1.1.2

Supporting Documents-

Department of Electrical Engineering

Approved MoMs of BoS

Minutes of Meeting held on October 14, 2021

The 1st meeting of BoS (Electrical Engineering) was held online (Google Meet Link: meet.google.com/wxv-uuuh-jbp) under the Chairmanship of Dr. Gagandeep Kaur on October 14, 2021, at 11: 00 am.

The meeting started with the welcome address to all the members of the BoS by Dr. Gagandeep Kaur, Chairperson BoS(EE).

The following Members were present:

1. Dr. Gagandeep Kaur, Chairperson
2. Dr Namarata Kad (Professor)
3. Dr Lakhwinder Singh (Professor)
4. Dr Kanwardeep Singh (Associate Professor)
5. Dr Chakradhar Reddy (Associate Professor)
6. Dr Gursewak Singh Brar (Associate Professor)
7. Dr Naveen Kumar Sharma (Assistant Professor)
8. Dr Akhil Gupta (Assistant Professor)
9. Dr Dilbag Singh (Outside Expert)
10. Dr Jaspreet Singh Dhillon (Outside Expert)
11. Dr Ajat Shatru Arora (Outside Expert)
12. Er. Paramjit Singh (Industry Expert)
13. Dr Deepika Bhalla (Coordinator)
14. Mr Pankaj (Alumni)
15. Mr Raviraj (Student batch 2019)
16. Mr Vikasdeep Singh (Student batch 2020)

A. 'Review of the Minutes of Meeting of the 3rd meeting of Board of Studies - Affiliated Colleges (2019-21) held on 30/12/2020:

Item No.	Agenda	Discussion and Decision taken in Meeting
3.4	Proposal of starting B. Tech. Minor Degree of in Electrical Vehicles for students pursuing Major Degree in Mechanical Engineering / Electrical Engineering as per IKGPTU/Reg/NF/2056, dated 17/05/2019, "Guidelines for Major and Minor Degree in B. Technology". IKGPTU/DAA/2347, dated 28/02/2020, "Regarding AICTE approval process handbook 20-21, Chapter VII point 7.3.2.	The BoS agreed to start a B. Tech. Minor Degree in Electrical Vehicles for students pursuing Major Degree in Mechanical Engineering / Electrical Engineering. The students of B.Tech. ME/B.Tech. ME (LEET) are eligible to undertake the B. Tech. Minor Degree of in Electrical Vehicles programme in 3rd semester. The programme will be offered by Department of Electrical Engineering. The draft of the Teaching Scheme was discussed and approved. ***Action taken:*** ***Approval from Chairman of Academic Council available.*** ***Discussion with BoS(ME) are in progress***

B. Review of the Minutes of Meeting of the 4rd meeting of Board of Studies - Affiliated Colleges (2019-21) held on May 05, 2021:

Item No.	Agenda	Discussion and Decision taken in Meeting
4.1	The syllabus of 7th and 8th Semester B.Tech. Programme in (a) Electrical Engineering (b) Electrical and Electronics Engineering (c) Electronics and Electrical Engineering	The BoS discussed, revised and approved the syllabus of 7th and 8th Semester B.Tech. Programme in (a) Electrical Engineering (b) Electrical and Electronics Engineering (c) Electronics and Electrical Engineering ***Action taken:*** ***Approval from Chairman of Academic Council available.*** ***Information available on website.***

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4.2	Teaching Scheme and Syllabus of B. Tech. Electrical (Part Time) Programme	The BoS discusses, and approved the Teaching Scheme of B. Tech. Electrical (Part Time) Programme as per the University regulations for Bachelor of Technology (PT) and minutes of Meeting held on 18th July 2014. The syllabus of all the courses of the teaching scheme to be same as that of regular B.Tech. Programme in Electrical Engineering for Batch 2018 and onwards. ***Action taken:*** ***Approval from Chairman of Academic Council available.*** ***As per meeting on 14/10/2021*** Post -facto approval given by BoS for the implementation of Teaching Scheme and Syllabus of B. Tech. Electrical (Part Time) Programme to be from batch 2021 and onwards. (subject to approval of part-time B. Tech. degree by AICTE/UGC)
4.3	To approve the final list of e-books for Under Graduate programme of (Electrical Engineering/Electrical and Electronics Engineering/Electronics and Electrical Engineering.	To members approved the final list of e-books for Undergraduate programme of (Electrical Engineering/Electrical and Electronics Engineering/Electronics and Electrical Engineering. ***Action taken:*** ***Approval from Chairman of Academic Council available. Information available on website.***
4.4	To discuss once again the Teaching scheme and syllabus of B. Voc. Solar System Technology of 03 Years duration	The interested institute; Baba Banda Singh Bahadur Engg. College, Fatehgarh Sahib proposed the teaching scheme and syllabus of 1st year for B. Voc. Solar System Technology. The members of BoS discussed and approved the teaching scheme and syllabus of 1st & 2nd Semester. ***Action Taken:*** ***Approval from Chairman of Academic Council available. Information available on website.*** ***As per meeting on 14/10/2021*** Reference to the communication regarding date of implementation; Post factor approval given by BoS for the implementation of teaching scheme and syllabus of 1st year for B. Voc. Solar System Technology to be from Batch 2021 and onwards.
4.5	To finalise the on-line SWAYAM/MOOCS courses and credits for A. Honors Degree in Electrical Engineering/Electrical and Electronics Engineering / Electronics and Electrical Engineering for the session January-May 2020. B. Minor Degree	The dates and details of SWAYAM/MOOCS courses are not available on date. The Members of BoS authorize, HoD(EE) Main Campus, Coordinator and one member of BoS Affiliated Colleges to take necessary action when the courses are available. ***Action Taken:*** ***On-line SWAYAM /MOOCs courses available on 25/07/2021 (July-November 2021) for Minor Degree/Honors Degree (Subject to changes made by host Institute/Swayam portal) was sent, the efile returned back that the start dates were already over. The revised status was asked for and sent on/as on 01/09 2021 was Nil.***
4.6	Reference to Letter from UGC; DO No F.1-1 2018 (Journal/care), dated December 2019, regarding a 2-credit course to be compulsory for all PhD students Course code: CPE-RPE	The BoS accepted the Course Title, of Research and Publication Ethics (RPE). The Course code, and evaluation, of the course to be as per university norm. ***Action taken:*** ***Approval from Chairman of Academic Council available.***

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	Course: Research and Publication Ethics (RPE)	

C: Agenda Items for 1st Meeting of Board of Studies-EE (2021-23)

Item No.	Agenda	Discussion and Decision in meeting
1.1 (2021-23)	Uniformity of marks and hours of EVS-101-18 Environmental Studies of B. Tech. programs. The internals to be of 100 marks and the teaching hours to be 3L: 0T: 0P	The BoS(EE) agreed in principle. To be implemented in the new teaching scheme of B. Tech. 2021.
1.2 (2021-23)	Ref. no: IKGPTU-DA-3064, Dated 8-9-21) regarding Theory paper of BTME-101 Engineering Graphics and Design for Batch 2021 and onwards. The details are (L1: T0: P5) Internal marks: 40 External marks:60 Total marks: 100 Duration of final exam to be 3 hours,	The BoS(EE) agreed in principle. To be implemented in the new teaching scheme of B. Tech. 2021.
1.3 (2021-23)	(i) Reference no: IKGPTU/REG/NF/ 2172, dated 27/07/2021, Regarding the adoption of Ph.D Course work structure and criteria for assessment. (ii) POs and COs of Ph.D Course work.	(i) The BoS (EE) accepted the proposal. (ii) The Bos (EE) discussed revised and approved the POs and COs of Ph.D Course work.
1.4 (2021-23)	Reference IKGPTU/REG/NF/2143— Academic program offered by IKGPTU for the session 2021-22 in University Main Campus and its Constituent Campuses., the M.Tech. programme to be offered modification from M. Tech. -Electrical Engineering (Power System) is to be read as M. Tech. -Electrical Engineering (Power Systems & Renewable Energy)	The BoS discussed, revised and approved the teaching scheme and syllabus of M. Tech. -Electrical Engineering (Power Systems & Renewable Energy) 2021
1.5 (2021-23)	Reference to item 72.7 of 72nd BOG proceeding of passing of 52nd Academic Council minutes. The compliance to be as per UGC guidelines and norms. Syllabus and curriculum to be sent to IIT Ropar for up-dation and value addition.	The Bo(EE) approved the decision to send the teaching scheme and syllabus of appended programs to IIT Ropar for up-dation and value addition. (a) B.Tech. Electrical Engineering (2018) (b) B.Tech. Electrical and Electronics Engineering (2018) (c) B.Tech. Electronics and Electrical Engineering (2018) (d) M.Tech. Electrical Engneering (2018) (e) M.Tech. Power Engineering (2018) (f) M.Tech. Power System (2018) (g) M. Tech. -Electrical Engineering (Power Systems & Renewable Energy) 2021.
1.6 (2021-23)	Regarding Value Added Courses for the students of IKGPTU Main campus & Constituent Campus from Academic Session 2021-22.	(i) The members of BoS accepted the list of Value added Courses for students of Department of Electrical Engineering of IKGPTU Main campus & Constituent Campus from Academic Session 2021-22. 1. Solar water Pumping

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	(i) Reference IKGPTU/DA.31.31, dated 08/10/2021, List of value added courses. (ii) Reference IKGPTU/DA.3150, dated 11/10/2021, syllabus of value added courses.	2. Safety, Health and Environment Management 3. Arduino 4. E-commerce 5. Condition Monitoring and Maintenance 6. Principals of Marketing 7. Environmental Sustainability 8. Biology of Engineers 9. Cyber security 10. Programming in Python 11. Big Data 12. Java 13. Hybrid vehicle 14. Energy storage (ii) The syllabus of the value added courses (3-12) to be requested from appropriate BoS through the Department of Academics.

Suggestions from members:

1. For the course BTME-101 Engineering Graphics and Design for Batch 2021 and onwards. It is proposed that:
   (a) Teaching hours to be (L1: T2: P3)
   (b) Since it's a practical based course so Internal marks: 60 and External marks:40
   (c) Certain content to be included that is relevant to electrical engineering.
2. The industry representative recommended a compulsory/mandatory course in B. Tech. programme on "Safety"

The Members of BoS (EE) authorize Chairperson, Coordinator and two members of BoS EE (2021-23) to sign relevant documents.

There being no further points the meeting ended with a thanks to the Chair.

Member, BoS (EE)

Member, BoS (EE)

Coordinator, BoS (EE)

Chairperson BoS (EE

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

Ref. No. IKG-PTU/DA/ 2022/169 Date: 09/05/2022

Director / Principal / Faculty Incharge /HOD
All Affiliated Institutes / University Constitute Campuses
IKG Punjab Technical University Jalandhar, Kapurthala

Subject : Implementation of Bridge course for B. Tech. course in Main campus, Constituent campuses and Affiliated colleges.

With reference to the subject cited above. As per notification No.IKGPTU/Reg/NF/93 dated 02.05.2022,the syllabus of Bridge courses is attached herewith for your necessary action please.

Dr. Nitya Sharma 09/05/22
Dy. Controller (Academics)

CC to :-

1- Dean (Academics) for information please.
2- ITS Branch to upload the information on the notification and syllabus webpage of university website.

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I.K. GUJRAL PUNJAB TECHNICAL UNIVERSITY
(REGISTRAR OFFICE)

IKGPTU/REG/NF/93 Dated: 02 .05.2022

NOTIFICATION

Sub: Regulation regarding Bridge Courses of B.Tech 1st Year.

As per the approval of the Competent Authority, dated 11.04.2022, the following regulations regarding Bridge Courses for B.Tech 1st Year shall be applicable from Batches 2021 Onwards:

For Colleges:

1. A separate provision shall be made in the time table for the conduct of bridge courses.
2. Concerned teacher shall be given 2 hours load per week for teaching the bridge course.
3. The Bridge courses shall be audit/ qualifying courses and not extra credit shall be awarded to students qualifying these courses.
4. The maximum marks shall be 40 for internal assessment and there will be two MSTs as per Academic Calendar.
5. The bridge courses shall be evaluated by the University along with end semester as per Academic Calendar. The maximum marks for the same will be 60. Student shall be required to fill examination form along with end semester examination. The applicable examination fees shall be charged i.e. Rs. 1,000/- (Rupees One Thousand). However, no additional tuition fees or other incidental charges will be charged.

For Students:

1. A separate Details Marks Card shall be issued after successful completion of Bridge Course.
2. The student may study the course in either 1st Semester or 2nd Semester and it's compulsory to qualify the audit course. If any student does not qualify the bridge courses, then he/she shall not be awarded the final degree.

This notification issued with the approval of the Competent Authority given vide eOffice File No. I/1061/2021-ACAD (Computer No. 55679).

(Dr. S.K. Mishra)
Registrar

Endst. No. IKGPTU/REG/NF/94-99 Dated: 02 .05.2022

A copy of the above is forwarded to the following for information and necessary action please.

1. Secretary to Vice Chancellor: For Kind information to Hon'ble Vice Chancellor.
2. Dean (Academics).
3. Controller of Examination.
4. Director Constituent Campuses of IKGPTU.
5. Director/ Principal, Affiliated/ Autonomous Colleges.
6. ITS Branch: - for upload on University website.

(Dr. S.K. Mishra)
Registrar

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Annexure V

Content of Bridge Course in Physics:

Module	Lecture Required
1. Mechanics	02
2. Mechanical Properties of Solids and Fluids	03
3. Waves and Oscillations	03
4. Electricity and Magnetism	03
5. Electromagnetic Signal	02
6. Optics	02
7. Semiconductor Electronics	03
8. Modern Physics	02
9. Atomic and Nuclear Physics	02

UNIT I: Classical Mechanics: Centre of Mass, Motion of Centre of mass, Pure Translational and Inertia, Torque and angular momentum, Principle of moments (Moment of Inertia). Radius of Gyration, Generalized Motion, Kinematics of rotational motion about a fixed axis.

UNIT II: Mechanical Properties of Solids and Fluids: Elastic behaviors of solids, Hooke's Law, Young's Modulus, Shear Modulus, Bulk Modulus, Applications of Elastic behaviors of materials, Compressibility, Viscosity, Relative density, Pascal's Law, Streamline Flow, Bernoulli's Principle, Surface Tension, Drops and Bubbles

UNIT III: Waves and Oscillations: Rectilinear motion, Oscillations or Vibrations, Simple Harmonic Motion, Damped Harmonic motion: Real oscillatory system, Forced or Driven oscillation, TYPES OF WAVES, Superposition of Waves, Reflection and Refraction, Standing Waves and Normal Modes, Beats, Resonance, Doppler's Effect

UNI IV: Electricity and Magnetism: Physical concepts of gradient, divergence, and curl; Laplacian, operator, Concept of electricity and magnetism, Coulomb's law, Electrostatics, Magnetostatics, Lorentz force, Maxwell's equations.

UNIT V: Electromagnetic Signal: Introduction to Maxwell's equations, The dynamical magnetic field, The dynamical electric field, Electromagnetic Waves

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UNIT VI: Wave Optics: Interference of light, Photons, Young's Double Slit Experiment, Huygens's Principle, Diffraction, Diffraction grating, Polarization

UNIT VII: Semiconductor Electronics: Classification of metals, conductors and semiconductors, Fermi Level, Intrinsic Semiconductor, Extrinsic Semiconductor, p-n junction, Semiconductor diode, Half wav rectifier, Full-wave rectifier, Zener diode, photo diode, Light emitting diode, Junction Transistor,

UNIT VIII: Modern Physics: Wave nature of light. Particle nature of light: the photon, De Broglie Hypothesis, Experimental confirmation of de Broglie hypothesis (Davisson and Germer's Experiment)

UNIT IX: Atomic and Nuclear Physics: Matters, Atoms, Atomic Theory: Atomic Theory by John Dalton, Atomic theory by J. J. Thomson, Atomic theory by Ernest Rutherford, Atomic theory by James Chadwick, Discovery of Neutron, Bohr postulates, Proton, Neutron, Electron, Limitations of Bohr Theory.

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	Bridge Course	L-4, T-1, P-0	4 Credits

Pre-requisite: Elementary calculus of matric level.

Course Objectives: The objectives of this course are to make the students understand the following:

1. The fundamental concepts of differential calculus, integral calculus, matrices and vector algebra.
2. The geometrical meaning of functions, limits, continuity, derivatives, mean value theorems, area under the curve, projection of a vector.
3. Applications of derivatives, integrals, matrices and vectors.
4. Limit, Continuity, derivatives and their applications in finding extreme values.
5. The utility of parallelogram law, triangle inequality, linear system of equations and their consistency.

Course Outcomes: At the end of the course, the students will be able to

CO1	Understand the basic concepts of Differential, integral calculus, matrices and vector algebra.
CO2	Visualize all concepts geometrically.
CO3	Apply the knowledge of derivatives in finding extreme values of the function and definite integrals to find area under the curve and dot product to find projection of a vector.
CO4	Explain the concept of Limit, Continuity, derivatives of functions and their applications.
CO5	Utilize the concept of parallelogram law, triangle inequality, linear system of equations and their consistency.

Mapping of course outcomes with the program outcomes

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	√	√	-	-	√
CO2	√	√	-	-	√
CO3	√	√	-	-	√
CO4	-	√	-	-	-
CO5	√	√	-	-	√

BOS coordinate

Chairperson, BOS

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Course Title: Bridge Course
Course Code:

UNIT-I

Functions of single variable, Simple examples of limit, continuity, differentiability, Derivative of elementary functions (t-ratios, logarithmic functions, exponential functions), Higher order derivatives, Statement of Mean value theorems and simple applications, Applications of derivative; increasing decreasing functions, extreme values of functions. **(Ref. 1)**

UNIT-II

Integration as an inverse process of differentiation, Finding integrals by partial fractions, by parts. Statement of fundamental theorem of calculus, Finding definite integrals by method of substitution, Applications of definite integral in finding length of an arc, area under simple curves, area enclosed between two curves. **(Ref. 1)**

UNIT-III

Definitions of Scalars, vectors, position vector, unit vector, types of vectors, Addition of vectors, parallelogram law, triangle law, direction ratios, direction cosines, multiplication by a scalar, components of a vector, dot product, cross product of vectors, projection of vectors on a line, area of triangle and parallelogram, Cauchy-Schwartz inequality, Solenoidal vectors, orthogonality.

UNIT-IV

Matrices: Introduction to matrix, Different kinds of matrices, Addition, Multiplication, Symmetric and Skew symmetric matrix, Transpose of matrix, trace of a matrix.

Determinants: Determinant of matrix, Properties of determinant, Singular and non-singular matrices, Adjoint and inverse of a matrix, Echelon form, Rank of a matrix.

Linear System of Equations: Introduction to system of linear equations, Condition of Consistency of system of linear equations, Homogenous and Non-homogenous system of linear equations, Solution of Trigonometric equations.

RECOMMENDED BOOKS:

- Mathematics, A Text book for Class XII (Parts I & II), New Delhi: NCERT, 2003.
- R.K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Pub., 4th Edition, 2015.
- James Stewart, Calculus, 5th Edition, Brooks/Cole (Thomson), 2003.

BOS Coordinator

Chairperson, BOS

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Bridge Course for Engineering Drawing

Course Objectives: - The subject is aimed at developing basic graphic skills in the students so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation.

Course Outcomes: -

1. Identify and use of different grades of pencils and other drafting instruments which are used in engineering field.
2. Utilize various types of lines used in engineering drawing.
3. Draw and interpret complete inner hidden details of an object which are otherwise not visible in normal view.
4. Draw free hand sketches of various kinds of objects.

UNIT-I

Introduction to engineering drawing, their applications, uses, detailed introduction of basic engineering drawing instruments such as drawing boards, drawing sheets, different grades of pencils, drawing instruments. Different types of lines as per BIS specifications and their applications, various symbols and conventions used in engineering drawing.

UNIT-II

Practice of making various geometrical shapes such as triangles, rhombus, pentagon, hexagon. Practice of vertical, horizontal and inclined lines, Dimensioning practice on simple geometrical figures using engineering instruments, Practice of free hand sketching of various simple drawings and engineering drawings.

UNIT-III

Free hand practice of alphabets in upper case and lower case, numerals, roman, free hand practice for writing different motivational quotes.

UNIT-IV

Concept of sectioning, cutting plane lines, practice of full sectioned and half sectioned views of simple examples

UNIT-V

Introduction about orthographic projections, practice of simple orthographic projections, identification and drawing first angle projection and third angle projection symbols, difference between first angle projection and third angle projection.

UNIT-VI

Concept of true length and isometric length, conversion of orthographic views into isometric views of simple objects such as cube, slab, cylinder, cone.

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Text/Reference Books: -

Engineering drawing by P. S. Gill

Engineering drawing by N. D. Bhatt

A text book of engineering drawing by Surjit Singh

Fundamentals of engineering drawing by W. J. Luzadder and J. M. Duff

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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.

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IKGPTU B.TECH. MECHANICAL ENGG. SYLLABUS
(2021 BATCH ONWARDS)

ENGINEERING GRAPHICS & DESIGN

B. Tech. – I / II Semester (All Branches)
Course Code: BTME 101-21
Internal Marks: 40
External Marks: 60
Total Marks: 100
Duration of Final Examination: 03 Hrs.

L	T	P	C
1	0	5	3

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.

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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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AP(MS)

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Department of Electrical Engineering
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I.K. GUJRAL PUNJAB TECHNICAL UNIVERSITY

Estd. Under Punjab Technical University Act, 1996
(Punjab Act No. 1 of 1997)

Ref. No. : IKGPTU/Reg/NF/ 2143 *Dated :* 16 *.07.2021*

NOTIFICATION

Sub: Academic Programs offered by IKGPTU for the Session 2021-22 in University Main Campus and its Constituent Campuses – modification.

In partial modification to Notification No. IKGPTU/REG/NF/164-168 dated 23.06.2021, the course M.Tech. (Electrical Engineering – Power System) mentioned at Sr. No. 3 against Department Electrical Engineering under Point A may be read as **M.Tech. (Electrical Engineering) (Power Systems & Renewable Energy)**.

(Sandeep Kumar Kazal)
Registrar

Endst. No. IKGPTU/Reg/NF/ 2144 – 2147 Dated: 16 .07.2021

A copy is forwarded to the following officers for information please.

1. Vice Chancellor Secretariat: For information of Vice Chancellor
2. All HoDs/ In-charge (Non-Teaching)
3. Director (Main Campus): To inform all Deputy Dean (Faculty), HoDs (Teaching) and Director/In-charge, Constituent Campuses
4. In-charge (ITS): For upload on website

(Sandeep Kumar Kazal)
Registrar

Head
Department of Electrical Engineering
I.K. Gujral Punjab Technical Univer