Course Title	: Engineering Graphics **R- 2013**	**Number of Credits**	: 4
Department	: Computer Science and Engineering	**Programme**	**:** B.E
Semester	: 1	**Academic Year**	: 2013-2014
Course Instructor	: Varun B, AP/ME		

Prerequisite Courses:

1. Engineering Maths
2. Drawing Skills

Text book:

1. Bhatt N.D. and Panchal V.M., "Engineering Drawing", Charotar Publishing House, 50th Edition, 2010.

References:

1. Gopalakrishna K.R., "Engineering Drawing" (Vol. I&II combined), Subhas Stores, Bangalore, 2007.
2. Luzzader, Warren.J. and Duff,John M., "Fundamentals of Engineering Drawing with an introduction to Interactive Computer Graphics for Design and Production, Eastern Economy Edition, Prentice Hall of India Pvt. Ltd, New Delhi, 2005.
3. Shah M.B., and Rana B.C., "Engineering Drawing", Pearson, 2nd Edition, 2009.
4. Venugopal K. and Prabhu Raja V., "Engineering Graphics", New Age International (P) Limited, 2008.
5. Natrajan K.V., "A text book of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2009.
6. Basant Agarwal and Agarwal C.M., "Engineering Drawing", Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
7. S.Gowri and T Jeyapoovan .,"Engineering Graphics" VIKAS publishing house Pvt Ltd,Sixth Edition

Publication of Bureau of Indian Standards:

- IS 10711 – 2001: Technical products Documentation – Size and lay out of drawing sheets.
- IS 9609 (Parts 0 & 1) – 2001: Technical products Documentation – Lettering.
- IS 10714 (Part 20) – 2001 & SP 46 – 2003: Lines for technical drawings.
- IS 11669 – 1986 & SP 46 – 2003: Dimensioning of Technical Drawings.
- IS 15021 (Parts 1 to 4) – 2001: Technical drawings – Projection Methods.

Special points applicable to University Examinations on Engineering Graphics:

1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size.
4. The examination will be conducted in appropriate sessions on the same day

E-Learning Resources	**:** http://nptel.iitm.ac.in/
Instructor URL	**:** bvarunsclass.weebly.com
Instructor Mail	**:** varun692@yahoo.co.in

COURSE PLAN

S.No	Topics to be Covered	No of Periods	Reference Book &Pg No
CONCEPTS AND CONVENTIONS (Not for Examination) 1			
1	Importance of graphics in engineering applications – Use of drafting instruments –	1	R7,1-40
2	BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.	1	
UNIT I PLANE CURVES AND FREE HAND SKETCHING 5+9			
1	Basic Geometrical constructions, Curves used in engineering practices:	1	
2	Conics – Construction of ellipse, parabola and hyperbola by eccentricity method	3	R7, 44-53
3	Construction of cycloid – construction of involutes of square and circle	3	
4	Drawing of tangents and normal to the above curves,	1	R7,7.1-7.16
5	Scales: Construction of Diagonal and Vernier scales.	1	R7,4.1-4.2
6	Visualization concepts and Free Hand sketching: Visualization principles	1	R7,245-247
7	Representation of Three Dimensional objects – Layout of views	1	R7,11.1-11.38
8	Free hand sketching of multiple views from pictorial views of objects	3	
UNIT II PROJECTION OF POINTS, LINES AND PLANE SURFACES 5+9			
1	Orthographic projection- principles-Principal planes-First angle projection-projection of points.	2	R5,12.1-12.10
2	Projection of straight lines (only First angle projections) **Inclined to both the principal planes (VP and HP)**	4	R7,90-115
3	Determination of true lengths and true inclinations by rotating line method and traces	2	R7,90-115
4	Projection of planes (polygonal and circular surfaces) **Inclined to both the principal planes (VP and HP)** by rotating object method.	6	R4,15.15-15.21
UNIT III PROJECTION OF SOLIDS 5 + 9			
1	Projection of simple solids like prisms, when the axis is inclined to one of the principal planes by rotating object method	1	R5,16.1-16.10
2	Projection of Solids **Axis Parallel to HP and Inclined to VP**	5	R7,221-238
3	Projection of Solids **Axis Parallel to VP and Inclined to HP**	5	R7,195-220
4	Rotating Object method, Auxiliary plane method.	3	R7, 195-220
UNIT IV PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES 5+9			
1	Sectioning of Solids in simple vertical position when the Cutting plane is **Perpendicular to HP and Parallel to VP**	5	R4,18.1-18.36
2	Sectioning of Solids in simple vertical position when the Cutting plane is **Perpendicular to VP and Parallel to HP**	5	
3	Development of lateral surfaces of simple and sectioned solids – Prisms, pyramids cylinders and cones.	2	R7,336-360
4	Development of lateral surfaces of solids with cut-outs and holes	2	
UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS 6 + 9			
1	Principles of isometric projection – isometric scale	3	R4,221-21.7

2	Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones	4	R4,21.7-21.34
3	Combination of two solid objects in simple vertical positions and miscellaneous problems.	4	R4,21.35-21.42
4	Perspective projection of simple solids-Prisms, pyramids and cylinders by visual ray method.	4	R7,440-474

COMPUTER AIDED DRAFTING (Demonstration Only) 3

- Introduction to drafting packages and demonstration of their use.

Lecture Hours:
      Monday   : 1.25 PM – 2.15 PM (Test Hour)
      Tuesday   : 8.45 AM – 9.35 AM
      Wednesday : 11.35 AM – 12.25 PM

Practical Hours
      Thursday   : 9.35 AM – 12.25 AM

Course Assessment Plan:
1. Internal Assessment (20)
1.1 Internal Assessment Test 1 for 50 Marks. (3*15=45 & 5 Marks for Presentation)
1.2 Internal Assessment Test 2 for 50 Marks. (3*15=45 & 5 Marks for Presentation)
1.3 Internal Assessment Test 3 for 50 Marks. (3*15=45 & 5 Marks for Presentation)
Tests as per the schedule given by the university – Average of the above performance are considered for assessment out of 15.
Course Attendance
Assessment out of 5

Attendance Percentage	Marks
96-100	5
91-95	4
86-90	3
81-85	2
76-80	1
≤75	0

2. External Assessment (80)
University will conduct end semester examination for 100 marks (5*20=100)
Performance will be considered for assessment out of 80.

Course Outcomes:
1. Student's ability to hand letter will improve.
2. Student's ability to perform basic sketching techniques will improve.
3. Students will be able to draw orthographic projections and sections.
4. Student's ability to use architectural and engineering scales will increase.
5. Students ability to produce engineered drawings will improve
6. Student's ability to convert sketches to engineered drawings will increase.
7. Students will become familiar with office practice and standards.
8. Students will become familiar with Auto Cad two dimensional drawings.
9. Students will develop good communication skills and team work.

Course Objectives:
  A. Increase ability to communicate with people
  B. Learn to sketch and take field dimensions.
  C. Learn to take data and transform it into graphic drawings.
  D. Learn basic Auto Cad skills.
  E. Learn basic engineering drawing formats
  F. Prepare the student for future Engineering positions

Programme Objectives:
  - Apply knowledge of computing, mathematics, science, and engineering in the field of Computer Science.
  - Design and conduct experiments, as well as analyze and interpret data by means of writing efficient algorithms and computer programs.
  - Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
  - Design a software system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
  - Select and use appropriate Software Tools, Techniques, and Hardware Resources or other modern engineering tools, necessary for computation and engineering with the understanding of the limitations.
  - Communicate effectively, comprehend and write effective report and design documentation, make effective presentations, apply ethical principles and commit to professional ethics and responsibilities in national and multinational organizations.

Course Instructor   **HOD-ME**   **PRINCIPAL**