management System: Introduction, File Oriented Approach and Database, importance and applications of DBMS.

Unit-III

Introduction to Computer Network: Introduction, importance of Computer Network, LAN, MAN, WAN,

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8HRS

6HRS

8HRS

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Networking Devices, World Wide Web, Web Browser, viruses, worms, malware, Use of Antivirus software, Good Computer Security Habits.

Unit-IV

Introduction to HTML: HTML Documents, SGML, Basic structure of an HTML document, Text Elements, Tag Elements, Special Character elements, Image tags, HTML Table tags and lists, Anchor tag, Name tag, Hyperlinks - FTP/HTTP/HTTPS, Static and Dynamic Web Pages.

Unit-V

Office Automation Tools: Introduction to Microsoft Word, Elements of word Processing and Working Objectives, MSWord Screen and its Components, Features of word, Introduction to MS-Excel, MS-Excel Screen and Its Components, Features of Excel, Manipulation of cells, Formatting of Spreadsheet and Cells, Formulas and Functions, Introduction to MS-PowerPoint, MS-PowerPoint Screen and Its Components, Features of PowerPoint, Working with MS-PowerPoint, Preparation of Slides, Creation of Presentation, Slide Manipulation and Slide Show, Presentation of the Slides.

Text Books:

- 1. E Balagurusamy, "Fundamentals of Computers", TMH.
- 2. Silakari and Shukla, "Basic Computer Engineering", Wiley India.
- 3. V. Rajaraman, Neeharika Adabala, "Fundamentals of Computers", PHI
- 4. Ajoy Kumar Ray and Tinku Acharya," Basic Computer Engineering", PHI.
- 5. P K Sinha, "Fundamentals of Computers", BPB Publications.

References:

- 1. J. P. Tremblay and R.B. Bunt, "An Introduction of Computer Science An Algorithmic Approach", TMH.
- 2. Faithe Wempen, "Computing Fundamentals: Introduction to Computers", Wiley.
- 3. Norton, Peter, "Introduction to Computers", Fourth revised ,Mc-Graw-Hill.
- 4. Reema Thareja, "Fundamental of Computers", Oxford University Press.

List of Practicals:

- 1. Study of Word Templates, Styles.
- 2. Create a new user and give it Administrator privilege for Microsoft windows OS.

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6HRS



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- **3.** Create a MS-Word .doc file contain your complete CV.
- 4. Study and perform different Excel Commands/Functions.
- 5. Perform MS-Excel Accounting
- 6. Create a MS-Excel .xls file contain mark sheet.
- 7. Display the student's result into a chart using MS-Excel.
- 8. Create a MS-Power Point Presentation .ppt file covers the topic "social responsibility".
- 9. Create a MS-Access database .mdb file to store the results of students.
- **10.** Design a Web Page, Insert an image on to the web page such that image is of height 300 and width 300 pixels. The image should have an ALT text in it.
- **11.**Create a Web page that holds a bulleted list of the names of your friends. Make sure that the bullets are in plain circle.
- **12.** Create a Frame which would hold both the web page that was created earlier. The frame should be split row-wise into equal halves.
- **13.**Create a Web Page to display the marks you got in all subjects of last semester using table.
- **14.**Create a Form having two boxes with labels as First Name and Last Name. The User should not be allowed to enter the names directly in the text boxes. The input has to be given in the prompt box and then entered values should be given in the textboxes.
- **15.**Create a Web Page that has a button in the center of the page. Using mouse events change the Message in the statusbar.
- 16. Design a Web page that accepts Username and Password. Opens a new window when the password corresponds to a particular value is set by the develop.

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