



NPR College of Engineering and Technology

(AN AUTONOMOUS INSTITUTION)

NBA Accredited (B.E. - CSE, ECE, EEE & Mechanical Engg.) | Accredited by NAAC with 'A' Grade
Recognized by UGC under 2 (f) | ISO 9001:2015 Certified | Approved by All India Council for Technical Education, New Delhi
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Natham, Dindigul (Dist.) - 624 401, Tamil Nadu.



DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses Autonomous Regulation 2023

SEMESTER I

Course Name: 23HS101 PROFESSIONAL ENGLISH - I

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	To use appropriate words in a professional context and communicate in a professional context.	Apply (K3)
CO2	To gain understanding of basic grammatic structures and use them in right context.	Understand (K2)
CO3	To read and infer the denotative and connotative meanings of technical texts and use technical words in describing products with appropriate definitions.	Apply (K3)
CO4	To write definitions, descriptions, narrations and essays on various topics.	Create (K6)
CO5	To express their opinions effectively in both oral and written medium of communication.	Create (K6)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO2	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO3	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO4	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO5	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name:23MA101 MATRICES AND CALCULUS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Use the matrix algebra methods for solving practical problems.	Apply (K3)
CO2	Able to use differential calculus ideas on several variable functions.	Apply (K3)
CO3	Apply integral calculus and multiple integral tools in solving various application problems.	Apply (K3)
CO4	Understand the concepts of Gradient, divergence and curl of a vector point function and related applications.	Understand (K2)
CO5	Apply various techniques in solving ordinary differential equations.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	1	1	-	-	-	-	2	-	2	3	-	-	-
CO2	3	3	1	1	-	-	-	-	2	-	2	3	-	-	-
CO3	3	3	1	1	-	-	-	-	2	-	2	3	-	-	-
CO4	3	3	1	1	-	-	-	-	2	-	2	3	-	-	-
CO5	3	3	-	-	-	-	-	-	2	-	-	2	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23PH101 ENGINEERING PHYSICS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Choose the correct materials based on their qualities for any intended applications and learn the basics of elasticity and its engineering-related applications.	Apply (K3)
CO2	Express their knowledge in electromagnetic waves.	Understand (K2)
CO3	Infer the characteristics of laser for various Engineering applications and expand the understanding of optical fibers use in communications.	Understand (K2)
CO4	Apply quantum theory's sophisticated physics notions to the matter characterization.	Apply (K3)
CO5	Know the fundamentals of crystal formations and growth methods.	Understand (K2)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	3	3	-	-	2	-	-	-	-	3	-	-	-
CO2	3	2	3	2	-	-	2	-	-	-	-	3	-	-	-
CO3	3	3	3	3	-	-	-	-	-	-	-	3	-	-	-
CO4	3	3	3	2	-	-	3	-	-	-	-	2	-	-	-
CO5	3	2	3	3	-	-	-	-	-	-	-	1	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23CY101 ENGINEERING CHEMISTRY

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Summarize the water related problems in boilers and their treatment techniques.	Remember (K1)
CO2	Discuss the applications of nanomaterials in medicine, agriculture, energy, electronics and catalysis.	Understand (K2)
CO3	Discuss the types, properties and applications of polymers and composites.	Apply (K3)
CO4	Summarize the fuels used for engineering processes and applications of fuels	Understand (K2)
CO5	Summarize the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	1	1	-	-	-	3	-	-	-	-	2	-	-	-
CO2	2	1	1	-	-	-	3	-	-	-	-	2	-	-	-
CO3	2	1	1	-	-	-	3	-	-	-	-	2	-	-	-
CO4	2	1	1	-	-	-	1	-	-	-	-	2	-	-	-
CO5	3	2	2	-	-	-	3	-	-	-	-	3	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23GE102 PROBLEM SOLVING AND PYTHON PROGRAMMING

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the concepts of computational thinking and algorithmic problem-solving techniques	Understand (K2)
CO2	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	Apply (K3)
CO3	Develop Python programs for solving real-time computational problems by using conditionals, looping, functions, and strings.	Apply (K3)
CO4	Understand the concepts of compound data using Python lists, tuples, and dictionaries	Understand (K2)
CO5	Develop python programs for solving computational problems by using modules, files, and python packages	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	2	-	-	-	-	-	-	-	2	-	-	2	3
CO2	3	3	3	2	2	-	-	-	-	-	2	3	3	-	3
CO3	3	3	3	2	2	-	-	-	-	-	2	3	3	2	3
CO4	3	2	2	-	-	-	-	-	-	-	2	-	-	2	3
CO5	3	3	3	2	3	-	-	-	-	-	2	3	3	2	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Autonomous Regulation 2023

Course Name: 23GE111 -PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Develop simple python programs for applying the concepts of datatypes, expressions and python statements	Apply (K3)
CO2	Develop Python programs using conditionals, looping, functions and strings for solving real-time computational problems.	Apply (K3)
CO3	Develop python programs using lists, tuples, and dictionaries	Apply (K3)
CO4	Develop python programs for solving problems by using modules, files and python packages	Apply (K3)
CO5	Utilize Python packages for developing real-world software applications	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

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CO2	3	3	3	2	2	-	-	2	-	3	2	3	3	2	3
CO3	3	2	1	2	-	-	-	2	-	3	2	3	3	2	3
CO4	3	2	2	2	2	-	-	-	2	-	2	3	-	2	3
CO5	3	3	3	2	2	-	-	-	2	-	2	3	3	2	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23BS111 PHYSICS AND CHEMISTRY LABORATORY

Course Outcome (Physics Laboratory)

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Apprehend the concepts of interference, diffraction of light and recognize the resonance concept of waves.	Understand (K2)
CO2	Apply the principles of operations of optical fibers, semiconductor using simple circuits and interaction of electromagnetic waves and crystalline solids.	Apply (K3)
CO3	Measure the elastic moduli and moment of inertia of given materials with the help of suggested procedures.	Apply (K3)
CO4	Experiment the relationship between the light and matter & properties of liquids.	Analyze (K4)
CO5	Estimate the velocity of sound and compressibility of liquid.	Understand (K2)

Course Outcome (CHEMISTRY LABORATORY)

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO.	Analyze (K4)
CO2	Determine the amount of metal ions through volumetric and spectroscopic techniques.	Apply (K3)
CO3	Analyse and determine the composition of alloys.	Analyze (K4)
CO4	Learn simple method of synthesis of nanoparticles	Understand (K2)
CO5	Quantitatively analyse the impurities in solution by electroanalytical methods.	Analyze (K4)



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Autonomous Regulation 2023

Mapping Table Mapping of COs with POs and PSOs

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CO2	3	1	-	-	-	-	-	1	2	1	-	-	-	-	-
CO3	3	3	-	-	-	-	-	2	2	1	-	-	-	-	-
CO4	3	2	-	-	-	-	-	1	3	2	-	-	-	-	-
CO5	3	2	-	-	-	-	-	2	1	2	-	-	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Autonomous Regulation 2023

Course Name: 23GE112 ENGLISH LABORATORY –I

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	To listen to and comprehend general as well as complex academic information.	Understand (K2)
CO2	To listen to and understand different points of view in a discussion.	Understand (K2)
CO3	To speak fluently and accurately in formal and informal communicative contexts.	Apply (K3)
CO4	To describe products and processes and explain their uses and purposes clearly and accurately.	Create (K6)
CO5	To express their opinions effectively in both formal and informal discussions.	Create (K6)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO2	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO3	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO4	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO5	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-

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SEMESTER II

Course Name: 23HS201 PROFESSIONAL ENGLISH - II

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	To compare and contrast products and ideas in technical texts and write analytical essays.	Apply (K2)
CO2	To identify and report cause and effects in events, industrial processes through technical texts and draft a report with suggestions.	Create (K6)
CO3	To analyze problems in order to arrive at feasible solutions and communicate them in the written format.	Analyze (K4)
CO4	To present their ideas and opinions in a planned and logical manner in industrial nature.	Create (K6)
CO5	To draft effective resumes in the context of job application.	Create (K6)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO2	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO3	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO4	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-
CO5	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-

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Autonomous Regulation 2023

Course Name: 23MA201 STATISTICS AND NUMERICAL METHODS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.	Apply (K3)
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.	Apply (K3)
CO3	Understand the basic concepts and Techniques of solving algebraic and transcendental equations.	Apply (K3)
CO4	Understand the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.	Understand (K2)
CO5	Solve the ordinary differential equations with initial conditions by using certain techniques with engineering applications.	Analyze (K4)

Mapping Table Mapping of COs with POs and PSOs

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CO2	3	3	1	1	1	-	-	-	2	-	2	3	-	-	-
CO3	3	3	1	1	1	-	-	-	2	-	2	3	-	-	-
CO4	2	3	1	1	1	-	-	-	2	-	2	3	-	-	-
CO5	3	3	1	1	1	-	-	-	2	-	2	3	-	-	-

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Course Name: 23PH203 PHYSICS FOR INFORMATION SCIENCE

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	To recognize the fundamental ideas behind different free-electron theories and establish the solids' electrical characteristics.	Understand (K2)
CO2	To evaluate the functions of semiconductors and their uses.	Apply (K3)
CO3	To employing quantum principles to examine the mechanisms at work in magnetic materials.	Apply (K3)
CO4	To understand about the uses of superconducting and Optical properties of materials.	Understand (K2)
CO5	To show the fundamentals of how micro- and nano-electronic equipment functions.	Understand (K2)

Mapping Table Mapping of COs with POs and PSOs

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CO2	3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
CO3	3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	3	3	-	2	-	-	-	-	-	-	2	-	-	-
CO5	3	3	3	-	3	1	1	-	-	-	-	3	-	-	-

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Autonomous Regulation 2023

Course Name: 23BE201-BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Compute the electric circuit parameters for simple problems	Apply (K3)
CO2	Examine the working principle and applications of electrical machines	Understand (K2)
CO3	Illustrate the characteristics of analog electronic devices	Understand (K2)
CO4	Examine the basic concepts of digital electronics	Analyze (K4)
CO5	Apply the concepts of principles of measuring instruments for real time applications	Apply (K2)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
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CO2	2	2	1	-	-	-	1	-	-	-	2	2	-	-	-
CO3	2	1	1	-	-	-	1	-	-	-	2	2	-	-	-
CO4	2	2	1	-	-	-	1	-	-	-	2	2	-	-	-
CO5	2	2	1	-	-	-	1	-	-	-	2	2	-	-	-

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Autonomous Regulation 2023

Course Name: 23CS901-DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION

Course Outcome

	On completion of the course, the students will be able to	Bloom's Level Mapped
CO1	Design various combinational digital circuits using logic gates	Apply (K3)
CO2	Describe the operation and construction of various flip flops.	Understand (K2)
CO3	Design sequential circuits and analyze the design procedures.	Apply (K3)
CO4	State the fundamentals of computer systems and analyze the execution of an instruction.	Understand (K2)
CO5	Analyze different types of control design and identify hazards.	Analyze (K4)
CO6	Identify the characteristics of various memory systems and I/O communication.	Understand (K2)
CO7	Design and implementation of combinational circuits.	Apply (K3)
CO8	Design and implementation of sequential circuits.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	-	-	-	-	-	-	2	-	-	-
CO2	3	3	3	3	1	-	-	-	-	-	-	1	-	-	-
CO3	3	3	3	3	3	-	-	-	-	-	-	2	-	-	-
CO4	3	3	3	3	1	-	-	-	-	-	-	1	-	-	-
CO5	3	3	3	3	3	-	-	-	-	-	-	2	-	-	-
CO6	3	3	3	3	1	-	-	-	-	-	-	1	-	-	-
CO7	3	3	3	3	3	-	-	-	-	-	-	2	-	-	-
CO8	3	3	3	3	3	-	-	-	-	-	-	2	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23AD201- DATA STRUCTURES DESIGN

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understanding of Abstract Data Types (ADTs) and their practical implementations.	Understand (K2)
CO2	Apply the Design and Implementation of Lists, Stacks, and Queues to Address Real-World Challenges	Apply (K3)
CO3	Apply In-Depth Understanding of Sorting, Searching, and Hashing Algorithms for Effective Problem Solving	Apply (K3)
CO4	Apply Profound Understanding of Trees to Effectively Manage Hierarchical and Interconnected Data	Apply (K3)
CO5	Analyze, Synthesize, and Innovate with Graph Structures for Complex Interconnected Data and Network Solutions	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	2	3	3	-	-	-	-	3	1	2	1	2	3	3
CO2	2	3	1	3	1	-	-	1	1	2	2	1	3	3	3
CO3	2	2	2	1	1	-	-	1	2	3	1	2	1	1	2
CO4	2	2	3	1	-	1	-	1	1	2	1	2	2	2	2
CO5	2	3	2	1	-	1	-	1	2	1	1	2	1	2	1

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Code & Name: 23GE211 ENGINEERING PRACTICES LABORATORY

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.	Apply (K3)
CO2	Wiring various electrical joints in common household electrical wire work.	Apply (K3)
CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.	Apply (K3)
CO4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO 12	PSO1	PSO2	PSO3
CO1	3	2	-	-	1	1	1	-	-	-	-	2	1	1	-
CO2	3	2	-	-	1	1	1	-	-	-	-	2	1	1	-
CO3	3	2	-	-	1	1	1	-	-	-	-	2	1	1	-
CO4	3	2	-	-	1	1	1	-	-	-	-	2	1	1	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23AD211-DATA STRUCTURES DESIGN LABORATORY

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Analyzing and Applying Fundamental Data Structures and Recursive Algorithms in Python	Apply (K3)
CO2	Design, implement, and analyses linear data structures, such as lists, queues, and stacks, according to the needs of different applications	Create (K6)
CO3	Design, implement, and analyses efficient tree structures to meet requirements such as searching, indexing, and sorting	Create (K6)
CO4	Analyzing Graph Representation Methods and Mastering Traversal Algorithms	Analyze (K4)
CO5	Design, implement, and analyses single source shortest path algorithm and minimum spanning tree algorithms	Create (K6)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	3	3	1	1	-	-	1	2	1	2	1	2	3	3
CO2	2	3	3	2	1	-	-	2	1	2	2	1	3	2	3
CO3	2	3	3	2	1	-	-	2	2	3	1	2	2	2	2
CO4	3	2	2	2	1	1	-	1	1	2	1	2	2	2	2
CO5	2	3	3	3	1	1	-	2	2	1	1	2	1	2	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23GE212 ENGLISH LABORATORY -II

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Speak effectively in group discussions held in a formal/semi formal contexts.	Create (K6)
CO2	Discuss, analyze and present concepts and problems from various perspectives to arrive at suitable solutions.	Analyze (K4)
CO3	Make effective presentations in an attractive way using appropriate vocabulary.	Apply (K3)
CO4	Attend job interviews and be successful in them.	Create (K6)
CO5	Develop adequate Soft Skills required for the workplace.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	3	3	-	3	-	-	-
CO2	-	-	-	-	-	-	-	-	3	3	-	3	-	-	-
CO3	-	-	-	-	-	-	-	-	3	3	-	3	-	-	-
CO4	-	-	-	-	-	-	-	-	3	3	-	3	-	-	-
CO5	-	-	-	-	-	-	-	-	3	3	-	3	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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SEMESTER III

Course Name: 23MA302 DISCRETE MATHEMATICS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	To apply the engineering knowledge to solve the logic of a program.	Apply (K3)
CO2	To understand and analyze the structures of problems on mathematical induction and counting principle.	Understand (K2)
CO3	To apply the fundamentals of graph theory using modern tools in computer networking to manage projects	Apply (K3)
CO4	To apply the notion of groups, rings and fields to design and solve the algebraic structures problems.	Apply (K3)
CO5	To acquire the knowledge of engineering in real life phenomena by solving Lattices and Boolean algebra	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	2	-	-	-	-	-	-	-	-	2	-	-	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	3	2	-	-	2	-	-	-	3	-	-	-	-	-
CO4	-	2	2	2	-	-	-	-	-	-	-	-	-	-	-
CO5	-	2	2	2	-	-	-	-	-	2	-	-	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23AD301- FUNDAMENTALS OF DATA SCIENCE AND ANALYTICS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Comprehensive understanding of the evolution, Significance, and processes involved in data science and analytics.	Understand (K2)
CO2	Understand and apply statistical techniques for data Analysis.	Apply (K3)
CO3	Apply statistical inference techniques to analyze data and make informed decisions.	Apply (K3)
CO4	Analyze and interpret data using inferential techniques such as t-tests and ANOVA	Analyze (K4)
CO5	Apply Advanced Predictive Modelling Techniques such as regression and time series analysis techniques.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	3	1	-	-	-	-	-	-	2	3	2	2
CO2	2	2	2	2	1	-	-	-	-	-	-	3	1	3	2
CO3	2	2	2	2	1	-	-	-	-	-	-	2	1	2	3
CO4	3	3	3	3	1	-	-	-	-	-	-	2	2	1	2
CO5	3	3	3	3	1	-	-	-	-	-	-	2	3	2	1

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23AD302-DATABASE DESIGN AND MANAGEMENT

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the database development life cycle and apply conceptual modeling	Understand (K2)
CO2	Apply SQL and programming in SQL to create, manipulate and query the database	Apply (K3)
CO3	Apply the conceptual-to-relational mapping and normalization to design relational database.	Apply (K3)
CO4	Determine the serializability of any non-serial schedule using concurrency techniques	Apply (K3)
CO5	Apply the data model and querying in Object-relational and No-SQL databases.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	2	3	3	1	-	-	-	-	-	-	1	2	1	2
CO2	2	2	1	3	2	-	-	-	-	-	-	2	2	1	3
CO3	2	2	2	1	2	-	-	-	-	-	-	2	1	1	2
CO4	2	2	2	1	2	-	-	-	-	-	-	2	1	1	2
CO5	2	2	3	2	2	-	-	-	-	-	-	3	2	1	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23AD303-ALGORITHMIC PROBLEM SOLVING TECHNIQUES

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Analyze the efficiency of recursive and non-recursive algorithms mathematically	Apply (K3)
CO2	Analyze the efficiency of brute force, divide and conquer, decrease and Conquer, Transform and conquer algorithmic techniques.	Apply (K2)
CO3	Implement and analyze the problems using dynamic programming and greedy algorithmic techniques.	Analyze (K4)
CO4	Solve the problems using iterative improvement techniques for optimization.	Analyze (K2)
CO5	Compute the limitations of algorithmic power and solve the problems using backtracking and branch and bound techniques.	Analyze (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	1	-	-	-	-	-	-	-	-	3	1	1
CO2	2	1	1	3	-	-	-	-	-	-	-	-	2	2	1
CO3	3	2	1	2	-	-	-	-	-	-	-	-	1	2	2
CO4	3	2	2	2	-	-	-	-	-	-	-	-	2	2	2
CO5	3	1	2	3	-	-	-	-	-	-	-	-	3	1	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23AD304 -SYSTEM SOFTWARE AND OPERATING SYSTEMS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Analyze and Understand basic concepts of System Software and various scheduling algorithms and process synchronization.	Understand(K2)
CO2	Explain deadlock prevention and avoidance algorithms	Apply (K3)
CO3	Compare and contrast various memory management schemes.	Apply (K3)
CO4	Explain the functionality of file systems, I/O systems, and Virtualization	Apply (K3)
CO5	Compare iOS and Android Operating Systems	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	1	3	3	-	-	-	-				1	2	1	1
CO2	2	2	1	1	1	-	-	-				1	3	1	1
CO3	2	1	2	1	-	-	-	-				2	1	1	1
CO4	2	1	2	2	-	-	-	-				2	1	1	1
CO5	3	2	2	1	1	-	-	-				2	2	1	1

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23AD305- INTELLIGENT SYSTEMS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	To understand the foundational knowledge of Intelligent Systems	Understand (K2)
CO2	Utilize problem-solving techniques to achieve optimal solutions or navigate complex environments	Apply (K3)
CO3	Utilize game playing and CSP approaches to design intelligent systems to solve Problems with optimal decisions and complex constraints.	Apply (K3)
CO4	Utilize logical reasoning to empower intelligent systems and reasoning techniques to solve the Problem	Apply (K3)
CO5	Integrate probabilistic reasoning techniques reasoning under uncertainty in intelligent systems	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	1	3	3	1	-	-	-	-	-	-	1	2	1	1
CO2	2	2	1	1	1	-	-	-	-	-	-	1	3	1	1
CO3	2	1	2	1	2	-	-	-	-	-	-	2	1	1	1
CO4	2	1	2	2	2	-	-	-	-	-	-	2	1	1	1
CO5	3	2	2	1	2	-	-	-	-	-	-	2	2	1	1

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23AD311-DATABASE DESIGN AND MANAGEMENT LABORATORY

Course Outcome

	On completion of the course, the students will be able to	Bloom's Level Mapped
CO1	Understand the database development life cycle	Understand (K2)
CO2	Design relational database using conceptual-to-relational mapping, Normalization	Apply (K3)
CO3	Apply SQL for creation, manipulation and retrieval of data	Apply (K3)
CO4	Develop a database applications for real-time problems	Apply (K3)
CO5	Design and query object-relational databases	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	3	3	1	1	-	-	1	2	1	2	1	2	3	3
CO2	2	3	3	2	1	-	-	2	1	2	2	1	3	2	3
CO3	2	3	3	2	1	-	-	2	2	3	1	2	2	2	2
CO4	3	2	2	2	-	-	-	1	1	2	1	2	2	2	2
CO5	2	3	3	3	-	-	-	2	2	1	1	2	1	2	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23AD312- INTELLIGENT SYSTEMS LABORATORY

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Design and implement search strategies	Apply (K3)
CO2	Implement game playing techniques	Apply (K3)
CO3	Implement CSP techniques	Apply (K3)
CO4	Develop logical reasoning systems	Apply (K3)
CO5	Develop probabilistic reasoning systems	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	1	3	3	2	-	-	-	-	-	-	-	3	1	2
CO2	1	2	3	3	2	-	-	-	-	-	-	-	3	1	2
CO3	3	1	3	3	1	-	-	-	-	-	-	-	1	1	2
CO4	2	1	1	1	1	-	-	-	-	-	-	-	2	1	2
CO5	3	1	1	1	1	-	-	-	-	-	-	-	3	1	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Value added Course-I

Course Name: 23ADAO1 - Augmented Reality & Virtual Reality (AR & VR)

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Identify and discuss current trends and real-world applications of AR and VR technologies.	Understand (K2)
CO2	Summarize the setup and configuration process of Vuforia for AR development.	Apply (K3)
CO3	Describe the setup and optimization techniques for VR environments using Unity.	Apply (K3)
CO4	Design and construct a VR scene using SimLab Composer, integrating interactivity and animations.	Apply (K3)
CO5	Develop a functional AR or VR project using Unity with Vuforia or SimLab Composer.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	1	1	3	1	1	2	1	1	3	3	3	2	3
CO2	3	-	-	-	3	-	2	2	-	-	-	2	1	-	1
CO3	3	1	2	2	3	-	2	-	1	-	2	1	2	2	2
CO4	3	2	3	2	3	1	1	2	2	-	1	1	2	2	3
CO5	3	2	3	3	3	2	1	1	2	2	3	2	2	2	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

SEMESTER IV

Course Name: 23MA401- STATISTICS FOR ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.	Understand (K2)
CO2	Understand the basic concepts of one and two-dimensional random variables and apply in engineering applications.	Understand (K2)
CO3	Understand the concept of estimation theory.	Understand (K2)
CO4	Apply the concept of non - parametric test.	Apply (K3)
CO5	Apply the notion of sampling distributions and statistical techniques used in engineering and management problems.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	2	-	-	2	-	-	-
CO2	3	3	-	-	-	-	-	-	2	-	-	2	-	-	-
CO3	3	3	-	-	-	-	-	-	2	-	-	2	-	-	-
CO4	3	3	3	2	-	-	-	-	2	-	-	2	-	-	-
CO5	3	3	2	2	-	-	-	-	2	-	-	2	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23AD401-DATA EXPLORATION AND VISUALIZATION

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the fundamentals of exploratory data analysis.	Understand (K2)
CO2	Experiment with data visualization using Matplotlib.	Apply (K3)
CO3	Apply univariate data exploration and analysis.	Apply (K3)
CO4	Apply bivariate data exploration and analysis.	Apply (K3)
CO5	Make use of data exploration and visualization techniques for time series data.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	2	2	-	-	-	-	2	3	3	3	2	2	2
CO2	2	2	2	2	2	-	-	-	3	2	3	1	2	1	2
CO3	2	3	2	3	2	-	-	-	3	2	1	2	2	2	2
CO4	2	2	2	3	2	-	-	-	1	2	1	3	1	2	2
CO5	3	3	2	2	2	-	-	-	3	2	1	2	2	2	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23AD402-MACHINE LEARNING

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Gain foundational knowledge of machine learning concepts, applications, theoretical aspects	Understand (K2)
CO2	Apply various supervised learning models for continuous and categorical prediction tasks and evaluate the performance.	Apply (K3)
CO3	Apply ensemble techniques and unsupervised learning to improve model performance and discover hidden patterns in unlabeled data and evaluate the performance.	Apply (K3)
CO4	Design, train, and optimize neural networks to address challenges and improve performance for standard data sets	Apply (K3)
CO5	Design and analyze machine learning experiments using best practices, to evaluate and compare the performance of different ML algorithms and select the suitable one based on the application.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	1	2	1	-	-	-	-	3	-	2	2	2	2	1
CO2	1	3	3	1	2	-	-	-	2	-	2	1	3	1	1
CO3	2	1	3	3	2	-	-	-	1	-	1	1	1	2	1
CO4	2	3	3	2	1	-	-	-	3	-	3	2	1	2	1
CO5	1	1	3	3	1	-	-	-	3	-	1	3	3	3	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23CS906 - ROBOTIC PROCESS AUTOMATION

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Explain the emergence, evolution, and benefits of RPA in business processes.	Understand (K2)
CO2	Develop and control automated workflows using RPA tools and activities.	Apply (K3)
CO3	Integrate applications, perform data recording and scraping using RPA.	Apply (K3)
CO4	Handle exceptions, debug errors, and manage code in automation projects.	Apply (K3)
CO5	Deploy, manage, and maintain bots in orchestration servers and explore future trends in RPA.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	2	-	-	-	-	-	-	3	2	-
CO2	3	3	-	2	-	-	-	-	-	-	-	-	3	3	-
CO3	-	3	3	-	2	-	-	-	-	-	-	-	3	3	-
CO4	3	-	3	-	-	-	-	2	-	-	-	-	3	3	-
CO5	3	-	-	-	2	3	-	-	-	-	-	-	3	2	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23AD404 - NETWORKING ESSENTIALS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Explain the basic layers and its functions in computer networks.	Understand (K2)
CO2	Describe protocols for various functions in the network	Understand (K2)
CO3	Understand the basics of how data flows from one node to another	Understand (K2)
CO4	Analyze the working of various application layer protocols.	Apply (K3)
CO5	Apply security practices for real time applications	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	1	-	-	-	-	-	-	-	2	3	2	1
CO2	2	1	1	3	-	-	-	-	-	-	-	2	2	2	2
CO3	3	2	1	2	-	-	-	-	-	-	-	2	1	3	3
CO4	3	2	2	2	-	-	-	-	-	-	-	2	2	1	2
CO5	3	1	2	3	-	-	-	-	-	-	-	2	3	1	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23CS905-CLOUD COMPUTING

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the design challenges in the cloud.	Understand (K2)
CO2	Apply the concept of virtualization and its types.	Apply (K3)
CO3	Experiment with virtualization of hardware resources and Docker.	Apply (K3)
CO4	Develop and deploy services on the cloud and set up a cloud environment.	Apply (K3)
CO5	Explain security challenges in the cloud environment.	Understand (K2)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	1	1	1	-	-	-	2	3	1	3	2	2	1
CO2	3	1	2	2	1	-	-	-	1	2	1	3	3	2	2
CO3	2	3	2	3	1	-	-	-	3	1	1	3	2	3	2
CO4	1	2	3	3	3	-	-	-	3	3	1	2	2	3	2
CO5	2	3	3	1	3	-	-	-	2	2	1	2	3	2	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23GE901 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation	Remember (K1)
CO2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.	Understand (K2)
CO3	To identify the causes, effects of natural disasters and contribute to the preventive measures in the society.	Apply (K3)
CO4	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.	Understand (K2)
CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	1	-	-	-	2	3	-	1	-	-	2	-	-	-
CO2	3	2	-	-	-	3	3	-	1	-	-	2	-	-	-
CO3	3	1	1	-	-	2	2	-	-	-	-	2	-	-	-
CO4	3	1	1	1	-	2	2	-	1	-	-	2	-	-	-
CO5	3	2	1	-	-	2	2	-	1	-	-	1	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23ADAO2 - Data Analytics & AI Tools (Value added Course-II)

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the basics of AI, NLP, and prompt engineering with ChatGPT.	Understand (K2)
CO2	Apply ChatGPT for productivity enhancement and coding automation tasks.	Apply (K3)
CO3	Use Power BI for data extraction, modeling, and dashboard creation.	Apply (K3)
CO4	Build interactive and optimized dashboards using advanced Power BI features.	Apply (K3)
CO5	Create and present analytics projects using Power BI or Tableau.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	1	-	3	1	2	-	1	2	-	2	2	1	2
CO2	3	2	2	2	3	-	1	-	1	-	2	1	2	2	2
CO3	3	2	3	2	3	1	2	-	2	1	2	2	3	2	3
CO4	3	-	3	3	3	1	-	-	2	1	1	2	3	3	3
CO5	3	2	3	3	3	2	1	1	3	3	3	3	3	3	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

SEMESTER V

Course Name: 23AD501 DEEP LEARNING

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the core concepts of deep learning, including neural Network architectures, learning mechanisms, and activation functions.	Understand (K2)
CO2	Apply Convolution Neural Network for image processing.	Apply (K3)
CO3	Apply Recurrent Neural Network and its variants for text analysis.	Apply (K3)
CO4	Apply model evaluation for various applications.	Apply (K3)
CO5	Apply auto encoders and generative models for suitable applications.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	2	3	1	-	-	-	2	3	1	3	3	3	3
CO2	2	2	2	3	3	-	-	-	1	2	2	1	1	3	2
CO3	3	3	3	3	3	-	-	-	2	1	1	2	1	3	3
CO4	3	3	1	1	1	-	-	-	1	3	1	2	1	1	3
CO5	3	2	2	2	3	-	-	-	2	3	2	2	3	3	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23AD502 DATA AND INFORMATION SECURITY

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Demonstrate the basics of data and information security	Understand (K2)
CO2	Explain the legal, ethical and professional issues in information security	Understand (K2)
CO3	Explain how digital signatures and authentication methods are used to secure systems.	Understand (K2)
CO4	Summarize various security practices and system security standards.	Understand (K2)
CO5	Describe web security protocols and how they protect online applications.	Understand (K2)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	2	2	1	-	-	-	-	1	2	1	2	2	1	1
CO2	1	2	2	2	-	-	-	-	1	2	2	2	1	2	2
CO3	2	2	2	2	-	-	-	-	1	2	1	2	1	2	1
CO4	2	2	1	1	-	-	-	-	2	1	1	2	2	2	2
CO5	2	2	2	2	-	-	-	-	1	2	1	2	2	2	1

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23CS903 EMBEDDED SYSTEMS AND IOT

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Explain the architecture and features of 8051.	Understand (K2)
CO2	Apply ARM processor architecture and programming concepts.	Apply (K3)
CO3	Develop Arduino-based IoT applications using sensors, actuators, and communication interfaces	Apply (K3)
CO4	Use IoT communication protocols with Raspberry Pi for device connectivity and cloud integration.	Apply (K3)
CO5	Design and evaluate real-time embedded and IoT-based solutions for smart agriculture, healthcare, smart cities, and industrial automation.	Analyze (K4)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	-	-	-	-	-	2	2	3	3	3
CO2	3	3	3	2	2	-	-	-	-	-	2	2	3	3	3
CO3	3	3	3	2	2	-	-	-	-	-	2	2	3	3	3
CO4	3	3	3	2	2	-	-	-	-	-	2	2	3	3	3
CO5	3	3	3	2	2	-	-	-	-	-	2	2	3	3	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23OEC02 CONSUMER ELECTRONICS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the principles and features of audio and video systems used in consumer electronics.	Understand (K2)
CO2	Explain the operation of home appliances and their subsystems.	Understand (K2)
CO3	Demonstrate knowledge of digital and smart consumer devices, including IoT-enabled products.	Apply (K3)
CO4	Apply safety, troubleshooting, and maintenance procedures for consumer electronics.	Apply (K3)
CO5	Enumerate emerging trends and technologies such as AI, ML, and sustainability in consumer electronics.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO5	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23PAD902 COMPUTER VISION

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Explain the fundamentals of computer vision, image formation, and basic image processing operations	Understand (K2)
CO2	Apply feature extraction and segmentation techniques to analyze and interpret image data	Apply (K3)
CO3	Implement machine learning and neural network algorithms for visual recognition tasks	Apply (K3)
CO4	Analyze 3D vision tasks such as stereo imaging, motion estimation, and structure from motion	Apply (K3)
CO5	Develop and evaluate deep learning models for object detection, segmentation, and real-time vision applications	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	2	2	1	2	2	-	-	1	2	1	2	2	2	1	2
CO2	2	2	2	2	2	-	-	1	2	1	2	2	2	2	2
CO3	2	2	2	2	2	-	-	1	2	1	2	2	2	2	2
CO4	2	2	2	2	2	-	-	1	2	1	2	2	2	2	2
CO5	2	2	2	2	2	-	-	1	2	1	2	2	2	2	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

Course Name: 23PIT04 UI AND UX DESIGN

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Explain UI and UX foundations, differences, and trends.	Understand (K2)
CO2	Apply visual design and interaction principles in UI development.	Apply (K3)
CO3	Utilize UX processes and research to address user and business needs.	Analyze (K4)
CO4	Design and evaluate wireframes, prototypes, and mockups.	Apply (K 3)
CO5	Implement ideation techniques, information architecture, and advanced UX concepts.	Analyze (K4)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	1	2	3	-	-	-	-	1	1	3	1	3	2	1
CO2	3	2	1	2	2	-	-	-	2	2	2	1	3	2	3
CO3	2	2	3	2	1	-	-	-	3	3	1	2	1	1	3
CO4	1	3	1	3	1	-	-	-	1	2	1	1	1	3	1
CO5	3	3	1	1	2	-	-	-	2	2	2	2	2	2	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Autonomous Regulation 2023

Course Name: 23MC903 DISASTER RISK REDUCTION AND MANAGEMENT

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR).	Apply (K3)
CO2	Enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction.	Apply (K3)
CO3	Develop disaster response skills by adopting relevant tools and technology.	Apply (K3)
CO4	Enhance awareness of institutional processes for Disaster response in the country.	Understand (K2)
CO5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	3	-	-	2	2	-	-	2	-	2	-	1
CO2	3	3	3	3	-	-	2	1	-	-	2	-	2	-	1
CO3	3	3	3	3	-	-	2	2	-	-	-	-	2	-	1
CO4	3	3	3	3	-	-	2	1	-	-	2	-	2	-	1
CO5	3	3	3	3	-	-	2	2	-	-	2	-	3	-	1

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Outcomes(COs) – Programme Outcomes(POs)/Programme Specific Outcomes(PSOs) Mapping for All Courses

Autonomous Regulation 2023

SEMESTER VI

Course Name: 23AD901 - BIG DATA ANALYTICS

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand the evolution and components of Big Data platforms, including modern applications.	Understand (K2)
CO2	Compare and apply NoSQL databases and schema design strategies.	Understand (K2)
CO3	Develop and test data processing jobs using MapReduce and Spark.	Apply (K3)
CO4	Manage data storage using HDFS and modern file systems	Apply (K3)
CO5	Use tools like HBase, Hive, Pig, Flink, and NiFi for scalable data analytics and processing.	Analyze (K4)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	-	2	-	-	1	-	-	-	-	2	-	-	3
CO2	3	3	-	2	-	-	-	-	-	-	-	3	-	-	3
CO3	2	3	-	3	-	-	-	-	-	-	-	3	-	-	2
CO4	2	2	-	3	-	-	-	-	-	-	-	2	-	-	2
CO5	2	3	-	3	-	-	-	-	-	-	-	3	-	-	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23AD601 ADVANCED PYTHON

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Describe advanced Python features such as iterators, generators, decorators, and OOP concepts.	Understand (K2)
CO2	Perform data cleaning, manipulation, and visualization using NumPy, Pandas, and visualization libraries.	Apply (K3)
CO3	Build and evaluate basic machine learning models using Scikit-learn, TensorFlow, or PyTorch.	Apply (K3)
CO4	Implement automation tasks, API integration, web scraping, and database operations using Python tools.	Analyze (K4)
CO5	Create test, and deploy Python applications using frameworks like Flask, Streamlit, and FastAPI.	Analyze (K4)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	2	1	2	-	-	-	-	1	-	1	3	2	2
CO2	2	3	2	2	3	-	-	-	-	1	-	1	3	3	2
CO3	2	3	3	3	3	-	-	-	-	1	-	1	3	3	3
CO4	2	2	3	3	3	-	-	-	-	2	-	1	2	3	3
CO5	2	3	3	3	3	-	-	2	3	3	2	2	3	3	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23AD602 NATURAL LANGUAGE PROCESSING

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Understand core NLP concepts including text preprocessing, syntax, and semantics	Understand (K2)
CO2	Apply linguistic and probabilistic models for parsing and language modeling.	Apply (K3)
CO3	Develop and evaluate word representations and semantic analysis techniques	Apply (K3)
CO4	Implement machine learning algorithms for text classification, sentiment analysis, and topic modeling.	Apply (K3)
CO5	Design and implement deep learning models including transformers for advanced NLP applications.	Analyze (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	2	2	1	2	-	-	-	-	1	-	1	3	2	2
CO2	2	3	3	3	3	-	-	-	-	2	-	1	3	3	2
CO3	2	3	3	3	3	-	-	-	-	1	-	1	3	3	3
CO4	2	3	3	3	3	-	-	2	-	2	1	1	3	3	3
CO5	2	3	3	3	3	-	-	2	3	3	2	2	3	3	3

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Autonomous Regulation 2023

Course Name: 23PIT02 APP DEVELOPMENT

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Apply the fundamentals of web and mobile technologies including HTML, CSS, JavaScript, and UI/UX principles to design responsive user interfaces.	Apply (K3)
CO2	Develop cross-platform applications using frameworks like React Native and Flutter, incorporating wireframing, prototyping, and hybrid/native approaches.	Develop (K6)
CO3	Integrate server-side programming and databases (Node.js, Python, MySQL, Firebase) to implement dynamic and data-driven applications. (K3)	Apply (K3)
CO4	Implement secure coding practices, API integration, authentication techniques (OAuth, JWT), and deploy scalable apps using cloud services.	Implement (K4)
CO5	Analyze and optimize app performance using testing methodologies and debugging tools, and develop an end-to-end Capstone Project applying industry practices.	Analyze (K6)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	3	2	2	1	-	2	2	1	1	3	3	1
CO2	3	3	3	3	2	2	2	-	2	3	2	1	3	3	1
CO3	3	3	3	3	3	2	2	-	2	3	2	1	3	3	1
CO4	3	3	3	3	3	2	2	-	2	3	2	2	3	3	1
CO5	3	3	3	3	3	2	2	-	3	3	2	2	3	3	1

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Course Name: 23PCS13 NETWORK SECURITY

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Describe security concepts, services, and mechanisms.	Understand (K2)
CO2	Apply symmetric and asymmetric encryption techniques.	Apply (K3)
CO3	Analyze and evaluate authentication and key management protocols.	Analyze (K4)
CO4	Illustrate secure communication practices in networks and the web.	Apply (K3)
CO5	Implement cryptographic techniques in simulated environments.	Evaluate (K5)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	-	2	-	-	-	-	-	-	-	-	2	-	-
CO2	3	3	2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	3	3	3	2	-	-	-	-	-	-	-	3	2	-
CO4	3	3	2		2	-	-	-	-	-	-	-	3	2	-
CO5	3	3	-	2	3	-	-	-	-	-	-	-	3	3	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Autonomous Regulation 2023

Course Name: 23OHS02 PROJECT REPORT WRITING

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Write effective project reports.	Analyze (K4)
CO2	Use statistical tools with confidence.	Apply (K3)
CO3	Explain the purpose and intension of the proposed project coherently and with clarity.	Understand (K2)
CO4	Create writing texts to suit achieve the intended purpose.	Evaluate (K5)
CO5	Master the art of writing winning proposals and project	Evaluate (K5)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	2	3	-	2	-	-	-
CO2	-	-	-	-	-	-	-	-	2	3	-	2	-	-	-
CO3	-	-	-	-	-	-	-	-	2	3	-	2	-	-	-
CO4	-	-	-	-	-	-	-	-	2	3	-	2	-	-	-
CO5	-	-	-	-	-	-	-	-	2	3	-	2	-	-	-

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)



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Autonomous Regulation 2023

Course Name: 23AD611 MINI PROJECT

Course Outcome

On completion of the course, the students will be able to		Bloom's Level Mapped
CO1	Apply programming and logical problem-solving skills to develop a simple and functional software/application.	Apply (K3)
CO2	Identify and clearly define a real-world problem, analyze its needs, and propose suitable technical solutions.	Analyze (K4)
CO3	Design and build a small-scale model or system using appropriate tools, programming languages, and technologies.	Analyze (K4)
CO4	Gain practical skills in gathering information (literature survey), planning requirements, writing code, testing, and debugging	Apply (K3)
CO5	Develop teamwork, communication, documentation, and presentation abilities while managing the project within the given timeline.	Apply (K3)

Mapping Table Mapping of COs with POs and PSOs

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	2	3	3	3	2	2	3	2	-
CO2	3	3	3	3	3	2	2	3	3	3	2	2	3	2	-
CO3	3	3	3	3	3	2	2	3	3	3	2	2	3	3	-
CO4	3	3	3	2	2	2	2	3	3	3	2	2	2	3	-
CO5	-	-	-	-	-	-	-	3	3	3	3	3	-	3	2

Mapping: 1-Low, 2-Medium, 3-High (Mapping value based on usage of Action verbs in each CO)