

Institute/Department	UNIVERSITY INSTITUTE OF ENGINEERING (UIE)	Program	Bachelor of Engineering (Automobile Engineering)(AE201)
Master Subject Coordinator Name:	Shivani Sahay	Master Subject Coordinator E-Code:	E19607
Course Name	Aptitude-IV	Course Code	23TDT-362

Lecture	Tutorial	Practical	Self Study	Skilling	TC	TGT	TGP	Studio	Credit	Subject Type
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Course Type	Course Category	Mode of Assessment	Mode of Delivery
N.A	Mandatory Non-Graded (MNG)	Theory Examination (ET)	Theory (TH)

Mission of the Department	<p>1. To produce intellectual engineers with strong analytical, modelling, designing, experimental and teamwork skills.</p> <p>2. To provide innovative teaching practices, through excellent laboratory infrastructure and exposure to recent trends in the automotive industry.</p> <p>3. To ensure that students are molded into competent automotive engineers to meet the growing challenges of the future.</p> <p>4. To provide industry oriented skills and guidance to students for conducting research and educating them with futuristic skills.</p>
Vision of the Department	"To be a Center of Excellence in Automobile Engineering through research and innovation in emerging fields for providing globally competent Engineers equipped with the technology of the future."

Program Educational Objectives(PEOs)	
PEO1	Automobile Engineering Graduates will contribute at local, regional and global level by solving complex engineering problems in the field of Automobile and Mechanical related industries.
PEO2	To prepare graduates for successful career in the field of Automobile Engineering or a related field utilizing his/her education and contribute as an excellent professional and to encourage the spirit of entrepreneurship.
PEO3	Graduates of Automobile Engineering will be able to adapt interdisciplinary, futuristic technology and innovative skills applicable for dynamic industrial competency to achieve sustainable development goals.

Program Specific Outcomes(PSOs)	
PSO1	Apply the concepts of alternative advanced fuels, combustion technology and emission norms for manufacturing and maintenance of mechanical systems & processes used in automotive sector.
PSO2	Design and analyse Automotive components and systems using conventional and/or advanced digital/simulation tools with the applications of simulation techniques.

Program Outcomes(POs)	
PO1	Disciplinary Knowledge - Automobile engineering is a discipline that focuses on the design, development, and production of automobiles. It involves the study of various aspects of Automobile and mechanical systems.
PO2	Complex Problem-Solving - Complex problem-solving is a crucial skill in Automobile engineering due to the intricate nature of Automobile systems and the challenges associated with designing and operating automobiles. Automobile engineers encounter various complex problems throughout their work, and they employ systematic approaches to analyze, identify, and solve these problems effectively.
PO3	Critical Thinking - Critical thinking is a fundamental skill in the Automobile industry as it allows Automobile professionals to analyze complex situations, evaluate information, and make well-reasoned decisions. In Automobile engineering, critical thinking is applied in various aspects of design, analysis, testing, and problem-solving.
PO4	Creativity - Creativity plays a significant role in Automobile engineering, as it drives innovation, fosters the development of new technologies, and enables engineers to find unique solutions to complex problems.
PO5	Communication Skills - Communication skills are essential in the Automobile industry as they facilitate effective collaboration, information exchange, and understanding among Automobile professionals. Strong communication skills enable Automobile engineers to convey complex technical information, work in multidisciplinary teams, and interact with stakeholders.

PO6	Analytical Reasoning/Thinking - Analytical reasoning and thinking are critical skills in Automobile engineering as they allow engineers to systematically analyze complex problems, evaluate data, and make informed decisions.
PO7	Research-related Skills - Research-related skills are essential in Automobile engineering to stay updated with the latest advancements, contribute to scientific knowledge, and drive innovation in the field.
PO8	Coordinating/Collaborating with Others - Coordinating and collaborating with others is a crucial aspect of Automobile engineering as it involves working in multidisciplinary teams, coordinating efforts across different departments, and collaborating with various stakeholders.
PO9	Leadership Readiness/Qualities - Leadership readiness and qualities are important in the Automobile industry as they contribute to the success of projects, the development of teams, and the advancement of the Automobile field as a whole.
PO10	Learning how to Learn Skills - Learning how to learn is a valuable skill in Automobile engineering as it enables professionals to adapt to new technologies, keep up with advancements, and continuously improve their knowledge and skills.
PO11	Digital and Technological Skills - Digital and technological skills are becoming increasingly important in the Automobile industry as it undergoes rapid advancements in areas such as automation, data analytics, simulation, and digital connectivity.
PO12	Multicultural Competence and Inclusive Spirit - Multicultural competence and an inclusive spirit are important in the Automobile industry as it is a global field that involves collaboration among professionals from diverse backgrounds, cultures, and perspectives.
PO13	Value Inculcation - Value inculcation in Automobile refers to the process of instilling and upholding core values and ethical principles within the Automobile industry. These values guide the behaviour and decision-making of Automobile professionals, promote responsible practices, and ensure the industry's long-term sustainability.
PO14	Autonomy, Responsibility, and Accountability - Autonomy, responsibility, and accountability are important principles in the Automobile industry, especially in roles that involve decision-making, operations, and safety.
PO15	Environmental Awareness and Action - Environmental awareness and action in the Automobile industry have become increasingly important in recent years. The Automobile industry, which includes exhaust emissions study, has a significant impact on the environment due to exhaust gases and greenhouse gas emissions.
PO16	Community Engagement and Service - Community engagement and service in the Automobile industry can take various forms, and it can have a significant positive impact on society.
PO17	Empathy - Empathy is an important aspect of any industry, including Automobile. While Automobile may seem like a highly technical field, it still involves interactions with people and communities.

Text Books

Sr No	Title of the Book	Author Name	Volume/Edition	Publish Hours	Years
1	MPP Part-A	Prof Pradeep Bansal	9th	CU	2024
2	MPP PART-B	Prof Pradeep Bansal	9th	CU	2024
3	MPP Part-C	Prof Pradeep Bansal	6th	CU	2024
4	MPP Part-D	Prof Pradeep Bansal	5th	CU	2024
5	MPP Part-E	Prof Pradeep Bansal	3rd	CU	2024
6	MPP Part-F	Prof Pradeep Bansal	1st	CU	2024
7	Acing Quantitative Part-2	Prof Pradeep Bansal	11th	CU	2024

Reference Books

Sr No	Title of the Book	Author Name	Volume/Edition	Publish Hours	Years
1	Quantitative Aptitude for Competitive Examintion 2023 Tata McGraw Hills Publication 7 West Patel Nag	Guha Abhijit	10th	Tata McGraw Hills Publication	2024-25
2	Modern Approach to Verbal and Non-Verbal Reasoning	S. Chand	Revised Edition	R S Aggrawal	2025

Course OutCome

SrNo	OutCome
CO1	To use the fundamentals of logical reasoning and quantitative aptitude concepts learnt earlier to solve high level problems

CO2	To evaluate the problem on Set theory and Venn diagram, logarithm, Data Interpretation-I, Data Sufficiency
CO3	To effectively solve problems the problem of Geometry Area, Seating Arrangement, Data Interpretation-2 & direction sense.
CO4	To use the fundamentals of and to solve the problem of time and work, time speed distance clock and calander
CO5	To effectively solve the problem of Veen diagram, time and work,clock,logarithm,di,geometry, time , speed distance etc

Lecture Plan Preview-Theory

Unit No	LectureNo	ChapterName	Topic	Text/ Reference Books	Pedagogical Tool**	Mapped with CO Number(s)	BT Level
1	1	Set theory and Veen diagram	Set theory is the branch of mathematics that studies sets which are collections of objects. It deals with operations like union, intersection, difference, and relationships between sets., MPP	,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-D,T-MPP Part-E,R-Quantitative Aptitude for Comp	PPT	CO2	BT5
1	2	Set theory and Veen diagram	A Venn diagram is a visual representation of sets using circles, showing how sets overlap and interact (common or distinct elements).MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-D,T-MPP Part-E,R-Quantitative Aptitude for Comp	PPT	CO2	BT5
1	3	Logarithm	syllabus but are typically included as part of the "Real Numbers" chapter or introduced in the context of other topics	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO2	BT5
1	4	Logarithm	Common Logarithms: Understanding logarithms with base 10 (denoted as 'log'). Simple problem-solving: Using the laws to simplify expressions and solve basic logarithmic equations MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO2	BT5
1	5	Data Interpretation -1 (pie and bar chart)	Data Interpretation (DI) using Pie Charts, a key topic is focusing on analyzing circular graphs, calculating percentages/ratios/averages, and solving questions on proportions, angles, and trends, often alongside other chart types like Bar Graphs	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO2	BT5
1	6	Data Interpretation -1 (pie and bar chart)	focuses on analyzing circular graphs showing percentages/angles, testing skills in ratios, percentages, averages, sums, and angle conversion of bar chart and DPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO2	BT5
1	7	Data Sufficiency	covers a broad range of topics in arithmetic	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO2	BT5
1	8	Data Sufficiency	covers a broad range of topics in arithmetic and MPP questions	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO2	BT5

1	25	Revision Unit -1	Union of sets, Intersection of sets, Complement of a set, Two-set Venn diagrams, Product rule (logarithm), Change of base formula, MPP	T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F	PPT	CO2	BT5
1	26	Revision Unit -1	Reading data from bar & pie, Percentage, ratio & average-based, Number System-Based Data Sufficiency , Factors & multiples , MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO2	BT5
2	9	Geometry and Area	geometry line and angles circle triangles and quadrilateral and MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO3	BT3
2	10	Geometry and Area	area related question	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO3	BT3
2	11	Seating Arrangement	A Seating Arrangement syllabus in competitive exams covers logical puzzles about arranging people/objects in rows, circles, squares	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO3	BT3
2	12	Seating Arrangement	square/rectangular, polygonal, double row) with conditions like facing direction, neighbors, opposites, and complex constraints, testing deductive reasoning and spatial logic for high-scoring questions and MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO3	BT3
2	13	Data Interpretation -2 (table and line)	The term "DI tablesyllabus" likely refers to the syllabus for Data Interpretation (DI) using tables, which is a significant topic in various competitive exams, particularly in the quantitative aptitude or mathematics section. and MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO3	BT3
2	14	Data Interpretation -2 (table and line)	The term "DI line syllabus" likely refers to the syllabus for Data Interpretation (DI) using tables, which is a significant topic in various competitive exams, particularly in the quantitative aptitude or mathematics section.	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO3	BT3
2	15	Direction sense	Rotation Concept, Basic Directions, Angle-Based Movements, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO3	BT3
2	16	Direction sense	Relative Direction Sense, Final Direction Determination, Minimum Distance / Shortest Path, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO3	BT3
2	27	Revision UNIT-2	Point, Line, Line Segment, Ray, Angles, Triangles, Circle-Related Areas, Basic Reading of Table Understanding rows & columns, Percentage-Based Questions, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO3	BT3

2	28	Revision UNIT-2	Linear Arrangement, Circular Arrangement, People sitting on corners based problems, Basic Directions, Right–Left Turns, Distance Calculation, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO3	BT3
3	17	time and work, pipes and cistern , work and wages	Individual Work Efficiency, Combined Work, Work Alternately, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO4	BT3
3	18	time and work, pipes and cistern , work and wages	Work Done in Fractions, Pipes and Cisterns, Negative Work, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO4	BT3
3	19	Time speed distance	Basic Concepts of Time Speed & distance, Average Speed, Relative Speed, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO4	BT3
3	20	Time speed distance	Weighted average speed, Units & conversions, Same direction & Opposite direction problems (Relative Speed),MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO4	BT3
3	21	clocks	Basic Structure of a Clock (12-hour dial,) Movement of hour & minute hands, Angle Between Hands, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO4	BT3
3	22	clocks	Hands Making a Given Angle, Hands in Opposite Direction,MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO4	BT3
3	23	calander	Ordinary year & Leap year, Months & number of days, Century year vs Non-century year, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO4	BT3
3	24	calander	Rules for leap year, Concept of odd days, Odd days in a week, Odd days in a month/year,MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO4	BT3
3	29	Revision Unit -3	Work, Time, and Efficiency relationship, Shortcut: LCM method, Total efficiency method, Combined Work, Negative Work, Basic Concepts (Time, speed & distance), Relative Speed, MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Quantitative Aptitude for Comp	PPT	CO4	BT3
3	30	Revision Unit -3	Movement of hour, minute & second hand, Formula-based angle questions, Mirror Image of Clock, Odd Days Concept, Finding Number of Days Between Two Dates, Finding day for given date ,MPP	,T-Acing Quantitative Part-2,T-MPP Part-A ,T-MPP PART-B,T-MPP Part-C,T-MPP Part-D,T-MPP Part-E,T-MPP Part-F,R-Modern Approach to Verbal and	PPT	CO4	BT3

Assessment Model			
Sr No	Exam Name	Max Marks	Weighted Marks
1	External Theory	60	60

2	Assignment/PBL	12	6
3	Attendance Marks	4	4
4	Mid-Semester Test-1	20	10
5	Surprise Test	12	4
6	Mid-Semester Test-2	20	10
7	Quiz	6	6

CO vs PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	NA	1	1	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO2	NA	3	2	NA	NA	1	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO3	NA	2	3	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO4	NA	2	2	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO5	NA	2	1	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Target	NA	2	1.8	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA

PO16	PO17	PSO1	PSO2
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

