S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
4	HSMC-201	Technical Communication	HSMC	3	2	1	0	50	100	150

Course Outcomes:

At the end of the course the student will be able to: -	
CO1	Understand the constructs of written communication.
CO2	Develop competence in writing technical papers, research articles, proposals and reports.
CO3	Understand different aspects of verbal and non-verbal communication.
CO4	Gain effective communication skills and professional etiquettes for the workplace.
CO5	Demonstrate linguistic competence for public speaking and group discussion.

Detailed Syllabus

Section-A

UNIT 1: Basic Writing Skills: Sentence, Creating Coherence, Use of Phrases and Clauses in Sentences, Organizing Principles of Paragraphs in Documents, Techniques for Writing Precisely. Identifying Common Errors in Writing: Subject–Verb Agreement, Noun–Pronoun Agreement, Misplaced Modifiers, Redundancies, Clichés. The e-English: E- Mail Communication, Internet Abbreviations, Blogging, Challenges of English Language Online.

(7 Hrs)

UNIT 2: Technical Writing Skills: Letter Writing, Letter of Application Content, Format, Report Writing — Types, Structures, Data Collection, Content, Form, Writing a Proposal, Recommendations, Instructions, Business Communication. Creative Writing Skills: Free Writing, Biographical Writing, Autobiographical Writing, Process Description, Bar Charts and Flowcharts, Descriptive Writing, Argumentative Writing, Essay Writing, Précis Writing, Paraphrasing, Poster Making.

(7 Hrs)

UNIT 3: Reading and Listening: Improving Reading Skills: Skimming and Scanning, Reading and Note-Making, Intensive Reading and Predicting Content, Reading and Interpretation, Reading — Critical Reading, Hints Development. Listening Skills: Listening Comprehension, Difference between Listening and Hearing, Types of Listening, Types of Listening Intensity, Effective Listening, Ways to Improve Listening Skills, Listening and Note-Taking, Barriers to Effective Listening.

(7 Hrs)

Section-B

UNIT 4: Verbal Communication

Process of Communication and Effective Speaking: Communication Process, Barriers to Effective Communication, Flow of Organizational Communication, Language as a Tool of Communication, Pronunciation, Intonation, Stress and Rhythm, Introduction to Phonetics,

(5 Hrs)

UNIT 5: Non-Verbal Communication: Oral Communication, Communication at Workplace, Public Speaking, Persuasive Speaking, Impromptu Speaking - Extempore, Just a Minute, Debate, Conversations and Dialogues, Conversation over Telephone. Professional Etiquettes Meaning and Type, Seminar on a given topic.

(4 Hrs)

Text Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Technical Communication	Wiley Editorial	Wiley	1st (2019)
2	Technical Communication: Principles and Practice	Meenakshi Raman, Sangeeta Sharma	Oxford	2nd (2011)
3	Technical Communication: A Reader-Centered Approach	Anderson	Cengage Learning	6th (2007)

S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
5	EE-211	Basic Electrical and Electronics Engineering Lab	PCC	1	0	0	2	50	-	50

Course Outcomes:

At the end of the course the student will be able to: -	
CO1	Apply fundamental concepts to solve simple DC and AC electric circuits.
CO2	Verify the basic characteristics of transformers and electrical machines.
CO3	Design diode and rectifier circuits and analyze their characteristics.
CO4	Design and evaluate various transistor biasing configurations and circuits.
CO5	Design different voltage regulators

List of Experiments of Basic Electrical and Electronics Lab

S. No.	Experiment
1	Verify Characteristics of passive circuit elements (R, L, C).
2	Examine time and frequency responses of RC, RL and RLC circuits.
3	Verify and analyze network theorems.
4	Analyze single-phase transformers.
5	Perform the polarity test of the single phase transformer.
6	Perform open and short circuit tests on single phase transformers.
7	Measure three phase power using two Wattmeter methods.
8	Verify and plot V-I characteristics of p-n junction and Zener diodes.
9	Verify and plot Input and Output characteristics of BJT (CE).
10	Implement half wave and full wave rectifiers.
11	Design voltage regulator using series pass transistor.

S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
6	ESC-212	Python Programming Lab	ESC	2	0	0	4	50	-	50

Course Outcomes:

At the end of the course the student will be able to: -	
CO1	Apply the knowledge to create applications using the Python Programming Language.
CO2	Classify various data structures available in Python programming language
CO3	Implement testing and debugging of code written in Python
CO4	Apply the different functions to show various kinds of plots
CO5	Create solution for practical applications working in a team

List of Experiments of Python Programming Lab

S. No.	Experiments
1	Installing Python; basic syntax, interactive shell, editing, saving, and running a script
2	Develop a simple programs to understand operators and input/output operations
3	Develop programs to understand the control structures of python
4	Develop programs to learn different types of structures (list, dictionary, tuples) in python
5	Develop programs to learn concepts of functions scoping, recursion and list mutability.
6	Develop programs to understand working of exception handling and assertions.
7	Develop programs for data structure algorithms using python – searching, sorting and hash tables.
8	Develop programs to learn regular expressions using python.
9	Learn to plot different types of graphs using PyPlot.
10	Write a program with a function called rate_score() that rates a player"s score. The function should have one parameter that receives a score , and should return a string based on the score, as follows: If the score is <100, the function should return “Nothing to be proud of.” If the score is < 500 and >100, the function should return “Not Bad.” If the score is > 500, the function should return “Great !”
11	Develop the Tic-Tac-Toe game where two players are playing. The program will check for the winning condition. If the whole board gets filled and no one wins, the result should be declared as “Tie” and the user can restart the game or quit the game.
Mini Projects	
1	Develop a basic python project – Alarm clock
2	Develop a python based project for number system conversion using Tkinter library
3	Create a simple Hangman game in python
4	Control Arduino Development Board using python using PySerial Lib.
5	Development of Weather App
6	Development of Article Reader
7	Data Visualization model

S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
7	COM-212	Business Process Automation with RPA Lab	ESC	2	0	0	4	50	-	50

Course Outcomes:

At the end of the course the student will be able to: -	
CO1	Develop RPA bots for performing simple business processes using UiPath Studio.
CO2	Design RPA bots to automate data collection from multiple web sources.
CO3	Develop competencies in designing RPA bots for manipulating data across documents.
CO4	Manage the developed UiPath RPA robots using UiPath Orchestrator.
CO5	Troubleshoot problems in existing RPA bots.

List of Activities in Lab

S. No.	Activity
1	Familiarity with UiPath Studio Academic Alliance Edition: ● Configure UiPath Academic Alliance Edition. ● Design a bot that prints “Hello World” on the screen. ● Design a bot to generate mathematical tables.
2	Designing basic RPA bots: ● Design a bot to display messages using Sequence and Flowchart activities. ● Design a bot to display the sum of two variables by taking two variables as input and produce the output.
3	Working with Microsoft Excel: ● Design a bot to open a Microsoft Excel sheet and read data into a datatable. ● Design a bot to compare two columns in an excel sheet. The output should display 'Match/Not Match' against the corresponding cell in the sheet.
4	Working with Desktop Automation: ● Design a bot to create a text file, write “Hello World” into it and save it at the desired location using the 'Recorder' feature. ● Design a bot for automating disk clean-up processes.
5	Working with Websites: ● Design a bot to scrape data from a website and store it in a Microsoft Excel sheet. ● Design a bot to fill a webform from the data stored in a Microsoft Excel sheet.
6	Working with Documents: ● Design a bot to read a true PDF file and fill the webform. ● Design a bot to read a word file and then create a list of unique words in an excel sheet.
7	Working with Images: ● Design a bot to read a scanned image of an invoice and store the extracted data in a .CSV file. ● Design a bot to perform Optical Character Recognition (OCR) on a saved image using OCR activities.
8	Working with Emails: ● Design a bot to read unread emails from inbox. ● Design a bot to send email with attachments to multiple receivers.
9	Handling Exceptions: ● Apply exception handling to previously developed automations.
10	Working with Orchestrator: ● Configure UiPath Orchestrator and setup tenant, machine, environment and robots. ● Design a bot to create a Queue in Orchestrator and store the subject of the email in .CSV. ● Configure Orchestrator to run a process as per a given schedule.
11	**Mini Projects** (choose one): ● RPA bot to send notifications to students when their attendance falls below 75%. ● RPA bot to extract and collate job openings from multiple job portals. ● RPA bot to extract and display news from Google News.
12	Deploy **Mini Projects** using Orchestrator.

S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
8	NCC-201	Environment & Sustainability	NCC	0	2	0	0	-	-	S/NS*

Course Outcomes:

At the end of the course the student will be able to:	
CO1	Describe the relationship between Humans, Environment and Sustainability.
CO2	Articulate different environmental risks and issues and potential interventions to tackle them.
CO3	Appraise sustainable energy systems through case-studies and real-world examples.
CO4	Articulate Sustainable Infrastructure Development plan.
CO5	Appreciate global sustainability best practices in diverse domains.

Detailed Syllabus

Section-A

Unit 1: Introduction to Sustainability: Humanity and the Environment: What is Sustainability? The IPAT Equation, Human Consumption Patterns and the "Rebound" Effect, Challenges for Sustainability.
Climate and Global Change: Climate Processes; External and Internal Controls, Milankovitch Cycles and the Climate of the Quaternary, Modern Climate Change, Climate Projections.

(3 Hrs)

Unit 2: Biosphere: Introduction, Biogeochemical Cycles and the Flow of Energy in the Earth System. Biodiversity, Species Loss, and Ecosystem Function. Soil and Sustainability.
Physical Resources: Water, Pollution, and Minerals. Water Cycle and Fresh Water Supply. Water Pollution. Mineral Resources: Formation, Mining, Environmental Impact.

(4 Hrs)

Unit 3: Environmental and Resource Economics: Tragedy of the Commons. Environmental Valuation. Evaluating Projects and Policies. Solutions: Property Rights, Regulations, and Incentive Policies.
Modern Environmental Management: Systems of Waste Management. Case Study: Electronic Waste and Extended Producer Responsibility. Government and Laws on the Environment. Risk Assessment Methodology for Conventional and Alternative Sustainability Options.

(4 Hrs)

Section-B

Unit 4: Sustainable Energy Systems: Environmental Challenges in Energy, Carbon Dioxide, Air, Water and Land Use. Energy Sources and Carriers. Electricity. Energy Uses. Applications of Phase Change Materials for Sustainable Energy. Problem-Solving, Metrics, and Tools for Sustainability.

(6 Hrs)

Unit 5: Sustainable Infrastructure: The Sustainable City. Sustainability and Buildings. Sustainable Energy Practices: Climate Action Planning. Sustainable Transportation: Accessibility, Mobility, and Derived Demand. Sustainable Stormwater Management.

(4 Hrs)

Text Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Sustainability: A Comprehensive Foundation	Tom Theis and Jonathan Tomkin	Open Textbook Library	1st (2015)
2	Energy, Environment, and Sustainability with MindTap	Saeed Moaveni	Cengage India Private Limited	1st (2012)
3	Improving the Sustainable Development Goals: Strategies and the Governance Challenge (Routledge Focus on Environment and Sustainability)	Lars Niklasson	Routledge	1st (2019)

Reference Book

S. No.	Name of the Book	Author	Publisher	Edition (Pub. Yr.)
1	Global Challenges to CSR and Sustainable Development: Root Causes and Evidence from Case Studies (CSR, Sustainability, Ethics and Governance)	Stephen Vertigans, Samuel O. Idowu	Springer	1st (2021)