DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Second Year Mechanical Engineering
Semester-I

MED221 LAB-I THERMODYNAMICS-I

Teaching Scheme
Practical : 2 Hrs/Week

Examination Scheme
Term work: 25 Marks
Practical: 25 Marks

All the experiments from the following list should be conducted /studied during the course and record for the same should be submitted:

1. Determination of C.V. of solid / liquid fuels by using calorimeter.
2. Determination of C.V. of gaseous fuels by using calorimeter
3. Study of determination of dryness fraction of steam.
4. Study and performance of flue gas analysis by using Orsat apparatus
5. Study of Redwood's Viscometer and determination of viscosity of lubricants
6. Determination of Cloud point and Pour point of lubricants
7. Assignments based on descriptive as well as at least five numerical from 1, 2, 4, 5 and 6 units.

Term work

The term work will consist of submitting a file for all the experiments with neatly written records of the study and diagrams. The term work will be assessed by the subject teacher.

Practical Examination

The Practical Examination will comprise of performing the experiments and viva voce on the Syllabus. The practical examination will be assessed by two examiners, one will be the subject teacher and other examiner appointed by Dr. B.A.M.U. Aurangabad.

MED222-LAB-II MACHINE DRAWING

Teaching Scheme
Practical: 4 Hrs/Week

Examination Scheme
Term work: 50 Marks
Practical: 50 Marks

OBJECTIVES:

- To make student to draw correct production drawing.
- To understand standard practice followed in industries for drawings.
- To understand the methodology of communicating all the required information that will allow a manufacturer to produce parts.
- To learn preparation of product drawing and assembly drawing using 2D CAD tools.

TERM-WORK: (First Angle projection to be adopted)

A. SKETCHBOOK SHOULD CONTAINED

1) Engineering Curves
2) Drawing standards :
Conventions are used to represent materials in section and machine elements.Methods of Dimensioning, Arrangement of Dimensions, standard abbreviations used in dimensioning. Limit system, representation of tolerances in Drawing, Types of Fits, GD&T symbols. Welding symbols, Machining symbols.

B. TOTAL 5 NUMBERS OF DRAWING SHEETS

1. One drawing sheet on Auxiliary views (Minimum Two problems)
2. One drawing sheet on Intersection of Solids (Minimum Two problems)
3. One drawing sheet on details to assembly drawing (Based on unit 5 of MD theory syllabus)
4. Two drawing sheets on assembly to details (Based on unit 6 of MD theory syllabus)

C. PRACTICALS IN CAD

By using any 2-D CAD packages Computer Aided Drawing of

1. Setting up of drawing environment by setting drawing limits, drawing units, naming the drawing, naming layers, setting line types using various type of lines in engineering drawing, saving the file .
2. Layout drawing using different layer and line colors. Name the details using text commands, Make a title Block.
3. Two exercises on Drawing of simple machine components with dimensions.
4. One exercise on Assembly to Details or Details to Assembly

Practical Examination should be based on Viva-Voce on the above syllabus.

TEXT BOOKS:

1. Elementary Engineering Drawing N D Bhatt Charotar Publication House
2. Machine Drawing-By N.D. Bhatt.
3. Machine Drawing by Sidheswar, N., Kanniah, P. and Sastry, V.V.S., Tata McGraw Hill.
4. Machine Drawing by K.I. Narayana, P. Kannaiah, K.Venkata Reddy, New Edge publications
5. Mahine Drawing by Sonaversity publications.
6. Engineering Drawing and Graphics + AutoCAD by K. Venugopal, New Age International Pub.
7. Engineering Drawing with an Introduction to AutoCAD by D.A. Jolhe, Tata-McGraw-Hill Co.

MED223-LAB-III STRENGTH OF MATERIALS

Teaching Scheme
Practical: 2 Hrs/Week

Examination Scheme
Term work: 25 Marks

List of the Experiments

1. Tension test on metals.
2. Compression test on materials.
3. Shear test on metals.
4. Modulus of rupture test.
5. Impact test on metals.
6. Hardness test on metals.
7. Torsion test on metals.
8. Deflection of beams.
9. Bucking of columns.
10. Deflection of springs.

Term work

The term work will consist of submitting a file for all the experiments with neatly written records of the study and diagrams. The term work will be assessed by the subject teacher.

MED224-LAB IV WORKSHOP-III

Teaching Scheme
Practical: 2 Hrs

Examination Scheme
Term work: 25 Marks
Practical: 50 Marks
Duration of exam: 8 hrs.

COURSE CONTENT

TURNING SHOP:

Study of different simple operations to be carried on the lathe machine. plane turning, facing, step turning, taper turning, knurling.
JOB: Preparing a job on lathe machine performing the above operations

PATTERN MAKING:
Study of patterns-material, type of patterns and cores, allowances, pattern making tools, method.
JOB: At least one pattern in Wood, involving details like allowances, core prints (if required) parting line of multi piece pattern etc. in the cope, drag.

FOUNDRY SHOP:

Sand moulding, types of sands, preparing sand for moulding, equipments, sand moulds (cope, drag, check etc.)
JOB: Preparing sand moulds for single, multi-piece patterns in at least two or multi-piece moulding boxes and details like runners, risers, gates etc mould cavity finishing, obtain wax casting. Demonstration of at least one casting using ferrous or non-ferrous metal for every batch.

TERM WORK

Term work shall consist of submission of the above jobs, a File containing the write-up (principle, tools, operations and application) of the three sections and a Workshop Diary in regular format which should have the record of job drawing, tools used, operations to be performed on the job, dates etc., certified by each Section Instructor and the Workshop Superintendent.
Assessment of the term work shall be done by the Workshop Superintendent and a teachers appointed by the Head of the Institute.

PRACTICAL EXAMINATION

The Practical Examination will comprise of two jobs. One Job in Turning Shop is compulsory and another in any one of the remaining shops. The job of foundry will be a wax casting obtained from the mould. The jobs should involve all the operations studied during the semester. Duration will be Four hours for each job. Question paper will be set by University.

The jobs will be assessed by two examiners, one will be the Internal and other will be External examiner appointed by University.

Recommended books:

1) *Workshop Technology, Vol I, and Vol II by Hazra Chaudhury;* Media Promotors & Pub
2) *Workshop Technology, Vol I and Vol II, by Raghuvanshi; Dhanpatrai and Sons.*

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Second Year Mechanical Engineering
Semester-II

MED271-Lab-V THEORY OF MACHINES-I

Teaching Scheme	**Examination Scheme**
Practical: 2 Hrs	Term work: 25 Marks
	Practical: 25 Marks

Practical:

1. Study of Kinematics and Definition
2. Solution of min.2 problem on topic Velocity Analysis, using Relative velocity method
3. Solution of min.2 problem on topic Velocity Analysis, using Instantaneous centre method
4. Solution of min.2 problem on topic Velocity & Acceleration analysis, using Relative acceleration method
5. Solution of min.2 problem on topic Velocity & Acceleration analysis, using Short cut methods.
6. Solution of min.2 problem on topic Dynamics of Engine Mechanisms, determination of inertia force and inertia torque.
7. Solution of min.2 problem on topic Cams
8. Study of Brakes
9. study of dynamometers

Term work

The term work will consist of submitting a file for all the experiments with neatly written records of the study and diagrams. The term work will be assessed by the subject teacher.

Practical Examination

The Practical Examination will comprise of performing the experiments and viva voce on the Syllabus. The practical examination will be assessed by two examiners, one will be the subject teacher and other examiner appointed by Dr. B.A.M.U. Aurangabad.

MED272-Lab-VI THERMODYNAMICS-II

Teaching Scheme
Practical: 2 hours/week

Examination Scheme
Term work: 25 Marks
Practical: 25 Marks

The list of experiments

[1] Study of any two boilers

[2] Study of boiler mounting and accessories

[3] Study of condensers

[4] Study of cooling towers

[5] Performance of single/multistage reciprocating air compressor

[6] Technical visit to steam power plant.

[7] Assignments based on descriptive as well as at least five numerical from 1, 2, 3, 5 and 6 units.

Term work
The term work shall consist of Performing / Studying following experiments. The candidate shall submit the report of each experiment and the assignments.

Practical Examination

The Practical Examination will comprise of performing the experiments and viva voce on the Syllabus. The practical will be assessed by two examiners, one will be the subject teacher and other will be examiner appointed by Dr. B.A.M.U. Aurangabad.

RECOMMENDED BOOKS

1. Nag P.K., "Engineering Thermodynamics", TMH Publishing Co. New Delhi
2. Rajput R.K., "A Text Book of Engineering Thermodynamics", Laxmi Publication, New Delhi
3. Ballaney P.L., "Thermal Engineering",
4. Domkundwar & Domkundwar, "Introduction to Thermal Power Engineering", Dhanpatrai and Sons,New Delhi
5. Rao, "Engineering Thermodynamics",
6. Radhakrishnan, "Fundamentals of Engineering Thermodynamics", PHI

MED273:Lab-VII ELECTRCAL MACHINES AND APPLIED ELECTRONICS

Teaching Scheme
Practical: 02 hrs/week

Examination scheme
Term work: 25 Marks

List of Experiments:

1) To perform speed control of DC motor
2) Speed control of 3phase Induction Motor
3) To Perform load test on DC series motor
4) Rheostatic speed breaking of DC shunt motor
5) To study single phase induction motor
6) To identify different parts and understand working of starters used for 3phase induction motors
7) To Study different sensors
8) To study different actuators
9) To study different types of heating
10) To study power devices

Term work

The term work will consist of submitting a file for all the experiments with neatly written records of the study and diagrams. The term work will be assessed by the subject teacher.

MED274-Lab-III WORKSHOP PRACTICE-IV

Teaching Scheme
Practical: 2 hours/week

Examination Scheme
Term work: 25 Marks
Practical: 50 Marks
Duration of exam: 8 Hrs.

COURSE CONTENT

TURNING SHOP:
Study of different advanced operations on the lathe machine, like taper turning by different methods thread cutting along with calculations, drilling, boring, internal threading, internal taper turning, facing, use of at least one attachment (like grinding attachment, taper turning attachment, milling attachment etc.).
JOB: Preparing at least one job on lathe machine to perform the above operations.

WELDING:
study of different arc welding processes.
Job: Preparation of at least one job using shielded metal arc welding and MIG or TIG welding.

BLACK SMITHY:
Study of forging parameters, forging tools, different operations like sizing, bending, upsetting, taper etc.
JOB: Prepare one job involving the above hand forging operations.

TERM WORK

Term work shall consist of submission of the above jobs, a File containing the write-up (principle, tools, operations and application) of the three sections and a Workshop Diary in regular format which should have the record of job drawing, tools used, operations to be performed on the job, dates etc., certified by each Section Instructor and the Workshop Superintendent.
Assessment of the term work shall be done by the Workshop Superintendent and a teachers appointed by the Head of the Institute.

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The Practical Examination will comprise of two jobs. One Job in Turning Shop is compulsory and another in any one of the remaining shops. The jobs should involve all the operations studied during the semester. Duration will be Four hours for each job. Question paper will be set by University.

The jobs will be assessed by two examiners, one will be the Internal and other will be External examiner appointed by University.

Recommended books:

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