

Name of Institute: Indus Institute of Technology and Engineering

Name of Faculty: Prof. Madhusudan Barot

Course code:AU0121

Course name: Basics of Automobile Engineering

Prerequisite: Basic understanding of Thermodynamics

Credit points: 3

Offered Semester: 1st

Course Coordinator (weeks 01 - 12)

Full Name: Prof. Madhusudan Barot

Department with siting location: Auto Lab-1, Automobile Department

Telephone:+919662547299

Email:Madhusudanbarot.me@indusuni.ac.in

Consultation times:03.50 PM – 04:15 PM (Tuesday and Friday)

09.00 AM – 10.00 AM (Saturdays)

Students will be contacted throughout the Session via Mail with important information relating to this Course.

Course Objectives

By participating in and understanding all facets of this Course a student will:

1. Recognize the importance of Automobile industry and its manufactures.
2. Understand the different types of I. C. engine working cycles
3. Understand different types of air conditioning system
4. Understand the fundamental of automobile materials

Course Outcomes (CO)

The students should be able to:

CO 1: Identify and Understand the importance of automobile engineering over other branches

CO 2: Classify and Explain types of automobiles.

CO3: Identify and Understand the functions and working of air conditioning of automobiles.

CO4: Synthesize and Evaluate performance of engine systems.

CO5: Analyze emission characteristics of engines .

CO6: Compare and Understand the importance of automobile materials to be used in engines.

Course Outline

UNIT 1

[12 hours]

Introduction to automobile engineering, Classification of Automobile vehicle, History of automobile, Introduction of car manufacture, Indian manufactures of scooters, Indian manufactures of Motor cycles, Indian manufactures of car & Jeep, Indian manufactures of Buses and trucks , Indian manufactures of 3 wheelers and tractors

UNIT 2

[12 hours]

Introduction of Engineering Materials: Types and applications of Ferrous & Nonferrous metals, Timber, Abrasive material, silica, ceramics, glass, graphite, diamond, plastic and polymer

UNIT 3

[12 hours]

Air conditioning system, AirBags, Antilock Braking System, Electronic Brakes Distribution, Traction Control System, Cruise Control

UNIT 4

[12 hours]

Introduction of Automobile Transmission of Motion and Power: Shaft and axle, Belt drive, Chain drive, Friction drive, Gear drive

Method of delivery

1. Chalk and talk
2. PowerPoint Presentations
3. Self-study material

Study time

3 hours per week Lectures

CO-PO Mapping (PO: Program Outcomes)

CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C0 1	2	2	2	1	2	-	-	-	-	-	-	-
C0 2	2	3	3	3	2	-	-	-	-	-	-	-
C0 3	2	3	3	3	1	-	-	-	-	-	-	-
C0 4	1	3	3	2	-	-	-	-	-	-	-	-
C0 5	2	3	3	2	1	-	-	-	-	-	-	-
C0 6	3	2	3	2	2							
AU0121	2	2.17	2.83	2.17	1.6							

1-Lightly Mapped

2- Moderately Mapped

3- Highly Mapped

Blooms Taxonomy and Knowledge retention (For reference)
 (Blooms taxonomy has been given for reference)

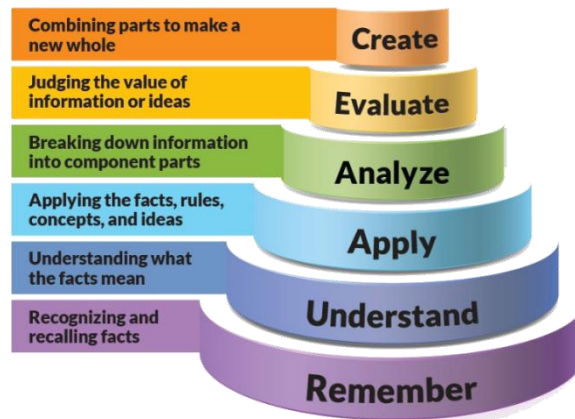


Figure 1: Blooms Taxonomy

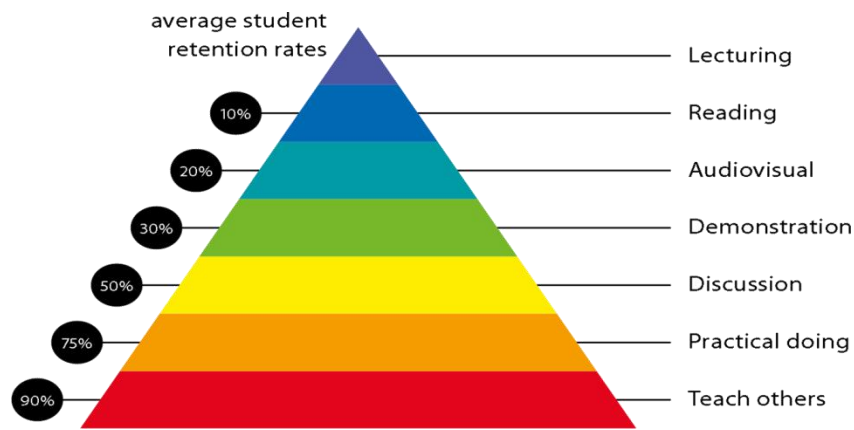


Figure 2: Knowledge retention

Graduate Qualities and Capabilities covered

General Graduate Qualities	Specific Department of _____ Graduate Capabilities
<p>Informed Have a sound knowledge of an area of study or profession and understand its current issues, locally and internationally. Know how to apply this knowledge. Understand how an area of study has developed and how it relates to other areas.</p>	<p>1 Professional knowledge, grounding & awareness</p>
<p>Independent learners Engage with new ideas and ways of thinking and critically analyze issues. Seek to extend knowledge through ongoing research, enquiry and reflection. Find and evaluate information, using a variety of sources and technologies. Acknowledge the work and ideas of others.</p>	<p>2 Information literacy, gathering & processing</p>
<p>Problem solvers Take on challenges and opportunities. Apply</p>	<p>4 Problem solving skills</p>

creative, logical and critical thinking skills to respond effectively. Make and implement decisions. Be flexible, thorough, innovative and aim for high standards.	
Effective communicators Articulate ideas and convey them effectively using a range of media. Work collaboratively and engage with people in different settings. Recognize how culture can shape communication.	5 Written communication
	6 Oral communication
	7 Teamwork
Responsible Understand how decisions can affect others and make ethically informed choices. Appreciate and respect diversity. Act with integrity as part of local, national, global and professional communities.	10 Sustainability, societal & environmental impact

Lecture/tutorial times

Lecture/Practical	Timings	Room No.
Lecture	11:10 to 12:10	Online
Lecture	11:10 to 12:10	Online
Lecture	10:00 to 11:00	Online

Attendance Requirements

The University norms states that it is the responsibility of students to attend all lectures, tutorials, seminars and practical work as stipulated in the Course outline. Minimum attendance requirement as per university norms is compulsory for being eligible for mid and end semester examinations.

Details of referencing system to be used in written work

1. Text Books and Reference Books
2. Online Resources

Text Books

1. R.B. Gupta, "Automobile Engineering", SatyaParkashan, New Delhi, Edition 2, 2015
2. Dr. N. K. Giri, "Automobile Mechanics", Seventh reprint, Khanna Publishers, Delhi, Edition 5, 2014

Reference Books

1. James D Halderman, "Automotive Engineering", Pearson, Edition 4, 2012.
2. Domkundwar, "Internal Combustion Engines", DhanpatRai Publication, 2013

Additional Materials

1. http://www.carbibles.com/fuel_engine_bible.html - Fuels & Engines

ASSESSMENT GUIDELINES

Your final course mark will be calculated from the following:

(a) CIE 60 marks (40 marks mid-semester examination + 20 marks internal evaluation)

20 marks internal evaluation is divided into 05 marks as attendance bonus for all students having attendance > 80% + 05 marks for presentation + 10 marks for assignment or case studies, limited to a minimum of 02 assignments per course

(b) End Semester 40 marks.

SUPPLEMENTARY ASSESSMENT

Students who receive an overall mark less than 40% in mid cior end semester will be considered for supplementary assessment in the respective components (i.e.cior end semester) of semester concerned. Students must make themselves available during the supplementary examination period to take up the respective components (cior end semester) and need to obtain the required minimum 40% marks to clear the concerned components.

Late Work

Late assignments will not be accepted without supporting documentation. Late submission of the reports will result in a deduction of 10% of the maximum mark per calendar day

Format

All assignments must be presented in a neat, legible format with all information sources correctly referenced. **Assignment material handed in throughout the session that is not neat and legible will not be marked and will be returned to the student.**

Retention of Written Work

Written assessment work will be retained by the Course coordinator/lecturer for two weeks after marking to be collected by the students.

University and Faculty Policies

Students should make themselves aware of the University and/or Faculty Policies regarding plagiarism, special consideration, supplementary examinations and other educational issues and student matters.

Plagiarism - Plagiarism is not acceptable and may result in the imposition of severe penalties. Plagiarism is the use of another person's work, or idea, as if it is his or her own - if you have any doubts at all on what constitutes plagiarism, please consult your Course coordinator or lecturer. Plagiarism will be penalized severely.

Do not copy the work of other students.

Do not share your work with other students (except where required for a group activity or assessment).

Course schedule (subject to change)

Week #	Topic & contents	CO Addressed	Teaching Learning Activity (TLA)
Week 1	Introduction to automobile engineering, Classification of Automobile vehicle, History of automobile	CO1	1. Chalk and talk 2. PowerPoint Presentations
Week 2	Introduction of car manufacture, Indian manufactures of scooters, Indian manufactures of Motor cycles,	CO1	1. Chalk and talk 2. PowerPoint Presentations
Week 3	Indian manufactures of car & Jeep, Indian manufactures of Buses and trucks , Indian manufactures of 3 Wheeler and tractors	CO1 CO2	1. Chalk and talk 2. PowerPoint Presentations
Week 4	Introduction of Engineering Materials: Types	CO1 CO2	1. Chalk and talk. 2. PowerPoint Presentations
Week 5	Applications of Ferrous & Nonferrous metals, Timber,	CO1 CO2	1. Chalk and talk 2. PowerPoint Presentations
Week 6	Introduction of Abrasive material, silica, ceramics, glass, graphite, diamond, plastic and polymer	CO3 CO4	1. Chalk and talk 2. PowerPoint Presentations
Week 7	Air conditioning system	CO1 CO2	1. Chalk and talk 2. PowerPoint Presentations
Week 8	AirBags, Antilock Braking System	CO6	1. Chalk and talk 2. PowerPoint Presentations

Week 9	Electronic Brakes Distribution, Traction Control System, Cruise Control	CO4	<ol style="list-style-type: none"> 1. Chalk and talk 2. PowerPoint Presentations
Week 10	Introduction of Automobile Transmission of Motion and	CO5	<ol style="list-style-type: none"> 1. Chalk and talk 2. PowerPoint Presentations
Week 11	Power: Shaft and axle, Belt drive	CO4	<ol style="list-style-type: none"> 1. Chalk and talk 2. PowerPoint Presentations
Week 12	Chain drive, Friction drive, Gear drive	CO6	<ol style="list-style-type: none"> 1. Chalk and talk 2. PowerPoint Presentations