



### List of Revised Courses

Department: **Mechanical Engineering**

Program Name : **B.Tech.**

Academic Year: **2018-19**

### List of Revised Courses

Sr. No.	Course Code	Name of the Course
01.	ME02TBS03	Physics
02.	ME02TES04	Basic Electrical Engineering
03.	ME02TBS04	Mathematics-I
04.	ME02TMC01	Environmental Studies
05.	ME02PBS02	Physics Lab
06.	ME02PES04	Basic Electrical Engineering Lab
07.	ME02 PES05	Engineering Graphics & Design Lab
08.	ME01TBS01	Mathematics-II
09.	ME01TBS02	Chemistry

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प्रौद्योगिकी संस्थान / Institute of Technology  
गुरु घासीदास वि.वि. / Guru Ghasidas V.V.  
कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)



**Minutes of Meetings (MoM) of Board of Studies (BoS)**

**Academic Year : 2018-19**

**School : School of Studies of Engineering and Technology**

**Department : Mechanical Engineering**

**Date and Time: February 26, 2018 - 11:00 AM**

**Venue : G-25**

DEPARTMENT OF MECHANICAL ENGINEERING  
SCHOOL OF ENGINEERING & TECHNOLOGY GGV, BILASPUR CG  
MINUTES OF MEETING OF BOARD OF STUDIES

A meeting of board of studies of Department of Mechanical Engineering was held on 26/02/2018 from 11:00AM, onwards at Room No.G-25 of New-IT building. Following members were present:-

1. Dr. Rajesh Kuamr Bhushan,  
H.O.D. Department Mechanical Engineering  
(Chairman Board of Studies)
2. Mr. Vivek Singh,  
Executive Engineer. (Mech), Damodar Valley Corporation,  
Koderma Thermal Power Station, Jharkhand  
(Member of B.O.S. as an Industry Expert)
3. Prof. Mukesh Kumar Singh  
Department Industrial and Production Engineering  
(Invited Member)
4. Mr. Prashant Kumar Jangde  
Assistant Prof. Department of Mechanical Engineering  
(Member Board of Studies)
5. Mr C P Dewangan, Associate Professor  
Department Industrial and Production Engineering  
(Invited Member)
6. Mr Leeladhar Rajput Assistant Professor  
Department Industrial and Production Engineering  
(Invited Member)

*General*  
26/2/18

*Jan 12*  
26/2/18

*Leeladhar Rajput*  
26.02.18

*Dewangan*  
26-2-18

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यांत्रिकी अभियांत्रिकी विभाग/Mechanical Engg. Dept.  
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Prof. N.D. Mittal, Professor (Mechanical Engineering Department), Maulana Azad National Institute of Technology, Bhopal (M.P.), (External Expert Member) could not attend the BOS meeting due to health problem. However he has mailed his suggestions, which were discussed and incorporated as per opinion of other board members.

In the meeting syllabus and scheme of B.Tech (Mechanical Engineering) from VII Semester to VIII Semester have been discussed in detail as per Choice Based Credit System (CBCS). The syllabus and scheme of B.Tech (Mechanical Engineering) VII<sup>th</sup> Semester and VIII<sup>th</sup> Semester have been approved by the B.O.S. members, revised syllabus is attached with the minutes.

The B.O.S. meeting was concluded with vote of thanks.

Mr. Vivek Singh, Executive Engineer, (Mech), Damodar Valley Corporation, (Member of B.O.S. as an Industry expert) Koderma Thermal Power Station, Jharkhand

Dr. Rajesh Kumar Bhushan, H.O.D. Department of Mechanical Engineering (Chairman Board of Studies)

Mr Leeladhar Rajput Department of Industrial and Production Engineering (Invited Member)

Mr. Prashant Kumar Jangde Assistant Prof. Department of Mechanical Engineering (Member Board of Studies)

Prof. M.K. Singh, Professor (Department of IPE) (Invited Member)

Mr C P Dewangan, Associate Professor Department Industrial and Production Engineering (Invited Member)

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4TH YEAR 2018

Department of Mechanical Engineering, School of Engineering & Technology, GGV, Bilaspur (C.G.)

Changes in syllabus of B. Tech. 4<sup>th</sup> year (VII & VIII Sem) Mechanical Engineering BOS 26-2-18)

The following changes have been incorporated in the course syllabus of B. Tech. 4<sup>th</sup> Year Mechanical Engineering as per the discussion in BoS meeting held in the department. The complete VII and VIII semester syllabus along with the evaluation scheme is appended for your reference. Salient aspects of the revisions made are listed below.

- Power plant engineering:** The subject has been added as a compulsory subject in VII semester from the list of VIII semester professional elective subjects.  
**Reasons and Benefits:** Various competitive exams take place immediately after VII semester and Power plant engineering has a significant role in competitive examinations. Also this will help students in deciding their career path in various industries like NPTI, power plants etc.
- Turbo Machinery:** The subject has been moved from VII semester compulsory subject to VIII semester compulsory subject.  
**Reasons and Benefits:** The important topics of this subject (competitive examinations point of view) are already covered in different fluid mechanics courses in lower semesters.
- Theory of Vibration:** The subject has been moved from compulsory subjects to professional elective in VII semester.  
**Reasons and Benefits:** Lower semester has Kinematics and Dynamics of Machine courses, which covers this subject in details from UG program point of view. This subject is taught as a compulsory subject in most of the PG programs.
- CAD-CAM:** This subject has been moved from VIII semester compulsory subject to VII semester compulsory subject.  
**Reasons and Benefits:** This subject has great advantages in terms of modeling and analysis, which will help the students in their Major Project (VIII Semester).
- In VII semester, in place of two professional electives, one professional and one open elective combination has been chosen.  
**Reasons and Benefits:** This will help students to choose elective from other departments such as Management, Environment etc. according to their future career plans.
- Total subject credits in VII semester have been increased from 16 to 18 credits.
- Changes have been made in the professional and open elective subjects according to the change described in point no. 6.
- Following new electives have been introduced in 4<sup>th</sup> year syllabus:
  - Principle of Management
  - Microprocessors in Automation

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Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2018-19

School : **School of Studies of Engineering and Technology**

Department : **Mechanical Engineering**

Date and Time: **July 31, 2022, 2018 - 11:00 AM**

Venue : **HoD room**

Name of the Dept. B. Tech, 1<sup>st</sup> year

Sub: syllabus of B. Tech, 1<sup>st</sup> year.

The concerned  
The syllabus of B. Tech 1<sup>st</sup> year after  
due approval from the notified BOS  
on 31/7/18 are hereby attached for  
your perusal and formal approval from  
BOS of your respective department.

Pl. forward it to MECH. Department

Encl: concerned syllabus.

Dean (ECT)

HOD (Mech. Engrs)

410/ B.Tech 1<sup>st</sup> yr / 5/9/18

5/9/18

4124/MEGA  
5/9/18

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SCHEME OF EXAMINATION										
B.TECH (FOUR YEAR) DEGREE COURSE										
FIRST YEAR , MECHANICAL ENGINEERING										
SEMESTER II (COURSE-A)										
EFFECTIVE FROM SESSION 2018-19										
SL. NO.	SUBJECT CODE	SUBJECTS	PERIODS/WEEK			EVALUATION SCHEME			CREDITS	
			L	T	P	IA	ESE	TOTAL		
<b>THEORY</b>										
1	ME02TBS03	PHYSICS	3	1	0	30	70	100	4	
2	ME02TBS04	MATHEMATICS-I	3	1	0	30	70	100	4	
3	ME02TES03	BASIC ELECTRICAL ENGINEERING	3	1	0	30	70	100	4	
4	ME02THS01	ENGLISH	3	0	0	30	70	100	3	
5	ME02TMC01	ENVIRONMENTAL SCIENCES	3	0	0	...	...	..	0	
<b>PRACTICAL</b>										
1	ME02PBS02	PHYSICS LAB	0	0	3	30	20	50	1.5	
2	ME02PES04	BASIC ELECTRICAL ENGINEERING LAB	0	0	2	30	20	50	1	
3	ME02PES05	ENGINEERING GRAPHICS & DESIGN	1	0	3	30	20	50	2.5	
TOTAL									20	
IA - INTERNAL ASSESSMENT ESE - END SEMESTER EXAM. L- LECTURE T- TUTORIAL P-PRACTICAL										

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31/07/18

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31-7-18

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(chemical)

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31/8/2018



Subject code/SUBJECT	L	T	P	Credit
ME01TBS01/MATHEMATICS-II	3	1	0	4

10%

**Module 5a: First order ordinary differential equations(6 hours)**

Exact, linear and Bernoulli's equations, Euler's equations, Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

**Module 5b: Ordinary differential equations of higher orders (Prerequisite 2c, 4a) (8 hours)**

Second order linear differential equations with variable coefficients, method of variation of parameters, Cauchy-Euler equation; Power series solutions; Legendre polynomials, Bessel functions of the first kind and their properties.

**Module 5c: Partial Differential Equations-First order(Prerequisite 5a-b) (6 hours)**

First order partial differential equations, solutions of first order linear and non-linear PDEs.

**Module 5d: Partial Differential Equations- Higher order(Prerequisite 5b-c) (10 hours)**

Solution to homogenous and non-homogenous linear partial differential equations second and higher order by complimentary function and particular integral method. Flows, vibrations and diffusions, second-order linear equations and their classification, Initial and boundary conditions (with an informal description of well-posed problems), D'Alembert's solution of the wave equation; Duhamel's principle for one dimensional wave equation. Separation of variables method to simple problems in Cartesian coordinates. The Laplacian in plane, cylindrical and spherical polar coordinates, solutions with Bessel functions and Legendre functions. One dimensional diffusion equation and its solution by separation of variables. Boundary-value problems: Solution of boundary-value problems for various linear PDEs in various geometries.

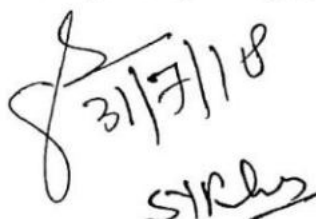
Textbooks/References:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 9<sup>th</sup> Edition, John Wiley & Sons, 2006.
2. W. E. Boyce and R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, 9th Edition, Wiley India, 2009.
3. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.
4. E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall India, 1995.
5. E. L. Ince, Ordinary Differential Equations, Dover Publications, 1958.
6. G.F. Simmons and S.G. Krantz, Differential Equations, Tata McGraw Hill, 2007.
7. S. J. Farlow, Partial Differential Equations for Scientists and Engineers, Dover Publications, 1993.
8. R. Haberman, Elementary Applied Partial Differential equations with Fourier Series and Boundary Value Problem, 4th Ed., Prentice Hall, 1998.
9. Ian Sneddon, Elements of Partial Differential Equations, McGraw Hill, 1964.
10. Manish Goyal and N.P. Bali, Transforms and Partial Differential Equations, University Science Press, Second Edition, 2010
11. Denian murry, differential equations, oxford publications



विभागाध्यक्ष/Head

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SUBJECT CODE/NAME	L	T	P	Credit
ME01TBS02/CHEMISTRY	3	1	0	4

90%

**Unit-I Concept of Quantum Energy and Spectroscopy:** Quantization of Energy, Regions of spectrum. Electronic Spectroscopy: Electronic Transition, Woodward Fiesher rules for calculating  $\lambda_{\max}$  of conjugated dienes &  $\alpha, \beta$ -unsaturated carbonyl compound, various shifts in  $\lambda_{\max}$  and intensities. Infra Red Spectroscopy: Conditions for Infra Red Spectroscopy, Molecular vibrations & factors affecting Infra Red frequencies. [ 8 L]

**Unit-II Chemical Bonding in Molecules:** Introduction of chemical bonding, VSEPER Theory, V.B.Theory and Molecular Orbital Theory. Energy level diagrams of diatomic molecules and ions. [ 16 L]

**Unit-III Concept of Chirality, Enantiomers, Diastereomers, Meso-compounds and Racemic mixtures.** Conformation of Acyclic hydrocarbons (Ethane, Propane & n-Butane) and Cyclic hydrocarbon (Cyclohexane), Plane of symmetry, Center of symmetry, Absolute and Relative Configuration (R & S, D & L and E & Z). [ 8 L]

**Unit-IV Reactivity of Organic Molecules, Factors influencing acidity, basicity and nucleophilicity of molecules, kinetic vs thermodynamic control of reactions. [12 L]**

**Unit-V Strategy for Synthesis of Organic Compounds: Reaction intermediates: Stability of Free Radical, Carbocation and Carbanion. Introduction to reaction involving Addition, Elimination, Substitution and Ring opening and Cyclization. [ 16 L]**

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31/3/18

*S.K.S.*

विभागाध्यक्ष/Head  
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SUBJECT CODE/SUBJECT	L	T	P	Credit
ME02TBS03/PHYSICS	3	1	0	4

**Unit - 1: Optics: Interference and Diffraction**

Introduction, Young's experiment, theory of interference, Coherent and non-coherent sources, Fresnel's Bi-prism and Newton's ring experiment.

Diffraction of light, Fresnel and Fraunhofer's diffraction, diffraction due to plane diffraction grating.

**Unit - 2: Electromagnetic Theory**

Coulomb's law, electrostatics field and potential, electric flux, Gauss' law, Poisson's and Laplace's equation, Equation of continuity for charge conservation, Ampere's and Faraday's laws, Maxwell's Electromagnetic equations.

**Unit - 3: Laser and Fiber optics**

Introduction, elementary idea of spontaneous and stimulated emission, active medium, population inversion, Einstein's coefficients, Types of lasers and important applications of lasers.

Introduction to optical fibers, basic principles of optical fiber, critical angle, numerical aperture, maximum acceptance angle, classification of optical fiber.

**Unit - 4: Semiconductor Physics and Devices**

Formation of energy in solids, Energy band gap of metals, insulators and semiconductors, classification of semiconductor: Intrinsic and Extrinsic semiconductors, Fermi levels in intrinsic and extrinsic semiconductors, Electrical conductivity in conductors and semiconductors, working of P-N Junction diodes and Bipolar Junction transistor.

**Unit - 5: Introduction to Quantum Mechanics**

Introduction to Quantum Mechanics, Photoelectric effect, Compton effect, wave-particle duality, uncertainty principle, wave function, De-Broglie waves, Phase and Group velocity, Davisson and Germer experiment, Schrodinger wave equation, particle in a box (1-Dimensional).

**Text Books and References**

- 1) Applied Physics – I and II by Navneet Gupta, Dhanpat Rai & Co.
- 2) Engg. Physics by S. K. Srivastava and R. A. Yadav, New Age Pub. New Delhi
- 3) Engg. Physics by Uma Mukherjee, Narosa Publication
- 4) Engg. Physics by M. N. Avadhanulu, S. Chand Pub.
- 5) Electricity and Magnetism by Rangwala and Mahajan, Tata McGraw Hill, 1998
- 6) Concepts of Physics Part -II by H. C. Verma, Bharati Bhawan (P&D), 1998
- 7) Modern Physics by Beiser, McGraw Hill Inc. New York, Publication 1995
- 8) Modern Physics by Mani and Mehta, East-West Press Pvt. Ltd. 1998
- 9) Introduction to Electrodynamics, David Griffith
- 10) J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill Inc. (1995).
- 11) B. E. A. Saleh and M. C. Teich, Fundamentals of Photonics, John Wiley & Sons, Inc., 2007).
- 12) S. M. Sze, Semiconductor Devices: Physics and Technology, Wiley (2008).
- 13) Yariv and P. Yeh, Photonics: Optical Electronics in Modern Communications, Oxford University Press, New York (2007).
- 14) P. Bhattacharya, Semiconductor Optoelectronic Devices, Prentice Hall of India (1997).
- 15) Online course: "Semiconductor Optoelectronics" by M R Shenoy on NPTEL.
- 16) Online course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Gupta on NPTEL.

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विभागाध्यक्ष/Head

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CODE/SUBJECT	L	T	P	CREDIT
ME02TMC01/ENVIRONMENTAL SCIENCES	3	0	0	0

**ENVIRONMENTAL STUDIES**

90 % change NC 04 class  
*(Signature)*

**Introduction to environmental studies:** Multidisciplinary nature of environmental studies; Scope and importance; Concept of sustainability and sustainable development. **Ecosystems:** Structure and function of ecosystem; Energy flow in an ecosystem; food chains, food webs and ecological succession. a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). **Natural Resources** Renewable and Non-renewable Resources; Land resources and land use change; Land degradation, soil erosion and desertification. **Deforestation:** Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. **Water:** Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). **Energy resources:** Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies. **Biodiversity and Conservation:** Levels of biological diversity; genetic, species and ecosystem diversity; Biogeographic zones of India;

Biodiversity patterns and global biodiversity hot spots. India as a mega-biodiversity nation; Endangered and endemic species of India. Threats to biodiversity: Habitat loss, poaching of wildlife, man wildlife conflicts, biological invasions; Conservation of biodiversity: in-situ and ex-situ conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational value. **Environmental Pollution:** Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution. Nuclear hazards and human health risks. Solid waste management: Control measures of urban and industrial waste. Pollution case studies. **Environmental Policies & Practices.** Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. **Environment Laws:** Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. **International agreements:** Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). Nature reserves, tribal populations and rights, human wildlife conflicts in Indian context. **Human Communities and the Environment.** Human population growth: Impacts on environment, human health and welfare. Resettlement and rehabilitation of project affected persons; case studies. **Disaster management:** floods, earthquake, cyclones and landslides. **Environmental movements** Chipko, silent valley, Bishnois of Rajasthan. **Environmental ethics:** role of Indian and other religions and cultures in environmental conservation. **Environmental communication and public awareness,** case studies (e.g., CNG vehicles in Delhi). **Field work:** Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc. Visit to a local polluted site- Urban/Rural/Industrial/Agricultural. **Study of common plants, insects, birds and basic principles of identification.** Study of simple ecosystems-pond, river etc.

**Suggested Readings:**

1. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
2. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.
3. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. DUP.
4. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.

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गुरु घासीदास विश्वविद्यालय / Guru Ghasidas V.V.  
कोनी, बिलासपुर (छ.ग.) Koni, Bilaspur (C.G.)



SUBJECT CODE/SUBJECT	L	T	P	Credit
ME02PBS02/PHYSICS LAB	0	0	3	1.5

5% change

**List of Experiments:**

1. To determine the wavelength of sodium light with help of Fresnel's Bi-prism.
2. To determine the refractive index and dispersive power of the material of prism with the help of spectrometer.
3. To determine the sodium light by Newton's ring method.
4. To determine the wavelength of sodium light by plane diffraction grating using spectrometer.
5. To demonstrate the diffraction pattern and determine the wavelength of different colors of mercury (white) light using plane diffraction grating and spectrometer.
6. To determine the wavelength and number of lines per cm on a diffraction grating using semiconductor laser diode.
7. To determine the specific rotation of sugar solution with the help of polarimeter.
8. Determine the width of the single slit and diameter of circular aperture using Fraunhofer diffraction pattern produced by semiconductor laser diode.
9. To determine the Energy band gap ( $E_g$ ) of a semiconductor material using P-N junction diode.
10. To determine the  $e/m$  ratio by Thomson's method
11. To study the P-N junction diode characteristics, in forward and reverse bias conditions.
12. To study the Zener diode characteristics.
13. To study the characteristics and gain of Transistor in C-B and C-E mode.
14. Determine the Planck's constant.

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31-7-2018

S.R.Chay

विभागाध्यक्ष/Head  
यांत्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept.  
प्रौद्योगिकी संस्थान / Institute of Technology  
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कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)



80% change

SUBJECT CODE/NAME	L	T	P	Credit
ME02PES04/ BASIC ELECTRICAL ENGINEERING LAB	0	0	2	1

**List of experiments/demonstrations:**

- Basic safety precautions. Introduction and use of measuring instruments—voltmeter, ammeter, multi-meter, oscilloscope. Real-life resistors, capacitors and inductors.
- Measuring the steady-state and transient time-response of R-L, R-C, and R-L-C circuits to a step change in voltage (transient may be observed on a storage oscilloscope).
- Sinusoidal steady state response of R-L, and R-C circuits—impedance calculation and verification. Observation of phase differences between current and voltage. Resonance in R-L-C circuits.
- Transformers: Observation of the no-load current waveform on an oscilloscope (non-sinusoidal wave-shaped due to B-H curve nonlinearity should be shown along with a discussion about harmonics). Loading of a transformer: measurement of primary and secondary voltages and currents, and power.
- Three-phase transformers: Star and Delta connections. Voltage and Current relationships (line-line voltage, phase-to-neutral voltage, line and phase currents).
- Phase-shifts between the primary and secondary side. Cumulative three-phase power in balanced three-phase circuits.
- Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor), synchronous machine (field winding - slip ring arrangement) and single-phase induction machine.
- Torque Speed Characteristic of separately excited dc motor.
- Synchronous speed of two and four-pole, three-phase induction motors. Direction reversal by change of phase-sequence of connections. Torque-Slip Characteristic of an induction motor. Generator operation of an induction machine driven at super synchronous speed.
- Synchronous Machine operating as a generator: stand-alone operation with a load. Control of voltage through field excitation.
- Demonstration of (a) dc-dc converters (b) dc-ac converters—PWM waveform (c) the use of dc-ac converter for speed control of an induction motor and (d) Components of LT switchgear.

*ML*  
3/1/21 LB

*SD*  
2/1/21 LB

*SR*

*[Signature]*

विभागाध्यक्ष/Head  
यांत्रिकी अभियांत्रिकी विभाग/Mechanical Engg. Dept.  
प्रौद्योगिकी संस्थान/Institute of Technology  
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SUBJECT CODE/SUBJECT	L	T	P	Credit
ME02PES05/ENGINEERING GRAPHICS & DESIGN LAB	1	0	3	2.5

**ENGINEERING GRAPHICS & DESIGN 80 % change**

**UNIT-I**

**Introduction to Engineering Drawing**

Principles of Engineering Graphics and their significance, usage of Drawing instruments, lettering, Conic sections including the Rectangular Hyperbola (General method only); Cycloid, Epicycloid, Hypocycloid and Involute; Scales – Plain, Diagonal and Vernier Scales.

**UNIT-II**

**Orthographic Projections**

Principles of Orthographic Projections-Conventions - Projections of Points and lines inclined to both planes; Projections of planes inclined Planes - Auxiliary Planes.

**Projections of Regular Solids**

Inclined to both the Planes- Auxiliary Views; Draw simple annotation, dimensioning and scale.

**UNIT-III**

**Sections and Sectional Views of Right Angular Solids**

Prism, Cylinder, Pyramid, Cone – Auxiliary Views; Development of surfaces of Right Regular Solids - Prism, Pyramid, Cylinder and Cone; Draw the sectional orthographic views of geometrical solids, objects from industry and dwellings (foundation to slab only)

**UNIT-IV**

**Isometric Projections covering,**

Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids; Conversion of Isometric Views to Orthographic Views and Vice-versa, Conventions;

**UNIT-V**

**Overview of Computer Graphics**

listing the computer technologies that impact on graphical communication, Demonstrating knowledge of the theory of CAD software [such as: The Menu System, Toolbars (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), The Command Line (where applicable), The Status Bar, Different methods of zoom as used in CAD, Select and erase objects.; Isometric Views of lines, Planes, Simple and compound Solids].

**Suggested Text/Reference Books:**

- Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House
- Shah, M.B. & Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education
- Agrawal B. & Agrawal C. M. (2012), Engineering Graphics, TMH Publication
- Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers
- (Corresponding set of) CAD Software Theory and User Manuals

*General*  
31/7/18

*AK*  
31/07/18

*SR*  
31/07/18

विभागाध्यक्ष / Head  
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गुरु घासीदास वि.वि. / Guru Ghasidas V.V.  
कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)