

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF MECHANICAL ENGINEERING

Course Outline Template			
Course Title	Machine Drawing		
Course Code	MELR10	No. of credits	2
Department	Mechanical Engineering III Sem - Sec (A &B)	Faculty	Dr. K. Sankaranarayananasamy Dr. K. R. Balasubramanian
Pre-requisites Course	Engineering Graphics		
E-mail ID	knsamy@nitt.edu krbala@nitt.edu	Telephone No.	9442250704 9443561873
Course Type	Core Course		
Course Overview			
<p>The universal graphical expression is called the language of engineers. Engineering drawing is a legal document of the company. The design engineer is the one who create a new product or improve the existing one and should have a complete knowledge on its working principles, functional requirement and the manufacturing process involved in producing the final product. The ability to articulate ideas and design intent through sketching is one of the most valuable tools a design engineer can possess. The ideas and all needed information about the product should be conveyed properly. Sketches alone can explain better than any amount of written or oral explanations. The sketches (engineering drawing) when drawn as per the rules laid down in national and international organizations for Standards (ISO) with necessary information enable the technicians to fabricate and make the assembly of the product to its actual size and shape.</p> <p>A machine is an assembly of different parts arranged in a definite order that uses energy to perform an intended action. Drawing of machine elements is called machine drawing. Machine drawing must provide information about part number, dimensions, tolerances, surface finish, material and stock size, manufacturing process, special finishing process if required and number of stocks required for each assembly. This machine drawing course is a laboratory course and the purpose of this subject is to give an insight knowledge about drawing the machine parts manually as per the standards. Students must be familiar with industrial drafting practices and thorough understanding of production drawings to make themselves fit in industries. Proficiency in sketching can be achieved with constant practice only.</p>			

Students will get exposure to first angle and third angle of projection, principles of drawings and standards used in machine drawing. They will be acquainted with the methods of representation of sectional views and other conventions. Students will understand to draw the sectional or plain elevations / plans / and side views of final assembly drawings from part drawings with dimensioning and bill of materials. Further they will be exposed to limits, types of fits and tolerances.

Course Objectives

- To impart knowledge on techniques and standard practices of machine drawing.
- To introduce conventions, surface finish symbols, limits, fits and tolerances.
- To inculcate the ability to read and interpret the part drawings and to prepare final assembly drawing of machine components with sectional views.
- To impart knowledge on working principle of various machine components

Course Outcomes (CO)

Course Outcomes

On completing this course students will be able to,

- identify the standards pertaining to machine drawing and know to represent sectional views and other conventions
- understand to prepare assembly drawing from part drawings
- Apply limits and tolerances to assemblies and choose appropriate fits.
- recognize machining and surface finish symbols and understand the working principle of various machine components

Aligned Programme Outcomes (PO)

Cos/Pos	Course Outcomes (Cos)			
	CO1	CO2	CO3	CO4
PO1	H	H	H	H
PO2	H	H	H	H
PO3	H	H	H	H
PO4	L	L	L	L
PO5	H	H	H	H
PO6	M	M	M	M
PO7	M	M	M	M
PO8	H	H	H	H
PO9	M	M	M	M
PO10	H	H	H	H
PO11	M	M	M	M
PO12	M	M	M	M

Course Teaching and Learning Activities

S.No	Week	Topic	Mode of Delivery
1.	1 - 2	Introduction to SP46; Orthographic Projection; Fasteners	Chalk and talk and Power point presentation

2.	3 - 4	Assembly drawing and sectional drawing of Rigid and Flexible Couplings	Chalk and talk and Power point presentation
3.	5 - 6	Assembly drawing and sectional drawing of Bearings, Plumber block	Chalk and talk and Power point presentation
4.	7-8	Assembly drawing and sectional drawing of Thrust bearing, connecting rod	Chalk and talk and Power point presentation
5.	9-10	Limits fits and Tolerances; machining symbols; surface finish indication; Assembly drawing and sectional drawing of Tail stock	Chalk and talk and Power point presentation
6.	11-12	Assembly drawing and sectional drawing of Tool post, Tool head for shaping machine,	Chalk and talk and Power point presentation
7.	13-14	Assembly drawing and sectional drawing of machine vice, screw jack.	Chalk and talk and Power point presentation
8.	15-16	Assembly drawing and sectional drawing of valves	Chalk and talk and Power point presentation
9.	17-18	End Semester Examination	

Course Assessment Methods

S.No	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Written test on standards and conventions	5 th week	1 hours	20%
2.	Continuous Assessment of Drawing Practice	During regular practice session	3 hours session	60%
3.	End Semester Exam	18 th Week	3 hours	20%

Essential Readings: Textbooks, reference books, etc.

1. Engineering Drawing Practice for Schools and Colleges SP: 46- 1988.
2. Bertoline, Wiebe, Miller, Nasma., Technical Graphics Communication, Ifourth edition, McGraw-Hill, 2009.
3. K. R. Gopalakrishna, Machine Drawing in First Angle Projection, Subhas Stores, 2007
4. Dhawan, R.K., A Text Book of Machine Drawing, S. Chand & Company, 1996.
5. William P. Spence, Engineering Graphics, Prentice - Hall Inc, 1984
6. Ostrowsky, O., Engineering Drawing with CAD Applications, ELBS, 1995.

Course Exit Survey (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

1. Students can meet the faculty at any stage in the course duration in case he/she finds difficulty in understanding the concept.
2. Feedback form issued to students to express their comments about the course after completing the syllabus. Students are requested to give genuine feedback about the course.
3. Student knowledge about the topic covered in this course will be judged during drawing sessions and marks obtained in the written examination.

Course Policy (including plagiarism, academic honesty, attendance, etc.)

1. Examination:

Students must attend all the classes regularly. If students missed any of the classes then that class exercise won't be evaluated and marks will not be given for that exercise.

Students should submit assignments as per the instructions given at the end of each practice class. Late submission is not permitted.

2. Attendance:

The minimum attendance for appearing for the semester examination is 75%.

Those students, whose attendance falls below 75% but above 50% in a subject, shall attend mandatory classes before the semester examinations to qualify to write semester exam.

The students who are having attendance less than 50% has to redo the course in next semester.

The Institute follows relative grading with flexibility given to teachers to decide the mark ranges for grades. All assessment of a course will be done on the basis of marks.

Additional Course Information

Students can reach course faculty by fixing appointment through E-mail (ksnsamy@nitt.edu; krbala@nitt.edu) or phone (9442250704 ; 9443561873)

For Senate's Consideration



Dr. K. Sankaranarayananamy
(Course Faculty)



Dr. K. R. Balasubramanian
(Course Faculty)



CC-Chairperson



Head of the Department
MED