IK GUJRAL PUNJAB TECHNICAL UNIVERSITY, JALANDHAR
(Department of Academics)

Ref. No. IKG-PTU/DA/ 3064 Date: 8/9/21

Chairperson Board of Studies (2021-2023)
IKG Punjab Technical Univesity, Jalandhar.

Sub:- Regarding start of Theory paper for Engineering Graphics and Design for B.Tech. Session 2021-22.

As per approval of the Hon'ble Vice Chancellor and recommendation of the Board of Studies (Mechanical/Production/Industrial/Automobile Engineering), the University is going to start Theory paper for Engineering Graphics and Design for B.Tech. Programme w.e.f. Session 2021 onwards. The copy of the syllabus is attached for your reference.

This is for your information please.

With regards.

Dr.Nitya Sharma 08/09/21.
Dy. Controller (Academics)

CC to :-

1- I/C VC Secretariat for kind information of the Hon'ble Vice-Chancellor.
2- Dean (Academics) for information please.
3- Controller (Examination)
4- All HODs, Main Campuses for information please.
5- Director, Main Campuses & Constitute Campuses for information please.
6- Principal, All Autonomous & Affiliated Colleges of IKGPTU for information please.

IKGPTU B.TECH. MECHANICAL ENGG. SYLLABUS

(2021 BATCH ONWARDS)

ENGINEERING GRAPHICS & DESIGN

B. Tech. – I / II Semester (All Branches) | **L T P C**

Course Code: BTME 101-21 | **1 0 5 3**

Internal Marks: 40

External Marks: 60

Total Marks: 100

Duration of Final Examination: 03 Hrs.

COURSE OVERVIEW:

One of the best ways to communicate one's ideas is through some form of picture or drawing. This is especially true for the engineers. An engineering drawing course focuses on usage of drawing instruments, lettering, construction of geometric shapes, etc. The students will study the use of dimensioning, shapes and angles or views of such drawings. Dimensions feature prominently, with focus on interpretation, importance, and accurate reflection of dimensions in engineering drawing. Other areas of study in this course may include projected views and development of surfaces.

COURSE OBJECTIVES:

1. To understand the basic principles of engineering drawing
2. To have the knowledge of generating the pictorial views
3. To understand the development of surfaces
4. Use CAD tools for making drawings of machine components and assemblies.
5. To have the knowledge of interpretation of dimensions of different quadrant projections.

COURSE OUTCOMES:

On completion of this course students will be able to:

1. Prepare and understand drawings.
2. Use the principles of orthographic projections.
3. By studying about projections of solids, students will be able to visualize three dimensional objects and that will enable them to design new products.
4. Design and fabricate surfaces of different shapes.
5. Represent the objects in three dimensional appearances.

NOTE:

1. The Question paper shall have following structure/weightage:
   Section A – Short answer type Questions based upon whole syllabus – 10 questions of 02 marks each. (All questions are compulsory; 10 x 2 =20).
   Section B – Questions from unit – I & II.; – 04 questions of 08 marks each

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Section C – Questions from unit – III & IV.; – 04 questions of 08 marks each

(02 Question are to be attempted from Section B & C each; 01 question from Section B or C; 5 x 08=40 marks).

DETAILED CONTENTS

UNIT – I (18 Hrs.)

INTRODUCTION TO ENGINEERING DRAWING: Principles of engineering drawing / engineering graphics / technical drawing and their significance –Drawing Instruments: their Standard and uses – symbols and conventions in drawing practice – lettering & numbering – BIS conventions. Types of lines and their uses, Drawing Sheets: sizes and layout, methods of folding drawing sheet, Grades of pencils used, Dimensioning: definition, types and methods of dimensioning, geometrical construction, concept of scales in drawing, types of scales, construction of plane and diagonal scales.

UNIT – II (12 Hrs.)

ORTHOGRAPHIC PROJECTIONS: Relevance of projection, Types of projections, Principles of orthographic projections in reference to quadrants – conventions – first and third angle projections, illustration through simple problems of projection; Projections of points in quadrants. Projections and trace of a line with different possible orientations in a quadrant. Methods to find true length and inclination of a line with principal planes.

UNIT – III (18 Hrs.)

PROJECTIONS OF PLANES AND SOLIDS: Concept of plane and lamina, Projections of a lamina when; parallel to any reference plane, perpendicular to any reference plane, inclined to reference plane. Traces of planes. Definition of solid, types of solids – conventions-different possible orientations of solid in a quadrant. Projections of solid when; axis parallel to reference plane, perpendicular to reference plane, inclined to one and parallel to other reference plane, parallel to both horizontal and vertical planes.

UNIT – IV (12 Hrs.)

ISOMETRIC PROJECTIONS: Principles of Isometric Projections-Isometric Scale- Isometric Views or drawing- Conventions. Isometric drawing / projections of solids such as cube, prisms, pyramids, cylinder, and cone.

UNIT – V (12 Hrs.)

Practice using Computer Aided Drafting (CAD) tools:

Hands on training on any CAD software to strengthen the understanding of the engineering drawing wherein the students will be introduced to a number of assignments as mentioned in the syllabus.

AmitBansal
AP(M.E)

Suggested Reading/Books:

TEXT BOOKS:

1. Engineering Drawing- Basant Agarwal, TMH
2. D. M. Kulkarni, A. P. Rastogi, and A. K. Sarkar (2009), Engineering Graphics with AutoCAD, PHI Learning Private Limited, New Delhi.
3. P.S Gill, *"Engineering Drawing", S K Kataria and sons*, 18th edition, 2017 reprint
4. Jolhe, Dhananjay (2006), Engineering Drawing: With an Introduction to CAD, Tata Mc Graw Hill, India.

REFERENCE BOOKS:

1. N. D. Bhat (2006), *Engineering Drawing*, Charotar Publications, New Delhi.
2. Venugopal (2010), *Engineering Drawing and Graphics*, 2nd edition, New Age Publications, New Delhi.
3. Johle (2009), *Engineering Drawing*, Tata Mc Graw Hill, New Delhi, India.
4. Trymbaka Murthy (2007), *Computer Aided Engineering Drawing*, I.K. International Publishers, New Delhi.
5. R.B. Choudary (2005), *Engineering graphics with Auto CAD*, Anuradha Publishers, New Delhi

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