

Detailed Course Scheme
Bachelor of Technology (B.Tech.)
Computer Science Engineering (CSE)
&
CSE with Specialization in AI and ML

Semester – I
(2025-2029)

DOC202506200017



RNB GLOBAL UNIVERSITY

RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

OVERVIEW

RNB Global University follows the Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December)** and **Even (January-June)**. Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The curriculum for **B. Tech (CSE) Program for Odd Semester (July-December) 2025** along with examination pattern is as follows:

Course Scheme

Semester -I

S. No.	Course Code	Course Category	Course Title	L	T	P	Credits
1.	CSEC14100	DSC-1(a)	Introduction to Programming with C	3	0	0	3
2.	CSEC14101	DSC-1(b)	Programming with C Lab	0	0	2	1
3.	CSEC14102	DSC-2(a)	Electronics and Electrical Technology	3	1	0	4
4.	CSEC14103	DSC-2(b)	Electronics and Electrical Technology Lab	0	0	2	1
5.	CSEC14104	DSC-3(a)	Manufacturing Processes	1	0	0	1
6.	CSEC14105	DSC-3(b)	Manufacturing Process/Workshop Lab	0	0	2	1
7.	BSCC15100	BSC-1	Applied Mathematics- I	3	1	0	4
8.	BSCC16100	BSC -2(a)	Applied Physics-I	3	1	0	4
9.	BSCC16101	BSC -2(b)	Applied Physics-I Lab	0	0	2	1
10.	SEC077001	ASE-1	Ability & Skill Enhancement - I	2	0	0	2
11.	GEC066001	GEC-1	Business Communication	3	1	0	4
12.	WHNN99000		Workshops & Seminars /Human Values & Social Service/NCC/NSS	-	-	-	1
		Total		18	4	8	27

EVALUATION SCHEME- THEORY

The evaluation of the theory paper of B.Tech would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Quiz	Quiz based on MCQs	5
Marks obtained in various Tests, Assignments, Presentations, Tutorials etc.	Average of Marks obtained	15
Academic Performance including Attendance	Eligibility >75% Attendance	5
TOTAL		50

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME -PRACTICAL

The evaluation of the practical paper of B.Tech would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Academic Performance including Attendance	Eligibility >75% Attendance	5
TOTAL	50	

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME- WORKSHOPS & SEMINARS & NCC/NSS

1. NCC/NSS will be completed from Semester I – Semester IV. It will be evaluated internally by the institute. The credit for this will be given at the end of each Semester.
2. The students have to join club/clubs with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of each Semester.

Bachelor of Technology – CSE (Four Years Course)

1. Vision

To create an environment where a holistic education is provided to ignite an inquisitive mind, inculcate the qualities of excellence, understand the intricacies of research, seek out obstacles, overcome them, and carve out a niche for oneself in the field of computer science.

2. Mission

Empowering Students: - Enabling students to maximize their potential and uphold professional standards through ethics and education, enhancing their competence and transforming them into change agents.

Scholarly Culture & Research: - Fostering a scholarly culture that encourages research, innovation, and giving back to society through creative endeavors.

Collaborations & Knowledge Enhancement: - Integrating partnerships that enrich knowledge, contributing to the development of dynamic intellectual capital.

Technology-Driven Learning: - Employing emerging technologies to create an inclusive learning environment and enhance the educational process.

Holistic Development: - Creating a teaching-learning atmosphere that nurtures resilience, sensitivity, and critical thinking, ultimately shaping strong and well-rounded personalities.

3. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To produce students with strong foundation of knowledge and skills in the field of computer science and engineering.

PEO2: To produce students who are employable in private/public sector/research organizations or work as an entrepreneur.

PEO3: To produce students who can provide solutions to problems in their profession by applying computer engineering theory and practices.

PEO4: To produce graduates who can provide leadership and are effective in multidisciplinary environment.

4. PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to:

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

PO3: Design/Development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitation.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: 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.

5. PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics and networking for efficient design of computer-based systems of varying complexity.

PSO2: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur and a zest for higher studies/employability in the field of Computer Science & Engineering.

PSO3: Cultivate the field of computing and its latest trends, to pursue teaching, research & development activities and to work effectively in a team.

6. Course Outcomes		
Course	After completion of these courses' students should be able to	
CSEC14100 – Introduction to Programming with C	C01:	Illustrate the programming tasks using techniques learned and write pseudo-code.
	C02:	Identify situations where computational methods and computers would be useful.
	C03:	Given a computational problem, identify and abstract the programming task involved.
	C04:	Analyse the right data representation formats based on the requirements of the problem.
	C05:	Create the logics for the programs.
CSEC14101- Programming with C Lab	C01:	Illustrate the knowledge on various parts of a computer.
	C02:	Design a flowchart and Apply algorithms for every C program.
	C03:	Develop C program solving skills.
	C04:	Analyse the tracing and debugging of a program.
	C05:	Create the programs and identify the outcomes.
CSEC14102 - Electronics and Electrical Technology	C01:	Illustrate the knowledge of basic electrical and electronics technology.
	C02:	Demonstration on general structure of power /Supply System.
	C03:	Utilize knowledge about battery technology.
	C04:	Make use of knowledge about the single phase and three base electrical circuits.
	C05:	Evaluate the outcomes with the actual outcomes.
CSEC14103- Electronics and Electrical Technology Lab	C01:	Choose meters and instruments for measurement of quantities.
	C02:	Illustrate and experiment potential divider circuits.
	C03:	Experimentally verify the basic circuit theorems.
	C04:	Contrast power and power factor using AC circuits.
	C05:	Perform the experiments based on the evaluations.
CSEC14104- Manufacturing Processes	C01:	Find fluid mechanics concepts design notches, flow measuring devices.
	C02:	Demonstrate various thermodynamics concepts and Contrast real life engineering problems (engines compressor).
	C03:	Make use of various fluid machineries to design pumps turbines.
	C04:	Design and Build of various power plants.
	C05:	Evaluate the outcomes with the actual outcomes.

CSEC14105- Manufacturing Process/Workshop Lab	C01:	Define the tools for welding, carpentry and plumbing operations.
	C02:	Make use of basic fabrication techniques and apply for carpentry and plumbing practices.
	C03:	Make use of basic fabrication techniques of different types of welding and basic machining practices.
	C04:	Design and Build of various fabrication techniques.
	C05:	Perform the experiments based on the evaluations.
BSCC15100 Applied Mathematics- I	C01:	Illustrate vector calculus and to Demonstrate the electromagnetic field.
	C02:	Make use of the physical interpretation of the gradient, divergence, and curl.
	C03:	Discover the ideas and techniques of linear algebra, and to illustrate some of their applications in engineering.
	C04:	Prepare to evaluate multiple integrals in rectangular, polar, spherical and cylindrical coordinates.
	C05:	Justify the polar theory techniques to solve real world problems.
BSCC16100 Applied Physics-I	C01:	Define the structure and various planes in a crystals, study its properties and use for applications.
	C02:	Illustrate of free electron theory to study the material properties and understand its use in engineering applications and studies.
	C03:	Build the knowledge of modern physics and quantum mechanics; solve the engineering problems using the concept of wave particle dualism in modern day applications.
	C04:	Elaborate the basic principle and concepts of light to construct lasers and optical fibers, impart the knowledge and develop skills to use modern instruments.
	C05:	Justify the quantum mechanics theory techniques to solve real world problems.
BSCC16101 Applied Physics-I Lab	C01:	Illustrate the concepts of diffraction and interference of light by using diffraction grating and Newton's ring.
	C02:	Identify the characteristics of Zener diode, photo diode, transistor by utilizing the concepts of semiconductors physics.
	C03:	Discover the ability to use various passive electrical components, determine Dielectric constant and electrical resonance.
	C04:	Evaluate the concepts of quantum mechanics to verify the Stefan's law and understand Fermi energy in metals.
	C05:	Create a experiment on newton's rings
SEC077001 Ability & Skill Enhancement - I	C01:	Understand the relevance and method of writing impactful and structured resume.
	C02:	Explain the need for right etiquettes to be followed in the professional

		world.
	C03:	Develop confidence in public speaking and expressing their opinions and ideas clearly and effectively.
	C04:	Build employability skills like critical thinking, team work, conflict management and leadership skills.
	C05:	Communicate effectively in English.
GEC066001- Business Communication	C01:	Explain historical background and the development of communication; Importance and role of communication in everyday life.
	C02:	Understand Mechanics behind the communication process, difficulties experienced in communication. Different types of communication, impedance due to extraneous factors called "barriers"
	C03:	Apply different types of communication, impedance due to extraneous factors called "barriers".
	C04:	Analyse the Important non-verbal parameters in communication. So to make communication effective and attractive
	C05:	Apply the appropriate body language for making presentation more effective
WHNN99000- Workshops & Seminars/ Human Values & Social Service/NCC/NSS	C01:	Relate to the concept of cognitive development and Big Five personality characteristics.
	C02:	Explain the basic fundamentals of Emotional Intelligence.
	C03:	Develop ability to practice new problem-solving skills in a group and use these skills in personal life.
	C04:	Build coping strategies and adapt balanced self- determined behaviour.
	C05:	Create leadership skills to be effective as a manager.

7. CO PO Mapping

CSEC14100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	3	2	2					3	2		3
C02	3	3	2	3	3	3	3	2	3		2	3
C03	3	3	3	2	3	3	3	2	3	3	3	3
C04	2	2	3	2	3	3	3	3	3	3	3	3
C05	3	3	2	2		2			3	2	2	3

CSEC14101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	3	2	2		3	3	3	3	3	3	3
C02	2	2	3	2	3	3	3	3	3	3	3	3
C03	2	2	2	3	3				3	3	3	3
C04	3	3	2	2	3				3	3	3	3
C05	3		2	2	3				3	2	2	3

CSEC14102	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	3	3	2			3	3	3	3	2	3
C02	3	3	3	3	2		3	3	2	3	3	3
C03	2	2	2	3	3	3			3		3	3
C04		2	3	3	3	3	3	3	3	2	3	3
C05	3		2	2	3				3	2	2	3

CSEC14103	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	3	2	2		3	3	3	3	3	3	3
C02	2	2	3	2	3	3	3	3	3	3	3	3
C03	2	2	2	3	3				3	3	3	3
C04	3	3	2	2	3				3	3	3	3
C05	3		3	2					2	3	2	3

CSEC14104	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	2	3	2			3	3	3	3	2	3
C02	2	3	2	3	2		3	3	2	3	2	3
C03	3	2	2	3	2	3			3		3	3
C04		2	3	2	3	3	3	3	3	2	3	3
C05	3		3		2	2	3	3	2	2		3

CSEC14105	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	3	2	2		3	3	3	3	3	2	3
C02	2	3	3	2	3	2	2	3	3	2	3	3
C03	2	2	2	2	3				2	3	3	3
C04	2	3	3	2	3				3	3	3	3
C05	3		2		3				2			3

BSCC15100	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3	3	2			3	3	3	3	2	3
C02	3	2	3	3	2		3	3	2	3	3	3
C03	2	2	2	2	3	3			3		3	3
C04		2	3	2	2	2	3	2	3	2	3	3
C05	2			2	3	3			3	2		2

BSCC16100	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3	3	2			3	3	3	3	2	3
C02	2	3	3	3	3		3	3	2	3	3	3
C03	2	2	2	2	2	3			3		3	3
C04		2	3	2	2	2	3	2	3	2	3	3
C05	2		3	3	3	3		3				2

BSCC16101	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3	2	2		3	3	3	3	3	2	3
C02	3	3	3	2	3	2	2	3	3	2	3	3
C03	2	2	2	2	3				2	3	3	3
C04	2	2	3	2	3				3	3	3	3
C05	3		3		3				3		2	3

SEC077001	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	2	3	3	3	3	2	2	3		2	-	3
C02	-	2	3	3	2		-	-	2	2	-	3
C03	2	-		3	3	2	-	3	2	-	2	3
C04	2		2	2		-	-	-	-	2	2	1
C05	3	2	3	2	3	-	-	2	-	2	2	2

99002200	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	2	2	3	2			2	2		2	2	2
C02		3	2	2	2	2		2	2	3	2	3
C03		3	2	3	3	2	2	3	3	3	3	2
C04			2	3	3	2	3	3	2	2		3
C05	3	2	3	2	3		3	2	2	2	2	2

GEC066001	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3	2	-	3	-	2	3	2	-	3	3
C02	2	3	3	3	-	2	2	2	3	2	-	3
C03	2	3	2	3		-	-	-	2	3	2	
C04	2		3	2	3	-	-	2	3	-	3	2
C05	3	3	3	3	3	3	3	3	3	3	3	3

WHNN99000	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	-	2	3	-	3	2	3	2	-	3	3
C02	2	3	-	3	2	3	-	3	2	3	2	3
C03	3	2	3	2	-	3	2	3	3	3	3	3
C04	2	3	2	2	3	2	2	-	2	3	2	3
C05	2	3	2	2	3	2	3	3	-	-	2	3

8. Curriculum

Course Name: Introduction to Programming with C

Course Code: CSEC14100

Objectives:

- The computer is often a very handy tool when solving complex technical problems in engineering and scientific explorations. Programming a computer is a fundamental task in finding solutions to such problems. This course is being offered in order to train the undergraduate students. The course aims to provide exposure to problem-solving through programming. It aims to train the student to the basic concepts of the C-programming language. This course involves a lab component which is designed to give the student hands-on experience with the concepts.

Course Outline:

Unit I: Introduction to Programming

Concept of algorithms, Flow Charts, Data Flow diagrams etc., Introduction to the Editing tools such as VI or MS-VC editors, Concepts of the finite storage, bits bytes, kilo, mega and gigabytes. Concepts of character representation, Number Systems & Binary Arithmetic Introduction to C History of C Overview of Procedural Programming

Unit II: C Programming Basic

Data Types, Variables, Constants, Operators and Basic I/O: Declaring, Defining and Initializing Variables, Scope of Variables, Using Named Constants, Keywords, C Data Types: int, char, float, etc, Casting of Data Types, C expressions, arithmetic operation, relational and logic operations, Using Comments in programs, Character I/O (getc, getchar, putc, putchar), Formatted and Console I/O (printf(), scanf()), Using Basic Header Files (stdio.h, iostream.h, conio.h), Using main() function, Example of some simple C program. C – Operators- Arithmetic Operators, Relational Operators, Logical Operators, Bitwise Operators, Assignment Operators

Unit III: Expressions, Conditional Statements and Iterative Statements

C - Decision Making Statements, conditional executing using if, else. Understanding syntax and utility of Iterative Statements (while, do-while, and for loops), Use of break and continue in Loops, Using Nested Statements (Conditional as well as Iterative).

Unit IV: Functions and Arrays

Utility of functions, call by Value, call by Reference, Functions returning value, Functions with variable number of Arguments. Creating and Using One Dimensional Arrays (Declaring and Defining an Array, initializing an Array, accessing individual elements in an Array, manipulating array elements using loops), Two dimensional Arrays (Declaring, Defining and Initializing Two Dimensional Array, Working with Rows and Columns), Introduction to

Multi-dimensional arrays.

Unit V: Pointers

Understanding a Pointer Variable, Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables), Pointers to Pointers, Passing pointers as function arguments, Returning a pointer from a function, using arrays as pointers, Passing arrays to functions, Structures and Unions.

Suggested Readings:

1. Ashok N. Kamthane, "Computer Basics and C Programming", Pearson Education.
2. E. BalaGuruswamy, "Programming in ANSI C", 2008.
3. V Rajaraman, "Computer Basics and C Programming", PHI.
4. Herbert Schildt, "C The Complete Reference" Fourth Edition, 2000.
5. YashwantKanetkar, "Let us C" eighth edition, 2002.
6. Kernighan and d. Ritchie, "The ANSI C Programming Language", 2000.
7. StephennPrata, "C Primer Plus" Fourth Edition, 2001.
8. Schaum's Outline Series, "Programming with C", 2nd Edition, 1996.

Course Name: Programming with C Lab

Course Code: CSEC14101

Course Outline:

List if Experiments (Not limiting to)

1. Write a program sum of two numbers
2. Write a program to check either the number is even or odd
3. Write a program calculate simple interest.
4. Write a program to calculate the marks of four subject and percentage.
5. Write a program to check either the year is leap year or not.
6. Write a program to find out the grade using if/else if statement.
7. Write a program to find out the greater number between two number.
8. WAP to read base and height of a triangle, calculate the area using formula :
$$\text{Area} = 1/2 * \text{base} * \text{height}$$
9. WAP to read marks obtained and maximum marks of a student and calculate its percentage and display it.
10. Write a program to print even number up to n.
11. Write a program to print odd number up to n.
12. Write a program to print table.

Course Name: Electronics and Electrical Technology

Course Code: CSEC14102

Objectives:

- The main motive of this subject to make students aware about basic electrical and electronics technology. This subject includes all the information related to electrical engineering as well electronics devices. By study we can be familiar with daily use electrical and electronics component.

Course Outline:

Unit I: Introduction

Basic electrical quantities, Electric circuit sources and circuit elements and their behavior (Active and passive). **Supply Systems:** AC Supply system (Singlephase, Three phase–three wire, Three phase–four wire), DC supply system, Their specifications and Comparison. D.C. Networks: Mesh and Nodal Analysis, Star–Delta Transformation, Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem, Step voltage response of RL and RC series circuits.

Unit II: Sinusoidal Steady-State Response of Circuits

Concept of Phasors, Phasor representation of circuit elements, Complex notation representation, Series and parallel circuits, Power and power factors, Resonance in series and parallel circuits, Balanced 3phase voltage, Current and power relations, 3phase power measurement.

Unit III: Magnetic Circuits

Concept of Magnetic circuits, BH curve, Calculation of Magnetic Circuits, Iron Losses. **Single Phase Transformers:** Constructional feature, EMF equation, Ideal transformer, Open and short circuit tests, Voltage regulation and efficiency.

Unit IV: Rotating Electrical Machines

Construction, Operating principles and Applications of DC generator, DC motor, Three phase Induction motor and Single phase induction motors. **Electrical safety and Wiring:** Electrical safety and standards, House hold wiring and electric appliances.

Unit V: Energy Management

Conservation efforts, Auditing **Electronic Devices:** P–N diode, BJT, SCR, FET, MOSFET, Their V–I characteristics and applications (Diode as rectifier, Zener diode as voltage regulator).

Suggested Readings:

1. Smith, I.M., Hiley, J. and Brown, K., Electrical and Electronic Technology, Dorling

- Kingsley (2007) 9th ed.
2. Nagrath, I.J. and Kothari, D.P., Basic Electrical Engineering, Tata McGraw–Hill (2002) 2nd ed.
 3. Naidu, M.S. and Kamashaiah, S., Introduction to Electrical Engineering, TataMcGraw–Hill (2004).
 4. Chakrabarti, A., Basic Electrical Engineering, Tata McGraw–Hill (2008).
 5. Del Toro, V., Electrical Engineering Fundamentals, Prentice–Hall of India Private Limited (2008) 2nd edition.

Course Name: Electronics and Electrical Technology Lab

Course Code: CSEC14103

Course Outline:

The primary objective of this lab course is to familiarize students with basic electrical and electronics technology through hands-on practice. It covers essential information related to both electrical engineering and electronic devices. Through practical experiments, students will gain familiarity with commonly used electrical and electronic components encountered in daily life.

List of Experiments

1. To get familiar with working knowledge of the following Instruments
 - (a) Cathode Ray Oscilloscope
 - (b) The Multimeter Structure
 - (c) Function generator f
 - (d) Regulated power supply
2. Study of Electronic components and equipment
 - (a) To measure phase difference between two waveforms using CRO.
 - (b) To measure unknown frequency from lissajous figures using CRO.
3. Plot the forward and reverse V-I Characteristics of a PN junction Diode.
 - (a) Calculation of cut in voltage
 - (b) (Study of Zener diode in Breakdown region.
4. To plot and study the input and output chacterstics of BJT in Common Emitter Configuration.
5. To find the frequency response of given(RC coupled) Amplifier and calculate its bandwidth.
6. To get familiar with pin configuration of typical OP-AMP 741 and its use as:
 - (a) Inverting amplifier
 - (b) Non-Inverting amplifier
 - (c) summing amplifier
 - (d) difference amplifier
7. Use of OP-AMP as:

- (a) Integrator
- (b) Differentiator
- 8. Verification of Truth tables of logic gates(NAND, NOR, EX-OR, AND, OR, NOT).
- 9. Verification of Truth tables of Flip-Flops (S-R,J-K).
- 10. Verification of Thevenin's theorem
- 11. Verification of Superposition theorem
- 12. To get familiar with the working and use of seven segment display.
- 13. To Study Half – Wave Rectifier.
- 14. To study Light Emitting Diode
- 15. Residential house wiring using switches, fuse, indicator, lamp and energy meter.
 - (a) Fluorescent lamp wiring.
 - (b) Stair case wiring
- 16. Measurement of electrical quantities voltage, current, power & power factor in RLCcircuit.
- 17. Measurement of energy using single phase energy meter and measurement of resistance to earth of electrical equipment.
- 18. Resistor, colour coding measurement of AC signal parameter (peak-peak, rms period, frequency)using CRO and Multimeter.

Suggested Readings

1. K.Jeyachandran, S.Natarajan& S, Balasubramanian, "A Primer on engineering practices Laboratory", Anuradha Publications, (2007).
2. T.Jeyapoovan, M.Saravanapandian & S.Pranitha, "Engineering Practices Lab Manual ", Vikas Publishing House Pvt.Ltd, (2006)
3. H.S. Bawa, "Workshop Practice", Tata McGraw –Hill Publishing Company Limited,(2007).
4. Rajendra Prasad & P.M.M.S. Sarma, "Workshop Practice", Sree Sai Publication, (2002).
5. P.Kannaiah& K.L.Narayana, "Manual on Workshop Practice", Scitech Publications, (1999).

Course Name: Manufacturing Processes

Course Code: CSEC14104

Objectives:

- The objective of this subject is to study various types of Manufacturing process, various Machining methods such as LBM,EDM ,USM,EBM and various welding process- Faculty
- To motivate and challenge students to understand and develop an appreciation of the processes in correlation with material properties which change the shape, size and

form of the raw materials into the desirable product by conventional or unconventional manufacturing methods AICTE

Course Outline:

Unit I: Introduction

Common engineering materials and their important mechanical and manufacturing properties General classification of manufacturing processes. Metal casting: Principles of metal casting, Patterns, their functions, types, materials and pattern allowances, Characteristics of molding sand, Types of cores, chaplets and chills; their materials and functions. Moulds and their types. Requisites of a sound casting. Introduction to die casting.

Unit II: Metal forming and shearing

Forging, rolling, drawing, extrusion, bending, spinning, stretching, embossing and coining. Die and punch operation in press work, shearing, piercing and blanking, notching, and lancing,

Unit III: Joining processes

Electric arc, Gas, Resistance and Thermit welding, Soldering, Brazing and Braze welding, Adhesive bonding

Suggested Readings:

1. "Processes and Materials of Manufacture", Lindberg, PHI
2. "Manufacturing Engineering And Technology", Kalpakjian and Schmid, Pearson
3. "Manufacturing Processes", Kalpakjian and Schmid, Pearson
4. "Manufacturing Processes", H. N .Gupta, R. C. Gupta, Arun Mital, New Age

Course Name: Manufacturing Processes/Workshop Lab

Course Code: CSEC14105

Course Objective:

The primary objective of this course is to provide students with a fundamental understanding of manufacturing technology. It covers essential concepts related to various manufacturing processes and techniques. Through practical applications, students will gain familiarity with the tools, equipment, and materials commonly used in manufacturing industries, preparing them for real-world manufacturing scenarios.

List of Experiments

1. **Wood/Carpentry Working Shop:** Making of various joints, Pattern making.
2. **Foundry Shop:** Bench moulding with single piece pattern and two piece pattern.
 - a. Floor moulding – Making of bend pipe mould etc.
3. **Fitting Shop:** Learning use of fitting hand tools, marking tools, marking gauge.
 - a. Exercises: Jobs made out of MS Flats, making saw – cut filling V-cut taper at the corners,

- circular cut, fitting square in square, triangle in square.
4. **Welding Shop:** Electric arc welding, Edge preparations, Exercises making of various joints. Bead formation in horizontal, vertical and overhead positions.
 5. **Gas Welding:** Oxy-Acetylene welding and cutting of ferrous metals.
 6. **Soldering:** Dip soldering.
 7. **Brazing:** With Oxy-Acetylene gas.
 8. **Sheet Metal Shop:** Learning use of sheet-metal tools, Exercises: Making jobs out of GI sheet metal. Cylindrical, Conical and Prismatic shapes.
 9. **Black smithy Shop Aim: To make an S-hook from a given round rod, by following hand forging operation.**
 10. **To make an S-hook from a given round rod, by following hand forging operation.**
 11. **To make a Square rod from a given round rod, by following hand forging operation.**
 12. **Project Shop:** Extrusion of soft metals, Plastic coating of copper wires, Plastic moulding.

Course Name: Applied Mathematics-I

Course Code: BSCC15100

Objectives:

- The purpose of this course is to provide participants with the skills, knowledge and attitudes required to perform fundamental mathematical procedures and processes for solution of engineering problems, particularly the use of calculus and vector analyses. The course aims to show the relevance of mathematics to engineering and applied science.-Faculty

Course Outline:

Unit I: Successive Differentiation

Leibniz Theorem, Mean Value Theorems and Their Geometrical Interpretation; Cartesian Graphing with First and Second Derivatives, Asymptotes and Dominant terms, Graphing of Polar curves, Polar Equations for Conic Sections

Unit II: Introduction to Sequences, Infinite Series, Tests for Convergence/Divergence

Limit Comparison Test, Ratio Test, Root Test, Integral Test, Cauchy Condensation Test. Alternating series: Absolute Convergence and Conditional Convergence.

Unit III: Series Expansions

Power Series, Taylor Series, Integration, Differentiation, Multiplication and Division Process in Power Series, Partial Differentiation: Functions of Several Variables, Limits and Continuity, Chain Rules, Change of Variables, Partial Differentiation of implicit Functions.

Taylor Series of Two Variables, Directional Derivatives and its Properties, Jacobian of Transformation, Maxima and Minima by Using Second Order Derivatives.

Unit IV: Vector Calculus

Rules for Differentiations, Tangent Vector, Velocity and Acceleration Vectors Normal Vector, Curvature and Torsion and TNB frame; Double Integrals, Change of Order of Integration, Change of Variables, Triple Integrals, Application of Multiple Integrals to Areas and Volumes;

Unit V: Gradient

Divergence, Curl, Line Integrals, Green's Theorem in Plane, Classification and Construction of Differential Equations, Exact Differential Equations, Riccati Equation, Clairaut Form.

Suggested Readings:

1. B. S. Grewal, "Higher Engineering Mathematics" Khanna Publications.
2. R. K. Jain and S.R.K. Iyengar, "Advanced Engineering Mathematics" Narosa Publications.
3. E. kresyzig, "Advance Engineering Mathematics", Wiley publications
4. G.Hadley, "Linear Algebra" Narosa Publication
5. N.M. Kapoor, "A Text Book of Differential Equations", Pitambar publication.
6. Wylie R, "Advance Engineering mathematics", McGraw-Hill
7. Schaum's Outline on Linear Algebra, Tata McGraw-Hill
8. Polking and Arnold, "Ordinary Differential Equation using MatLab" Pearson.

Course Name: Applied Physics -I

Course Code: BSCC16100

Objectives:

- The objective of the paper is to facilitate the student with the basics of Applied Physics aspects that are required for his understanding of basic physics. The main objectives are to provide the student with a clear and logical presentation of the basic concepts and principles of physics, to develop strong problem-solving skills and to strengthen an understanding of the concepts and principles through a broad range of interesting applications. Faculty

Course Outline:

Unit I: Sound Waves

Introduction, Reverberation, Eyring's Formula, Absorption coefficient, Conditions for good acoustical design, Production and detection of ultrasonic waves and their applications.

Unit II: Electromagnetic Waves

Introduction, Maxwell's equations in differential and integral forms, Concept of displacement current, Electromagnetic wave equations for free space, Conducting and dielectric medium, Poynting theorem, Concept of wave guides.

Unit III: Light

Interference: thin films, wedge-shaped films, non-reflecting films, Newton rings, Michelson interferometer, Diffraction: single, double and multiple slits, Dispersive and resolving powers. Polarization, its production, and detection

Unit IV: Quantum Mechanics

Origin of quantum hypothesis, de-Broglie hypothesis of matter waves, Uncertainty principle, Wave function and wave mechanics, Schrodinger equation: steady state form, Quantum mechanical operators, Expectation value, One dimensional solutions: zero potential, step potential, potential barrier and potential well.

Unit V: Laser

Basic concepts, Laser properties, Laser systems: ruby, Nd:YAG, He-Ne, excimer, and semiconductor lasers.

Suggested Readings:

1. David, J. G., Introduction to Electrodynamics, Pearson Education (2003).
2. Ghatak, A., Optics, Tata McGraw Hill Publishing Co. Ltd, New Delhi (2006).
3. Beiser, A., Concept of Modern Physics, Tata McGraw Hill Publishing Co. Ltd, New Delhi (2003).
4. Rajendran Baldev Raj and Palanichary P.V., Science & Technology of Ultrasonics 1st Edition, Narosa Publications (2007).
5. Schiff L. I., Quantum Mechanics, 3rd Edition MC- Graw Hill, (2007)
6. Chattopadhyay D. and Rakshit P.C., Practical Physics, 7th Edition, New Central Book Agency (2002)

Course Name: Applied Physics I Lab
Course Code: BSCC16101

Course Outline:

List of Experiments

1. To find the refractive index and Cauchy's constants of a prism using Spectrometer.
2. To determine the frequency of an A.C. using Sonometer.
3. To determine the wavelength of Sodium light by Newton's Rings.
4. To compare the capacitances of two condensers by De-sauty's Bridge method Using Head phone.
5. To study photovoltaic cell and hence to verify the inverse square law.
6. To determine the Resolving Power of a Telescope.
7. Determine the wavelength of sodium light by Fresnel's biprism.

8. To plot a graph between the distance of the knife-edge from the center of the gravity and the time period of bar pendulum. From the graph, find
 - (a) The acceleration due to gravity
 - (b) The radius of gyration and the moment of inertia of the bar about an axis.
9. To determine the moment of inertia of a flywheel about its own axis of rotation.
10. To determine the frequency of electrically maintained tuning fork by Melde's method.
11. To determine the numerical aperture (NA) of an Optical Fibre.
12. Compute simulation (simple application of Monte Carlo) e.g. Brownian motion, charging & discharging of capacitor.
13. To verify the laws of vibrating strings by Melde's experiment that is to show that $\frac{f}{v} = \text{constant}$
14. To study the characteristics of PN diode and Zener diode.
15. To determine the frequency of AC Mains by using a sonometer and an electro-magnet.
16. To determine the impedance of A.C. Circuits.
17. Determination of Young's modulus of the material – Non uniform bending.
18. Determination of Rigidity modulus by Torsional Pendulum.

Course Name: Business Communication

Course Code: GEC066001

Objective:

- To equip students of the B. Tech course effectively to acquire skills in reading, writing, comprehension and communication, as also to use electronic media for business communication. To provide an overview of the various business communication skills and groom students professionally

Course Outline:

Unit I: Introduction

Theory of Communication, Types and modes of Communication Fundamentals of Communication: Communication defined, Models of Communication, barriers in communication, perception and communication, essentials of good communication.

Unit II: Language of Communication

Verbal and Non-verbal (Spoken and Written) Personal, Social and Business Barriers and Strategies Intra-personal, Inter-personal and Group communication Modes of human communication: Basic differences in the principal modes of human communication – reading, writing, listening, speaking and non-verbal communication. Spoken

Communication: Importance of spoken communication, designing receiver-oriented messages, comprehending cultural dimension. Speaking Skills Monologue Dialogue Group Discussion Effective Communication/ Mis-communication Interview Public Speech;

Unit III: Making Oral presentations

Functions of presentations, defining objective, audience analysis, collection of materials, organization of materials, body language, effective delivery techniques. Written communication: Fundamentals of sentence structure, writing as a process. Reading and Understanding Close Reading Comprehension Summary Paraphrasing Analysis and Interpretation Translation (from Indian language to English and vice-versa) Literary/Knowledge Texts Writing Skills Documenting Report Writing Making notes Letter writing.

Unit IV: Fundamental of technical writing

Special features of technical writing, the word choice, developing clarity and conciseness, Report writing, Business letters, Applications and resumes. Transactional Analysis: Three human ego states, 4 life positions, different types of transactions.

Unit V: The significance of communication in a business organization

Channels of communication – Downwards, Upwards, Horizontal, Consensus, and Grapevine. Literary discussions: Analysis and discussion of the novel The Funda of Mix-ology and short stories from the books Under the banyan tree and other stories and Popular short stories.

Laboratory work: Audio-visual aids for effective communication: The role of technology in communication, the role of audio-visuals, designing transparencies, computer-aided presentation software, Software-aided activities in developing communication skills: Proper pronunciation, Learning to use the correct tense, Business writing, Report writing, Connected speech, Building up vocabulary, Awareness about the common errors in the usage of English, etc. Case studies, group discussions, presentations

Suggested Readings:

1. Sen, L., Communication Skills. Prentice Hall of India (2004).
2. Dhar, M., The Funda of Mixology: What bartending teaches that IIM does not, Srishti Publications (2008).
3. Narayan, R. K., under the banyan tree and other stories. Penguin Classics. (2007)

Course Name: Ability & Skill Enhancement I

Course Code: SEC077001

Objectives:

- To make students understand the usage of Grammar in day to day life and improve their fluency and confidence while speaking English.

Course Outline -Final Assessment – Written Paper

Unit I: Ice Breaking Session & Recap of Language Skills

Ice Breaking Session, Phrase, Clause, Sentence, Word Classes (Parts of Speech).

Unit II: Recap of Language Skills

Tenses (Present, Past Future), Modals, Articles (a, an, the);

Unit III: Reading Skills & Fluency Building

Reading Process, Importance & Types of Reading, Techniques of Reading, and Strategies to Improve Reading Abilities, Comprehension, Reading Aloud, Reading News;

Unit IV: Writing Skills

Generating ideas/gathering data, organizing ideas, Note taking, Outlining, drafting, Editing, and Proof Reading, Story Writing (through pictures/videos), Dialogue Writing, Email Writing;

Unit V: Listening & Speaking Skills

Types and Essentials of good listening, Listening Process, Barriers to Listening and Strategies to improve Listening, Listening to Inspirational Movies/Clips, Listening News Techniques of Effective Speaking, Introducing Oneself and others, Extempore, Situational Conversations (Practicing Short Dialogues).

Note: The review of Syllabus happens on periodic basis for the benefit of the students. In Case there are changes in curriculum due to review, students would be intimated in writing.

9. Lesson Plans

CSEC14100 – Introduction to Programming with C

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to Computer and Programming language	C-1	Lecture
Unit-I	Concept of algorithms, Flow Charts, Data Flow diagrams etc.,	C-2	Lecture
Unit-I	Introduction to the Editing tools such as vi or MS-VC editors,	C-3	Lecture
Unit-I	Concepts of the finite storage, bits bytes, kilo, mega and gigabytes.	C-4	Lecture
Unit-I	Concepts of character representation, Number Systems & Binary Arithmetic.	C-5	Lecture
Unit-I	Number Systems & Binary Arithmetic.	C-6	Lecture
Unit-I	Number Systems & Binary Arithmetic.	C-7	Lecture
Unit-I	Introduction to C History of C Overview of Procedural Programming	C-8	Lecture
Unit-I	Clarification Class 1	C-9	Clarification Class
Unit-II	Data Types, Variables, Constants,	C-10	Lecture
Unit-II	Operators and Basic I/O: Declaring, Defining and Initializing Variables, Scope of Variables, Using Named Constants,	C-11	Lecture
Unit-II	Keywords, C Data Types: int, char, float, etc, Casting of Data Types, C expressions,	C-12	Lecture
Unit-II	arithmetic operation, relational and logic operations,	C-13	Lecture
Unit-II	Using Comments in programs, Character I/O (getc, getchar, putc, putchar etc),	C-14	Lecture
Unit-II	Formatted and Console I/O (printf(), scanf()), Using Basic Header Files (stdio.h, iostream.h, conio.h etc), Using main() function, Example of some simple C program.	C-15	Lecture
Unit-II	C – Operators- Arithmetic Operators, Relational Operators, Logical Operators, Bitwise Operators, Assignment Operators	C-16	Lecture
Unit-II	Clarification Class 2	C-17	Clarification Class
Unit-II	Presentation	C-18	Presentation
Unit-III	Expressions, Conditional Statements and Iterative Statements:	C-19	Lecture
Unit-III	C - Decision Making Statements, conditional executing using if, else.	C-20	Lecture
Unit-III	Understanding syntax and utility of Iterative Statements (while, do-while, and for loops),	C-21	Lecture
Unit-III	Use of break and continue in Loops, Using Nested Statements (Conditional as well as Iterative)	C-22	Lecture
Unit-III	Programming Example	C-23	Lecture
Unit-III	Clarification Class 3	C-24	Clarification Class

Unit-IV	Functions and Arrays	C-25	Lecture
Unit-IV	Utility of functions, call by Value, call by Reference,	C-26	Lecture
Unit-IV	Functions returning value, Functions with variable number of Arguments.	C-27	Lecture
Unit-IV	Programming Example	C-28	Lecture
Unit-IV	Creating and Using One Dimensional Arrays (Declaring and Defining an Array, initializing an Array, accessing individual elements in an Array, manipulating array elements using loops),	C-29	Lecture
Unit-IV	Two dimensional Arrays (Declaring, Defining and Initializing Two Dimensional Array, Working with Rows and Columns),	C-30	Lecture
Unit-IV	Programming of 2D Array	C-31	Lecture
Unit-IV	Introduction to Multi-dimensional arrays.	C-32	Lecture
Unit-IV	Clarification Class 4	C-33	Clarification Class
Unit-IV	Class Room Assignment 1	C-34	Class Assignment
Unit-IV	Webinar 1	C-35	Webinar
Unit-IV	Guest lecture 1	C-36	Guest lecture
Unit-V	Pointers Understanding a Pointer Variable, Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables),	C-37	Lecture
Unit-V	Pointers Understanding a Pointer Variable, Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables),	C-38	Lecture
Unit-V	Programming Example	C-39	Lecture
Unit-V	Pointers to Pointers, Passing pointers as function arguments,	C-40	Lecture
Unit-V	Returning a pointer from a function, using arrays as pointers, Passing arrays to functions,	C-41	Lecture
Unit-V	Structures and Unions,	C-42	Lecture
Unit-V	Clarification Class 5	C-43	Clarification Class
	Webinar 2	C-44	Webinar
	Guest lecture 2	C-45	Guest lecture
	Take Home Assignments		Home Assignments

CSEC14101 – Programming with C Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1.	Write a program sum of two numbers	P-1,2	Practical
2.	Write a program to check either the number is even or odd	P-3,4	Practical
3.	Write a program calculate simple interest.	P-5,6	Practical
4.	Write a program to calculate the marks of four subject and percentage.	P-7,8	Practical
5.	Write a program to check either the year is leap year or not.	P-9,10	Practical
6.	Write a program to find out the grade using if/else if statement.	P-11,12	Practical
7.	Write a program to find out the greater number between two number.	P-13,14	Practical
8.	WAP to read base and height of a triangle, calculate the area using formula: $\text{Area} = 1/2 * \text{base} * \text{height}$	P-15,16	Practical
9.	WAP to read marks obtained and maximum marks of a student and calculate its percentage and display it.	P-17,18	Practical
10.	Write a program to print even number up to n.	P-19,20	Practical
11.	Write a program to print odd number up to n.	P-21,22	Practical
12.	Write a program to print table.	P-23,24	Practical
13.	Presentation	P-25,26	Practical
14.	Quiz	P-27,28	Practical
15.	Workshop	P-29,30	Practical

CSEC14102 – Electronics and Electrical Technology

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction of Subjects	C-1	Lecture
Unit-I	Difference between Electrical and Electronics, Application of Electrical and Electronics	C-2	Lecture
Unit-I	Charge, Properties of charge, application of charge	C-3	Lecture
Unit-I	AC Supply System, DC Supply System, Their application and comparison	C-4	Lecture
Unit-I	KCL and KVL	C-5	Lecture
Unit-I	Parallel and Series Circuit	C-6	Lecture
Unit-I	Current Divider and Voltage divider	C-7	Lecture
Unit-I	Nodal Analysis, Superposition theorem	C-8	Lecture
Unit-I	Presentation -1	C-9	Presentation
Unit-I	Thevenin Theorem	C-10	Lecture
Unit-I	Norton Theorem, Maximum Power Transfer theorem	C-11	Lecture
Unit-I	Step Voltage Response of RL and RC Series	C-12	Lecture
Unit-I	Step Voltage Response of RL and RC Series	C-13	Lecture
Unit-I	Clarification Class -I	C-14	Clarification Class
Unit-II	SINUSOIDAL STEADY STATE RESPONSE OF CIRCUITS		
Unit-II	Sinusoidal Steady State Response of Circuits, Phasor representation of circuit elements,	C-15	Lecture
Unit-II	Phasor Diagram	C-16	Lecture
Unit-II	Series and Parallel circuits, Power and Power Factor	C-17	Lecture
Unit-II	Amplitude of AC wave form	C-18	Lecture
Unit-II	Sine Wave Generation, Amplitude of AC waveform	C-19	Lecture
Unit-II	Phase Shift	C-20	Lecture
Unit-II	Class Assignment - 1	C-21	Class Assignment
Unit-II	Phasor Diagram-II	C-22	Lecture
Unit-II	Phasor Algebra	C-23	Lecture
Unit-II	Clarification Class -2	C-24	Clarification Class
Unit-III	MAGNETIC CIRCUITS		
Unit-III	3 Phase Power Measurement	C-25	Lecture
Unit-III	Class Assignment -II	C-26	Class Assignment
Unit-III	Concepts of Magnetic Circuits	C-27	Lecture
Unit-III	BH Curve, Calculation of Magnetic Circuits	C-28	Lecture
Unit-III	Iron Losses	C-29	Lecture
Unit-III	Constructional Features of Transformer	C-30	Lecture
Unit-III	EMF Equations, Ideal transformer	C-31	Lecture
Unit-III	Clarification Class -3	C-32	Clarification Class
Unit-IV	ROTATING ELECTRIC MACHINES		
Unit-IV	Voltage Regulation and Efficiency	C-33	Lecture
Unit-IV	Guest Lecture	C-34	Guest lecture
Unit-IV	Construction, Operating Principle and Application	C-35	Lecture
Unit-IV	DC Motor and 3 Phase DC Motor	C-36	Lecture
Unit-IV	Clarification Class - 4	C-37	Lecture
Unit-V	ENERGY MANAGEMENT		
Unit-V	Electrical Safety and Standard	C-38	Lecture
Unit-V	Home Assignment - I		Home Assignments

Unit-V	Seminar	C-39	Seminar
Unit-V	P-N diode, BJT	C-40	Lecture
Unit-V	SCR, FET, MOSFET	C-41	Lecture
Unit-V	V-I Characteristics	C-42	Lecture
Unit-V	Rectifier	C-43	Lecture
Unit-V	Clarification Class -5	C-44	Clarification Class
Unit-V	Webinar	C-45	Webinar

CSEC14103– Electronics and Electrical Technology Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1.	To get familiar with following instruments CRO, Multimeter, Function Generator and Power Supply	P-1,2	Practical
2.	Verification of Superposition Theorem, Thevenin Theorem	P-3,4	Practical
3.	Resistor Color Coding	P-5,6	Practical
4.	Verification of Logic Gates, Superposition Theorem	P-7,8	Practical
5.	Universal gates	P-9,10	Practical
6.	Resistor Color Coding Revision	P-11,12	Practical
7.	V-I Properties of Diode	P-13,14	Practical
8.	V-I Properties of Zener Diode	P-15,16	Practical
9.	Fluorescent Lamp	P-17,18	Practical
10.	Half wave Rectifier	P-19,20	Practical
11.	Presentation	P-21,22	Practical
12.	Activity	P-23,24	Activity
13.	Quiz	P-25,26	Practical
14.	Class Room Assignment	P-27,28	Class Assignment
15.	Group Discussion	P-29,30	Group discussions

CSEC14104– Manufacturing Processes

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	INTRODUCTION		
Unit-I	Introduction: Common Engineering Materials and their important Mechanical and Manufacturing Properties	C-1	Lecture
Unit-I	General classification of manufacturing processes. Metal casting, principle of metal casting	C-2	Lecture
Unit-I	patterns, their functions, types, material and pattern allowances, characteristics of molding sand	C-3	Lecture
Unit-I	types of cores. chaplets and chills; their material and functions, Mould and their types.	C-4	Lecture
Unit-I	Requisites of a sound casting. Introduction to die casting.	C-5	Lecture
Unit-I	Clarification Class-1	C-6	Clarification Class
Unit-II	METAL FORMING AND SHEARING	C-7	
Unit-II	Metal forming and shearing: forging rolling, drawing, extrusion	C-8	Lecture
Unit-II	Bending, spinning, stretching, embossing and coining	C-9	Lecture
Unit-II	Die and punch operation in press work shearing piercing and blanking, notching and lancing	C-10	Lecture
Unit-II	clarification Class-2	C-11	Clarification Class
Unit-III	JOINING PROCESSES	C-12	
Unit-III	Joining Processes: Electric Arc and Gas welding Resistance and Thermit welding	C-13	Lecture
Unit-III	soldering, Brazing and Braze welding, Adhesive Bonding	C-14	Lecture
Unit-III	clarification Class-3	C-15	Clarification Class

CSEC14105– Manufacturing Process/Workshop Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1.	Wood/Carpentry Working Shop: Making of various joints, Pattern making.	P1,2	Practical
2.	Foundary Shop: Bench moulding with single piece pattern and two piece pattern. Floor moulding – Making of bend	P3,4	Practical
3.	Learning use of fitting hand tools, marking tools, marking gauge. Jobs made out of MS Flats, making saw.	P-5	Practical
4.	cut filling V-cut taper at the corners, circular cut, fitting square in square, triangle in square.	P-6	Practical
5.	Welding Shop: Electric arc welding, Edge preparations, Exercises making of various joints. Bead formation diff. posit.	P-7	Practical
6.	Gas Welding: Oxy-Acetylene welding and cutting of ferrous metals.	P-8	Practical
7.	Soldering: Dip soldering. Brazing: With Oxy-Acetylene gas.	P-9	Practical
8.	Sheet Metal Shop: Learning use of sheet-metal tools,	P-10	Practical
9.	Exercises: Making jobs out of GI sheet metal. Cylindrical, Conical and Prismatic shapes.	P-11	Practical
10.	Black smithy Shop Aim: To make an S-hook from a given round rod, by following hand forging operation.	P-12	Practical
11.	To make an S-hook from a given round rod, by following hand forging operation.	P-13	Practical
12.	To make a Square rod from a given round rod, by following hand forging operation.	P-14	Practical
13.	Project Shop: Extrusion of soft metals, Plastic coating of copper wires, Plastic moulding.	P-15	Practical

BSCC15100– Applied Mathematics- I

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Successive differentiation: a) Introduction b) Calculation of 1st, 2nd, 3rd & higher order derivatives	C1,2	Lecture
Unit-I	Calculation of nth derivative: some standard results Application of successive differentiation Leibnitz's theorem: Introduction, statement	C3,4,5	Lecture
Unit-I	Assignment - I		Home-Assignment
Unit-I	Clarification Class	C-6	Clarification Class
Unit-I	Cartesian Graphing with First and Second Derivatives	C7,8	Lecture
Unit-I	Assignment - II		Home Assignments
Unit-I	Asymptotes and Dominant terms Graphing of Polar curves Polar Equations for Conic Sections.	C9,10,11,12	Home Assignments
Unit-II	Introduction to Sequences, Infinite Series	C-13	Lecture
Unit-II	Tests for Convergence/Divergence: Limit Comparison Test	C-14,15	Lecture
Unit-II	Assignment - III		
Unit-II	Ratio Test		Home Assignments
Unit-II	Root Test	C16,17,18,19	Lecture
Unit-II	Integral Test	C20,21	Lecture
Unit-II	Assignment - IV		
Unit-II	Cauchy Condensation Test		Class Assignment
Unit-III	Alternating series: Absolute Convergence and Conditional Convergence.	C22,23,24,25	Lecture
Unit-III	Series Expansions: a) Power Series b) Taylor Series	C26,27,28	Lecture
Unit-III	Integration, Differentiation, Multiplication and Division Process in Power Series	C29,30	Lecture
Unit-III	Assignment - V		
Unit-III	Partial Differentiation: a) Functions of Several variable b) Limits and Continuity		Class Assignment
Unit-III	Chain Rules Change of Variables Partial Differentiation of implicit Functions	C31,32,33,34	Lecture
Unit-III	Taylor Series of Two Variables	C35,36	Lecture
Unit-III	Directional Derivatives and its Properties Jacobian of Transformation	C37,38,39	Lecture
	Assignment - VI		
Unit-IV	Maxima and Minima by Using Second Order Derivatives.		Home Assignments
Unit-IV	Vector Calculus: Rules for Differentiations	C40,41	Lecture
Unit-IV	Tangent Vector	C42,43	Lecture
Unit-IV	Velocity and Acceleration Vectors, Normal Vector	C44,45	Lecture
Unit-IV	Assignment - VII	C46,47	Class Assignment
Unit-IV	Double Integrals		Take Home Assignments

Unit-IV	Change of Order of Integration, Change of Variables	C48,49	Lecture
Unit-V	Triple Integrals, Application of Multiple Integrals to Areas and Volumes.	C50-C53	Lecture
Unit-V	Gradient, Divergence	C-54	Lecture
Unit-V	Curl, Line Integrals	C-55	Lecture
Unit-V	Green's Theorem in Plane	C-56	Lecture
Unit-V	Assignment - VIII	C-57	Class Assignment
Unit-V	Classification and Construction of Differential Equations		Home Assignments
Unit-V	Exact Differential Equations	C-58	Lecture
Unit-V	Riccati Equation	C-59	Lecture
Unit-V	Claiurat Form	C-60	Lecture

BSCC16100– Applied Physics-I

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Sound Waves:		
Unit-I	Introduction to sound waves, Reverberation.	C-1	Lecture
Unit-I	Eyring's Formula, Absorption coefficient	C-2	Lecture
Unit-I	Conditions for good acoustical design	C-3	Lecture
Unit-I	Production and detection of ultrasonic waves	C-4	Lecture
Unit-I	Numericals	C-5	Lecture
Unit-I	Applications of ultrasonic waves	C-6	Lecture
Unit-I	Clarification Class I	C-7	Clarification Class
Unit-II	Electromagnetic Waves:		
Unit-II	Introduction to EMW; Maxwell's equations in differential and integral forms,	C-8	Lecture
Unit-II	Introduction to EMW; Maxwell's equations in differential and integral forms,	C-9	Lecture
Unit-II	Class Room Assignment I	C-10	Class Assignment
Unit-II	Concept of displacement current, Conduction current	C-11	Lecture
Unit-II	Electromagnetic wave equations for free space,	C-12	Lecture
Unit-II	Electromagnetic wave equations for free space,	C-13	Lecture
Unit-II	Electromagnetic wave equations for Conducting medium,	C-14	Lecture
Unit-II	Electromagnetic wave equations for dielectric medium,	C-15	Lecture
Unit-II	Poynting theorem.	C-16	Lecture
Unit-II	Poynting theorem.	C-17	Lecture
Unit-II	Concept of wave guides.	C-18	Lecture
Unit-II	Concept of wave guides.	C-19	Lecture
Unit-II	Workshop	C-20	Workshop
Unit-II	Take Home Assignment-I		Home Assignments
Unit-II	Clarification Class II	C-21	Clarification Class
Unit-III	Light: Interference:		
Unit-III	Interference in thin films, wedge-shaped films, non-reflecting films,	C-22	Lecture
Unit-III	Interference in thin films, wedge-shaped films, non-reflecting films,	C-23	Lecture
Unit-III	Interference in thin films, wedge-shaped films, non-reflecting films,	C-24	Lecture
Unit-III	Newton rings.	C-25	Lecture
Unit-III	Newton rings.	C-26	Lecture
Unit-III	Activity I	C-27	Activity
Unit-III	Michelson interferometer,	C-28	Lecture
Unit-III	Michelson interferometer,	C-29	Lecture
Unit-III	Diffraction: single, double and multiple slits, Dispersive and resolving powers.	C-30	Lecture
Unit-III	Polarization, its production, and detection	C-31	Lecture
Unit-III	Polarization, its production, and detection	C-32	Lecture
Unit-III	Clarification Class III	C-33	Clarification Class

	Activity II	C-34	Activity
Unit-IV	Quantum Mechanics:		
Unit-IV	Origin of quantum hypothesis,	C-35	Lecture
Unit-IV	de-Broglie hypothesis of matter waves,	C-36	Lecture
Unit-IV	Numericals	C-37	Lecture
Unit-IV	Uncertainty principle,	C-38	Lecture
Unit-IV	Wave function and wave mechanics,	C-39	Lecture
Unit-IV	Schrodinger equation: steady state form,	C-40	Lecture
Unit-IV	Quantum mechanical operators,	C-41	Lecture
Unit-IV	Expectation value,	C-42	Lecture
Unit-IV	One dimensional solutions: zero potential, potential step	C-43	Lecture
Unit-IV	Potential Barrier	C-44	Lecture
Unit-IV	Class Room Assignment II	C-45	Class Assignment
Unit-IV	Potential Well	C-46	Lecture
Unit-IV	Potential Well	C-47	Lecture
Unit-IV	Presentation	C-48	Presentation
Unit-IV	Clarification Class IV	C-49	Clarification Class
Unit-V	Lasers:		
Unit-V	Basic concepts,	C-50	Lecture
Unit-V	Laser properties	C-51	Lecture
Unit-V	Laser systems: Ruby laser	C-52	Lecture
Unit-V	Nd:YAG laser	C-53	Lecture
Unit-V	Quiz	C-54	Quiz
Unit-V	He-Ne Laser	C-55	Lecture
Unit-V	Excimer	C-56	Lecture
Unit-V	Excimer	C-57	Lecture
Unit-V	Semiconductor lasers	C-58	Lecture
Unit-V	Semiconductor lasers	C-59	Lecture
Unit-V	Clarification Class V	C-60	Clarification Class

BSCC16101– Applied Physics-I Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1.	Introduction to Physics Lab	P-1,2	Practical
2.	To find the refractive index and Cauchy's constant of a prism using spectrometer	P-3,4	Practical
3.	To find the refractive index and Cauchy's constant of a prism using spectrometer	P-5,6	Practical
4.	To determine the wavelength of Sodium light by Newton's ring	P-7,8	Practical
5.	To compare the capacitances of two condensers by De-Sauty's bridge method using Head Phone	P-9,10	Practical
6.	To study the characteristics of a PN diode	P-11,12	Practical
7.	To determine the Resolving Power of a Telescope	P-13,14	Practical
8.	To find unknown capacitance by the help of De Sauty's bridge	P-15,16	Practical
9.	To find the acceleration due to gravity by simple Pendulum.	P-17,18	Practical
10.	To determine the characteristics of Zener diode	P-19,20	Practical
11.	To determine the Moment of Inertia of a fly wheel about its own axis of rotation	P-21,22	Practical
12.	To determine the band gap of a semiconductor	P-23,24	Practical
13.	To determine the frequency of electrically maintained tuning fork by Melde's method	P-25,26	Practical
14.	Charging and discharging of a capacitor	P-27,28	Practical
15.	To study the V-I characteristics using a solar cell	P-29,30	Practical

SEC077001– Ability & Skill Enhancement – I

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Sentence and its types	C-1	Lecture
Unit-I	Story Writing	C-2	Activity
Unit-I	Ice Breaking Session: Introduction to ASE, Introduction and overview of the course	C-3,4	Lecture
Unit-I	Word Classes (Parts of Speech) , Phrases Clauses	C-5	Lecture
Unit-II	Tenses - Present Tense	C-6	Lecture
Unit-II	Present Tenses: Written & spoken exercise	C-7	Activity
Unit-II	Tenses – Past Tense	C-8	Lecture
Unit-II	Past Tenses: Written & spoken exercise	C-9	Activity
Unit-II	Tenses – Future Tense	C-10	Lecture
Unit-II	Future Tenses: Written & spoken exercise	C-11	Activity
Unit-II	Class Room Assignment	C-12	Class Assignment
Unit-II	Modals & Exercises	C-13	Lecture
Unit-II	Articles	C-14	Lecture
Unit-II	Articles: Exercise	C-15	Activity
	Presentation	C-16	Presentation
	Clarification Class	C-17	Clarification Class
Unit-III	Reading Skills: Reading Process, Importance & Types of Reading, Techniques of Reading, and Strategies to Improve Reading Abilities	C-18	Lecture
Unit-III	Reading aloud, Reading News	C-19	Class Assignment
Unit-III	Reading Comprehension	C-20	Lecture
Unit-IV	Writing Skills: Generating ideas/gathering data, organizing ideas, Note taking, Outlining, drafting, Editing, and Proof Reading,	C-21	Lecture
Unit-IV	Story Writing (through pictures/videos)	C-22	Class Assignment
Unit-IV	Email Writing	C-23	Lecture
Unit-IV	Dialogue Writing	C-24	Lecture
Unit-IV	News Writing	C-25	Activity
	Presentation	C-26	Presentation
Unit-V	Types and Essentials of good listening, Listening Process, Barriers to Listening and Strategies to improve Listening	C-27	Lecture
Unit-V	Listening to Inspirational Movies/Clips	C-28	Activity
Unit-V	Listening News	C-29	Activity
Unit-V	Techniques of Effective Speaking	C-30	Lecture
Unit-V	Introducing Oneself and others	C-31	Activity
Unit-V	Situational Conversations (Practicing Short Dialogues)	C-32	Class Assignment
Unit-V	Public Speaking	C-33	Lecture
Unit-V	Extempore	C-34	Lecture
Unit-V	Extempore	C-35	Class Assignment
	Webinar	C-36	Webinar
	Guest Lecture	C-37	Guest lecture

GEC066001– Business Communication

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Process of Communication (What is communication)	C-1	Lecture
Unit-I	Importance of Communication	C-2	Lecture
Unit-I	Seven C's of Communication	C-3	Lecture
Unit-I	Types of Communication - Verbal	C-4	Lecture
Unit-I	Types of Communication- Non Verbal	C-5	Lecture
Unit-I	Types of Communication (Formal & Informal)	C-6	Lecture
Unit-I	Types of Communication (Interpersonal & Interpersonal)	C-7	Lecture
Unit-I	Different forms of Communication Barriers to Communication Causes, Linguistic Barriers, Psychological Barriers	C-8	Lecture
Unit-I	Interpersonal Barriers, Cultural Barriers	C-9	Lecture
Unit-I	Physical Barriers, Organizational Barriers	C-10	Lecture
	Classroom Assignment on JAM	C11,12,13	Class Assignment
	Clarification Class	C-14	Clarification Class
Unit-II	Preparing the Resume	C-15	Lecture
Unit-II	Job Application Letter	C-16	Lecture
Unit-II	Classroom Exercise	C-17	Activity
Unit-II	Letter Writing	C18,19,20	Lecture
Unit-II	Inviting quotations, Sending quotations, Placing orders	C-21	Lecture
Unit-II	CV Preparation	C-22	Lecture
Unit-II	Claim & Adjustment letters, Inviting tenders, Sales letters	C-23	Lecture
Unit-II	Social Correspondence	C-24	Lecture
Unit-II	Memorandum, Inter -office Memo,	C-25	Lecture
Unit-II	Notices	C-26	Lecture
Unit-II	Agenda	C-27	Lecture
Unit-II	Minutes	C-28	Lecture
Unit-II	Group Discussion	C-29	Group Discussion
Unit-II	Class Presentation	C-30,31,32,33	Presentation
Unit-II	Clarification Class	C-34	Clarification Class
	Home Assignment		Home Assignment
	Quiz	C-35	Quiz
	Classroom Exercise	C36,37	Activity
Unit-III	Business reports	C-38	Lecture
Unit-III	Business Reports: Types, Characteristics	C-39	Lecture
Unit-III	Business Reports: Importance	C-40	Lecture
Unit-III	Business Reports: Elements of structure	C-41	Lecture
Unit-III	Business Reports: Process of writing, Order of writing	C-42	Lecture
Unit-III	Business Reports: the final draft	C-43	Lecture
Unit-III	check lists for reports	C-44	Lecture
	Classroom Assignment	C-45	Class Assignment
	Clarification Class	C-46	Clarification Class
Unit-IV	Words often confused	C-47	Lecture

Unit-IV	Words often misspelt	C-48	Lecture
Unit-IV	Common errors in English	C-49	Lecture
Unit-IV	Classroom Exercise	C-50	Activity
	Group Discussion	C-51	Group Discussion
	Clarification Class	C-52	Clarification Class
Unit-V	Oral Presentation: Importance, Characteristics, Presentation Plan	C-53	Activity
Unit-V	Power point Presentation Slide Preparation	C-54	Lecture
Unit-V	Visual aids	C-55	Lecture
Unit-V	Classroom Exercise	C-56	Activity
Unit-V	Clarification Class	C-57	Clarification Class
	Guest Lecture	C-58	Guest Lecture
	Webinar	C-59	Webinar
	Seminar	C-60	Seminar

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