



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

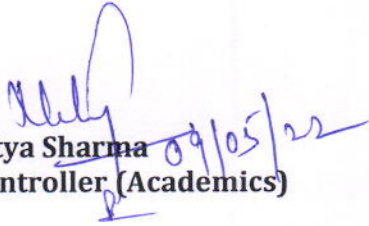
Ref. No. IKG-PTU/DA/ 2022/169

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
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.

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:

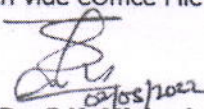
For Colleges:

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

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

UNIT 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 wave 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: Matter, 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.

Hebha
SP

	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	√	√	-	-	√

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BOS coordinate

Ans.
chairperson, BOS

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

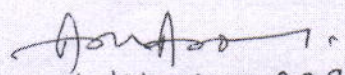
Matrices: Introduction to matrix, Different kinds of matrices, Addition, Multiplication, Symmetric and Skew symmetric matrix, Transpose of matrix, trace of a matrix.

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.


Chairperson, BOS


BOS Coordinator

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.

Ambarish (Coordinator, M.E.)

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

Amrinder (Coordinator M.E.)
APK