Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Four Years B.E. Course
Scheme of Examination B.E. First year (All Branches of Engineering)

First Semester

Sub Code	Subjects	Workload in hrs			Credits	Marks					Minimum Passing Marks	
		L	T/A	P		Theory		Practical		Total		
						Internal	Uni	Internal	Uni		Theory	Practical
BSE1-1T	Mathematics-I	3	1	-	4	30	70	-	-	100	45	-
BSE1-2T	Applied Physics	3	2	-	4	30	70	-	-	100	45	-
BSE1-3T	Energy and Environment	2	2	-	3	30	70	-	-	100	45	-
BSE1-4T	Communication Skills	2	-	-	2	15	35	-	-	50	23	-
BSE1-5T	Engineering Graphics	1	-	-	1	15	35	-	-	50	23	-
BSE1-6T	Basics of Civil & Mechanical Engineering	4			Audit	50	-	-		Audit	-	-
BSE1-2P	Applied Physics Lab	-	-	3	1.5			25	25	50	-	25
BSE1-3P	Energy and Environment Lab	-	-	2	1			25	25	50	-	25
BSE1-4P	Communication Skills Lab	-	-	2	1			25	25	50	-	25
BSE1-5P	Engineering Graphics Lab	-	-	4	2			25	25	50	-	25
Three weeks Induction Program												
	Total	**15**	**11**		**19.5**	**120***	**280**	**100**	**100**	**600**		

- L- Lecture , P-Practical, T- Tutorial , A- Activity (Half Credit per Hour)

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Syllabus (Theory)

Semester	Course Title (Subject) code: BSE1-5T	Hours / Week			Credits	Maximum Marks			Exam Duration (Hrs.)
		L	T	P		Continual Assessment	University Examination	Total	
B.E. I Sem	Engineering Graphics	1			1	15	35	50	03

Sr. No.	Course Objective The objective of this course is–
1	To acquire basic knowledge about engineering drawing language, line types, dimension methods, and simple geometrical construction. To draw conic sections by various methods, involutes, cycloid and spiral.
2	To acquire basic knowledge about physical realization of engineering objects and shall be able to draw its different views.To imagine visualization of lateral development of solids.
3	To visualize three dimensional engineering objects and shall be able to draw their isometric views

Course Outcomes

After successful completion of this course the student will be able to:

CO1	The learner will able to understand the basic knowledge of engineering graphics such as instruments, lines, dimensioning techniques, scales, sheet layout. Construct the various engineering curves using the drawing instruments and basic of orthographic projection through drawing the projection of point and line.
CO2	The learner will able to understand projections of different types planes (2D) and solids (3D) and will be able to draw different views of plane and solids.
CO3	The learner will able to understand concept of sectioning and development of lateral surfaces of solid and will able to represent it.
CO4	Apply the visualization skill to draw a simple isometric projection/view from given orthographic views precisely using drawing equipment

SYLLABUS

Contents	No of hours
Unit I: **Introduction to Engineering Graphics:** Introduction to Engineering Graphics, Use of various drawing instruments, Sizes of drawing sheets, different types of lines used in drawing practice. Dimensioning linear, angular, aligned system, unidirectional system, Introduction to scales & scale factor (RF). **Basics of Orthographic Projections:** Basic principles of orthographic projection, reference planes, concepts of four quadrants, methods of orthographic projections. First angle projections,	3

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Projections of Points and Lines: Projections of points in all possible positions w.r.t. reference planes. Projections of lines when it is perpendicular to one of the reference planes, when line is inclined to one & parallel to other reference plane. Lines inclined to both reference planes. (Lines in First Quadrant Only) Construction of conic section by using various methods. Ellipse, Parabola and Hyperbola, Engineering Curves: Cycloid, Involute, Archimedean Spiral.	
Unit II: **Projection of planes**: Types of planes, position of planes parallel to one of the reference planes, Perpendicular to one & inclined to other reference plane. Inclined to both reference planes. Types of Auxiliary Planes, projection on auxiliary planes. (Exclude determination of true shape). **Projection of Solids**: types of solids, Simple positions, Axis inclined to one plane & parallel to other plane(only two stage)	3
Unit III: **Section of Solids**. (only one stage)– Types of section plane, types of sectional views, true shape of section. Projection of different solids cut by different section plane(when solid is in simple position, i.e. axis perpendicular to one and parallel to other reference plane). **Development of Lateral Surfaces:** Principle of development, methods of development of lateral surfaces of solids. Development of lateral surface of above cut solids.	3
Unit IV: **Isometric View and Projection**: Definition of isometric projection/view, Isometric scale, isometric lines, planes, non isometric lines/plane. Plane figures. Construction of isometric view from given views of an object. Construction of isometric projection of combined solids (axes vertical and coinciding) Prism, Pyramid Cylinder and Cone.(Exclude Sphere)	3
Total	**12**

Sr. No.	List of Tutorials	No of hours
01	Projection of points.	1
02	Projection of Straight lines – Simple positions, Minimum 4 problems on Projection of Straight lines: Inclined to both the planes..	2
03	Two problem each of Construction of conic section by using various methods. Ellipse, Parabola and Hyperbola,	2
04	One problem each of Cycloid, Involute, Archimedean Spiral.	1
05	Projection of planes – Perpendicular and oblique planes	2
06	Projection on auxiliary planes	2
07	Projection of Solids : Simple positions, Axis inclined to one plane & parallel to other	2
08	Section of Solids – Prism & Pyramids ,Cylinder & Cones Development of Lateral Surfaces – Prism, Pyramid, Cylinder & Cones	6
09	Isometric View and Projection – Planes or plane figures ,Prism, Pyramid Cylinder and Cone, General Object	6
	Total no of Tutorial	**24**

References:

Text Books Recommended:

Bhatt, N. D. and Panchal, V. M., (2016), "Engineering Drawing", Charotar Publication, Anand, India

Dhawan, R. K., (2000), "A Textbook Of Engineering Drawing", S. Chand, New Delhi

.Reference Books Recommended:

Jolhe, D. A., (2015), "Engineering Drawing ", Tata McGraw Hill, New Delhi

Shah P J, (2012) 'Basics of Engineering Graphics' S. Chand, New Delhi

P.S. Gill , (2015) "Engineering Drawing', S.K.Kataria and sons,

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Proposed Syllabus (Practical)

Semester	Course Title (Subject) Code: BSE1-5P	Hours / Week			Credits	Maximum Marks			Exam Duration (Hrs.)
		L	T	P		Continual Assessment	University Examination	Total	
B.E. I Sem	Engineering Graphics lab	-	-	4	2	25	25	50	

Sr. No.	Course Objective The objective of this course is–
1	To acquire basic knowledge about engineering drawing , line types, dimension methods, and simple geometrical construction. To draw conic sections by various methods, involutes, cycloid and spiral.
2	To acquire basic knowledge about physical realization of engineering objects and shall be able to draw its different views. To imagine visualization of lateral development of solids.
3	To visualize three dimensional engineering objects and shall be able to draw their isometric views

Course Outcomes

After successful completion of this course the student will be able to:

CO1	Draw the fundamental engineering objects using basic rules and able to construct the lines, simple geometries. Construct the various engineering curves using the drawing instruments.
CO2	Draw two dimensional and three dimensional objects. precisely using drawing equipment.
CO3	Draw the development of lateral surfaces for cut section of geometrical solids precisely using drawing equipment.
CO4	Draw a simple isometric projection from given orthographic views precisely using drawing equipment.

Dr M. N. Giriya

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Sr. No.	List of practical	No of hours	No of sheet
01	Projection of Straight lines – Simple positions, Minimum 4 problems on Projection of Straight lines: Inclined to both the planes.	2	1
02	Two problems each of Construction of conic section by using various methods. Ellipse, Parabola and Hyperbola,One problem each of Cycloid, Involute, Archimedean Spiral.	2	1
03	Minimum 4 problems on Projection of planes – Perpendicular and oblique planes	2	1
04	Minimum 4 problems on Projection on auxiliary planes(Excluding True shape)	4	1
05	Minimum 4 problems on Projection of Solids : Simple positions, Axis inclined to one plane & parallel to other	4	1
06	Minimum 4 problems on Section of Solids(only one stage) – Prism & Pyramids,Cylinder & Cones, Development of Lateral Surfaces – Prism, Pyramid, Cylinder & Cones	4	1
07	Minimum 4 problems on Isometric View and Minimum 4 problems Projection,Prism, Pyramid Cylinder and Cone, General Object	6	2
	Total	**24**	**08**

References:

Text Books Recommended:

Bhatt, N. D. and Panchal, V. M., (2016), "Engineering Drawing", Charotar Publication, Anand, India

Dhawan, R. K., (2000), "A Textbook Of Engineering Drawing", S. Chand, New Delhi

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Jolhe, D. A., (2015), "Engineering Drawing ", Tata McGraw Hill, New Delhi

Shah P J, (2012) 'Basics of Engineering Graphics' S. Chand, New Delhi

P.S. Gill , (2015) "Engineering Drawing', S.K.Kataria and sons,

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Wiley and Sons, USA

Reference Books Recommended:

1. Pravin Kumar, (2018), " Basic Mechanical Engineering, 2nd Ed.", Pearson (India) Ltd
2. Groover,Mikell P., (1996), "Fundamentals of Modern Manufacturing: Materials, Processes, and Systems", Prentice Hall, USA
3. Khurmi, R.S. ,and Gupta, J. K.,"A Textbook of Thermal Engineering", S. Chand & Sons
4. The National Building Code, BIS,(2017)
5. RERA Act,(2017)
6. Chandiramani, Neelima (2000), The Law of Contract: An Outline, 2nd Edn.Avinash PublicationsMumbai
7. Avtarsingh (2002), Law of Contract, Eastern Book Co.
8. Dutt (1994), Indian Contract Act, Eastern LawHouse
9. Anson W.R.(1979), Law of Contract, Oxford UniversityPress
10. Kwatra G.K.(2005), The Arbitration & Conciliation of Law in India with case lawon UNCITRAL Model Law on Arbitration, Indian Council ofArbitration
11. Avtarsingh (2005), Law of Arbitration and Conciliation, Eastern BookCo.
12. Wadhera (2004), Intellectual Property Rights, Universal Law PublishingCo.
13. P. S. Narayan (2000), Intellectual Property Rights, Gogia LawAgency
14. T. Ramappa (2010), Intellectual Property Rights Law in India, Asia LawHouse
15. Bare text (2005), Right to Information Act
16. O.P. Malhotra, Law of Industrial Disputes, N.M. TripathiPublishers
17. K.M. Desai(1946), The Industrial Employment (Standing Orders)Act
18. Rustamji R.F., Introduction to the Law of Industrial Disputes, Asia PublishingHouse
19. Vee, Charles &Skitmore, Martin (2003) Professional Ethics in the Construction Industry, Engineering Construction and Architectural management, Vol.10, Iss. 2,pp 117-127, MCB UPLtd
20. American Society of Civil Engineers (2011) ASCE Code of Ethics – Principles Study andApplication
21. Ethics in Engineering- M.W.Martin&R.Schinzinger,McGraw-Hill
22. Engineering Ethics, National Institute for Engineering Ethics,USA
23. www.ieindia.org
24. Engineering ethics: concepts and cases – C. E. Harris, M.S. Pritchard,M.J.Rabins
25. Resisting Bureaucratic Corruption: Alacrity Housing Chennai (Teaching CaseStudy)
26. -S. Ramakrishna Velamuri -CEIBS
27. CONSTRUCTION CONTRACTS,http://www.jnormanstark.com/contract.htm
28. Internet and Business Handbook, Chap 4, CONTRACTSLAW, http://www.laderapress.com/laderapress/contractslaw1.html
29. Contract&Agreements , http://www.tco.ac.ir/law/English/agreements/General/Contract%20Law/C.htm
30. Contracts,http://206.127.69.152/jgretch/crj/211/ch7.ppt
31. Business & Personal Law. Chapter 7. "How ContractsArise", http://yucaipahigh.com/schristensen/lawweb/lawch7.ppt
32. Types of Contracts,http://cmsu2.cmsu.edu/public/classes/rahm/meiners.con.ppt
33. IV. TYPES OF CONTRACTS AND IMPORTANTPROVISIONS, http://www.worldbank.org/html/opr/consult/guidetxt/types.html
34. Contract Types/Pricing Arrangements Guideline- 1.4.G(11/04/02), http://www.sandia.gov/policy/14g.pd

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