ENGINEERING GRAPHICS

Introduction

Know your Faculty

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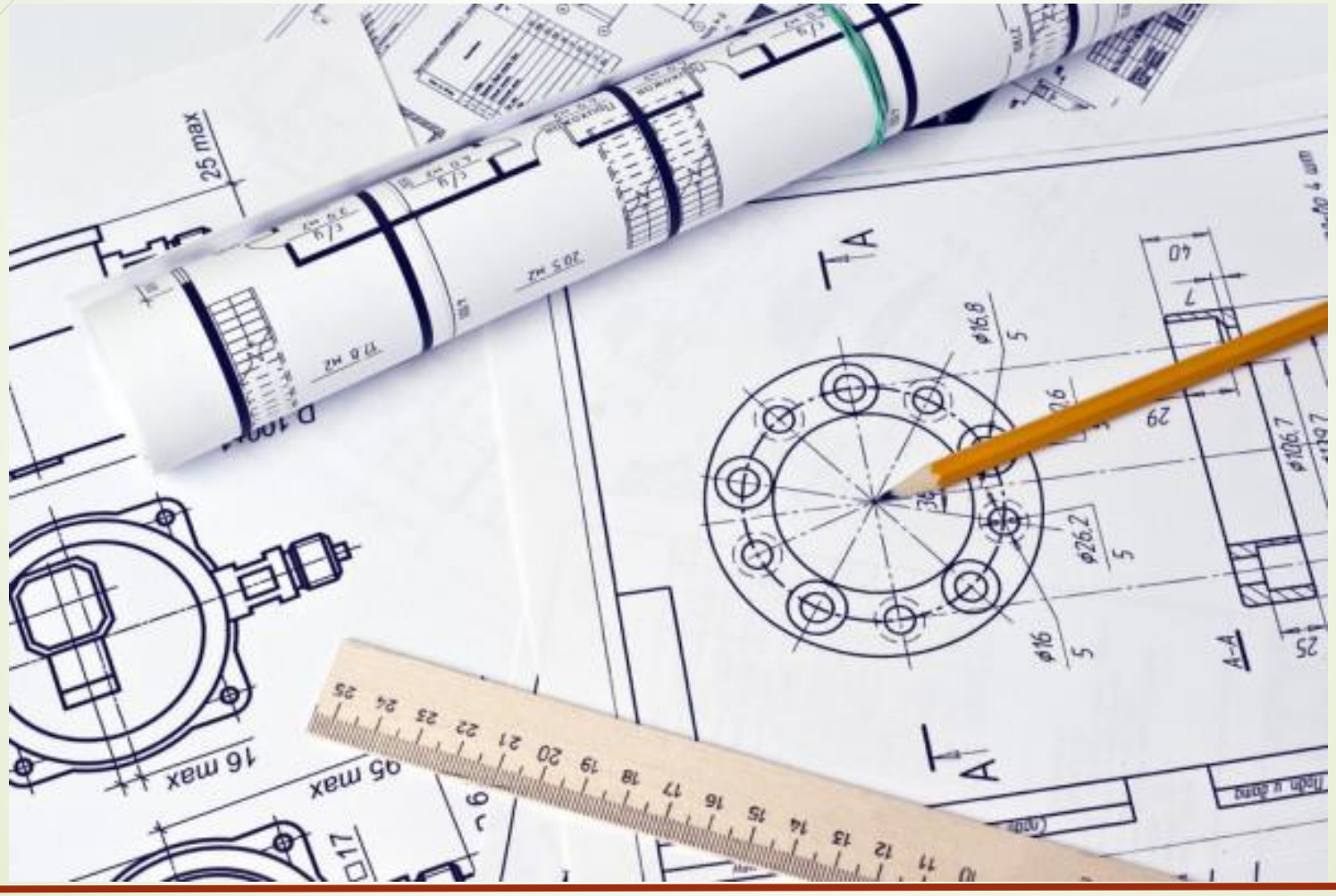
Topics covered in today's class

- Drawing Vs Engineering Drawing
- Syllabus
- Course Outcomes
- Program Outcomes

Drawing
is an **ART**

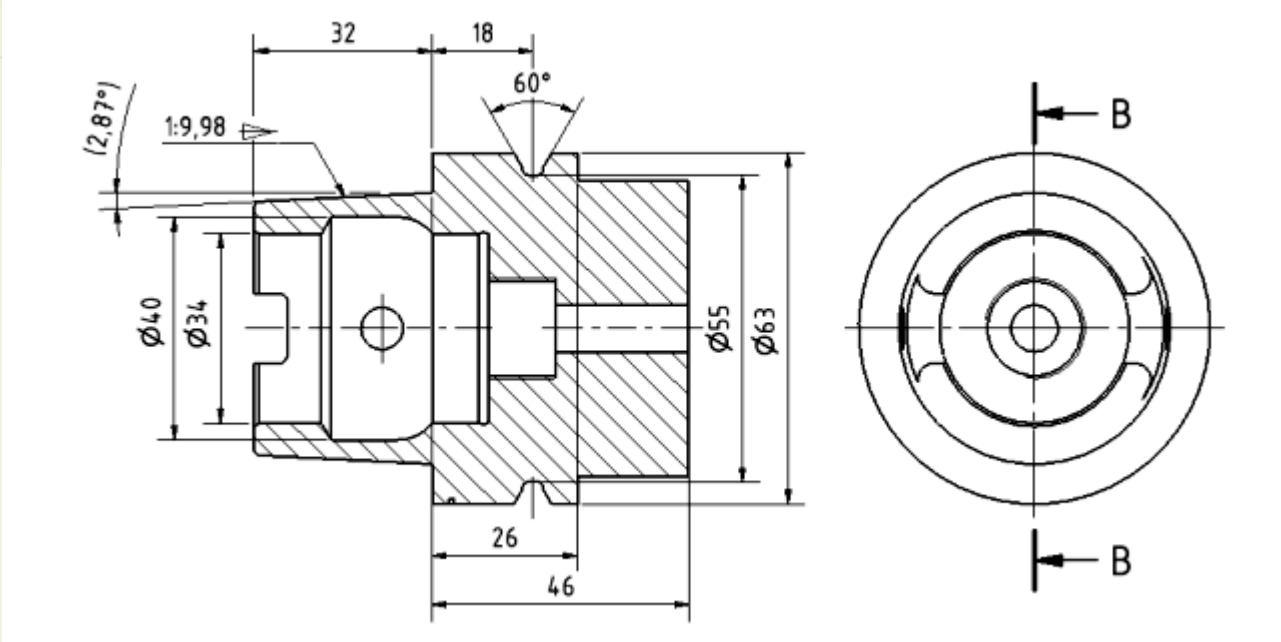
Engineering Drawing

Is a **Skill**

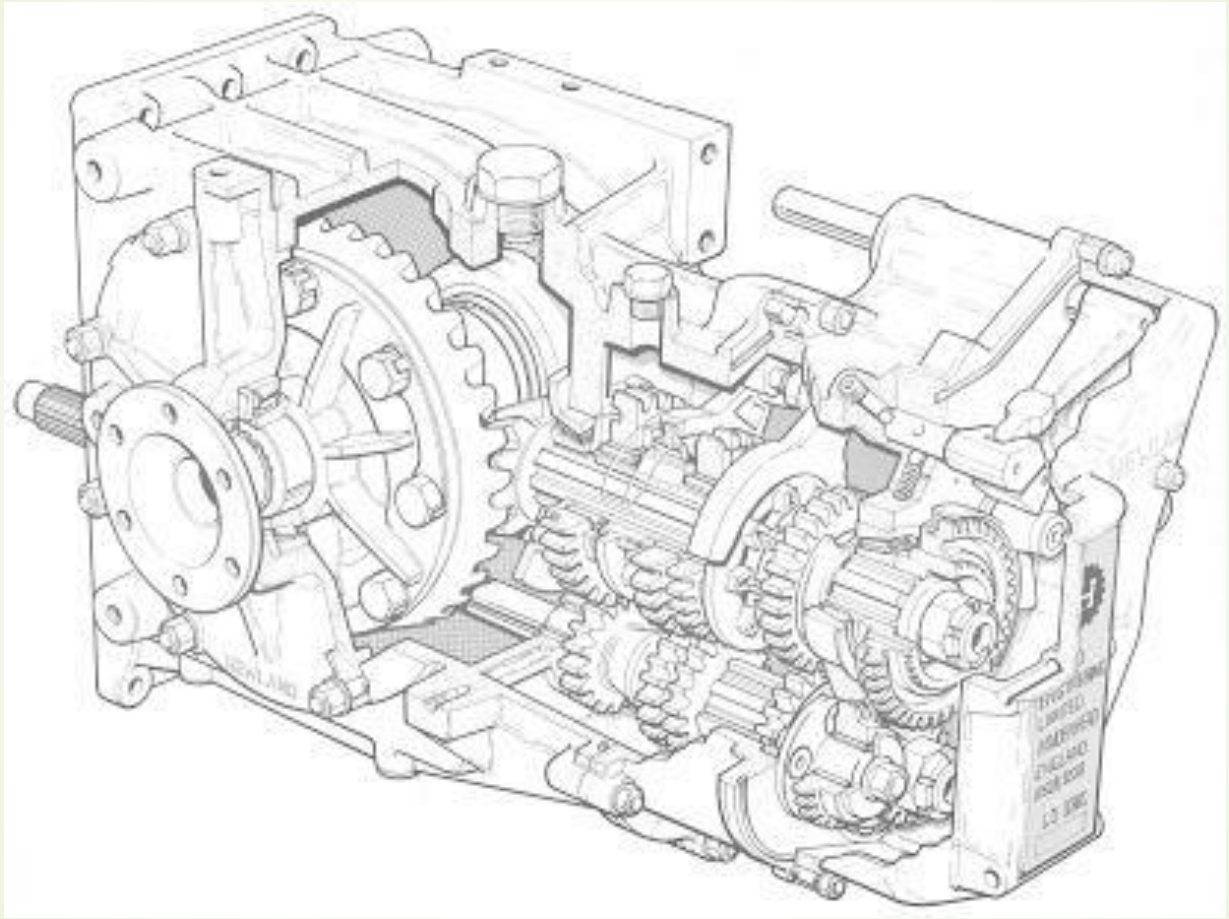


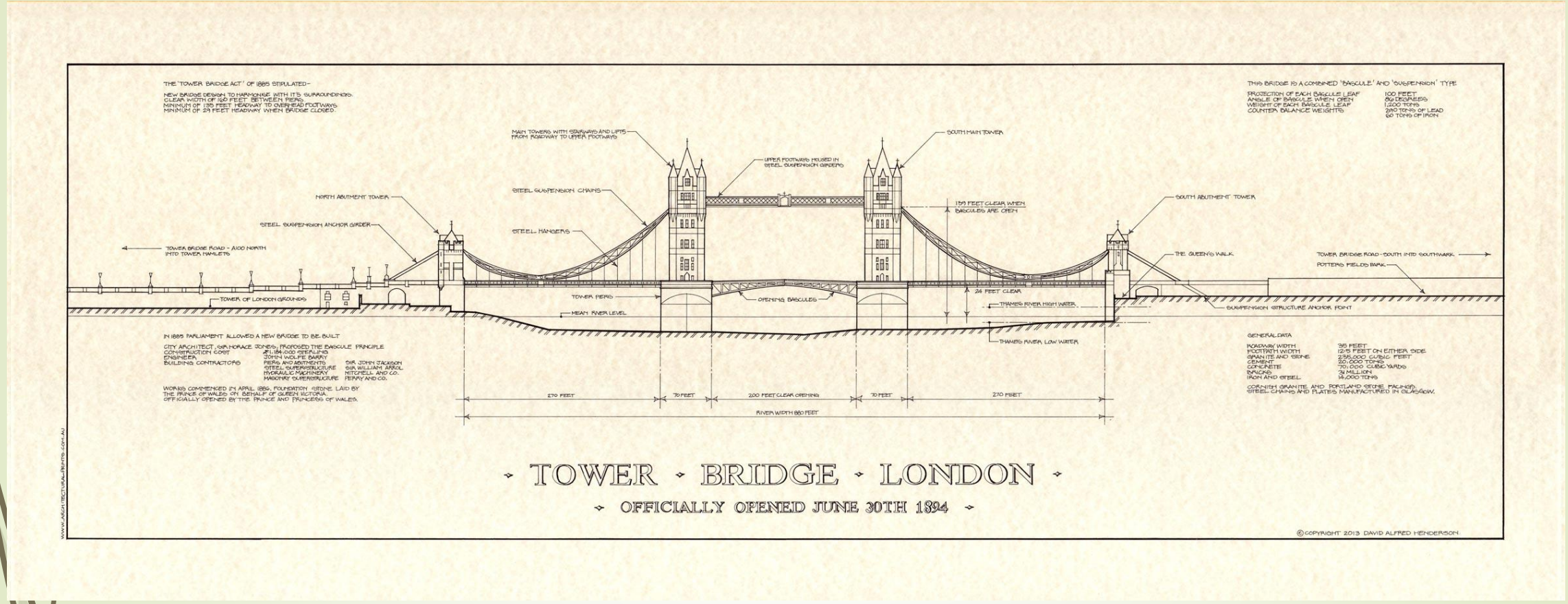

A picture is worth a thousand words

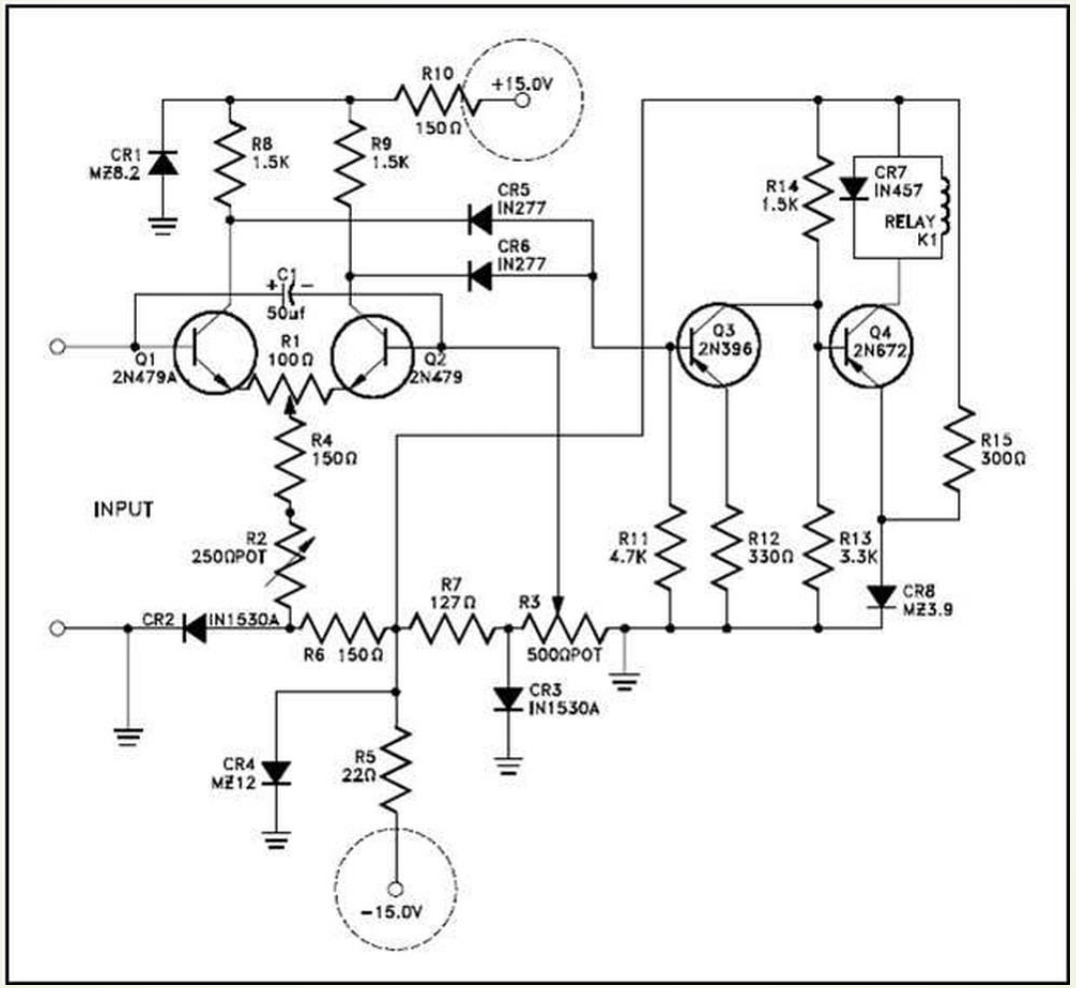
Creamy, Delicious, Yummy!!, Smooth, colours, waffles, texture, Strawberry, chocolate, vanilla, mango, butterscotch, sugar, dessert, peaceful, cold, comforting, stress free, mint, toppings, dripping, fun, cheat meal, calories, sprinkles, chunks, fudges, sundae

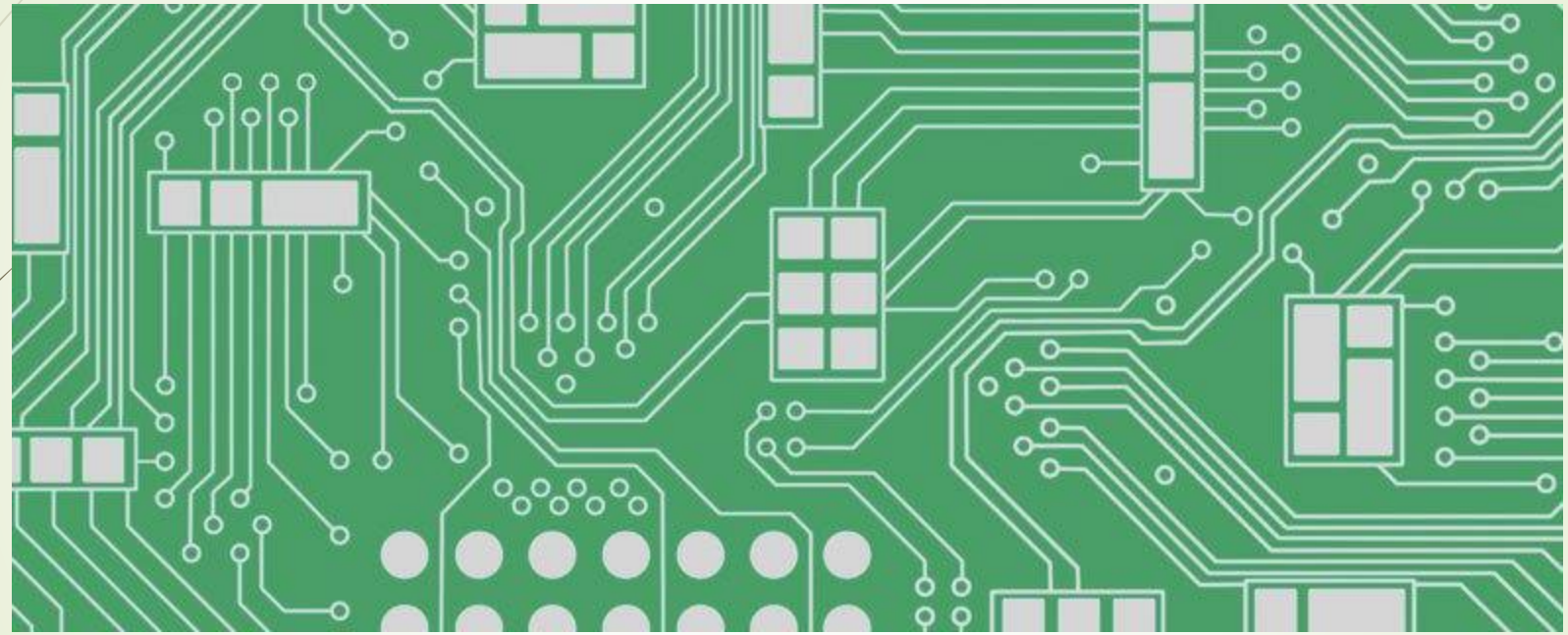


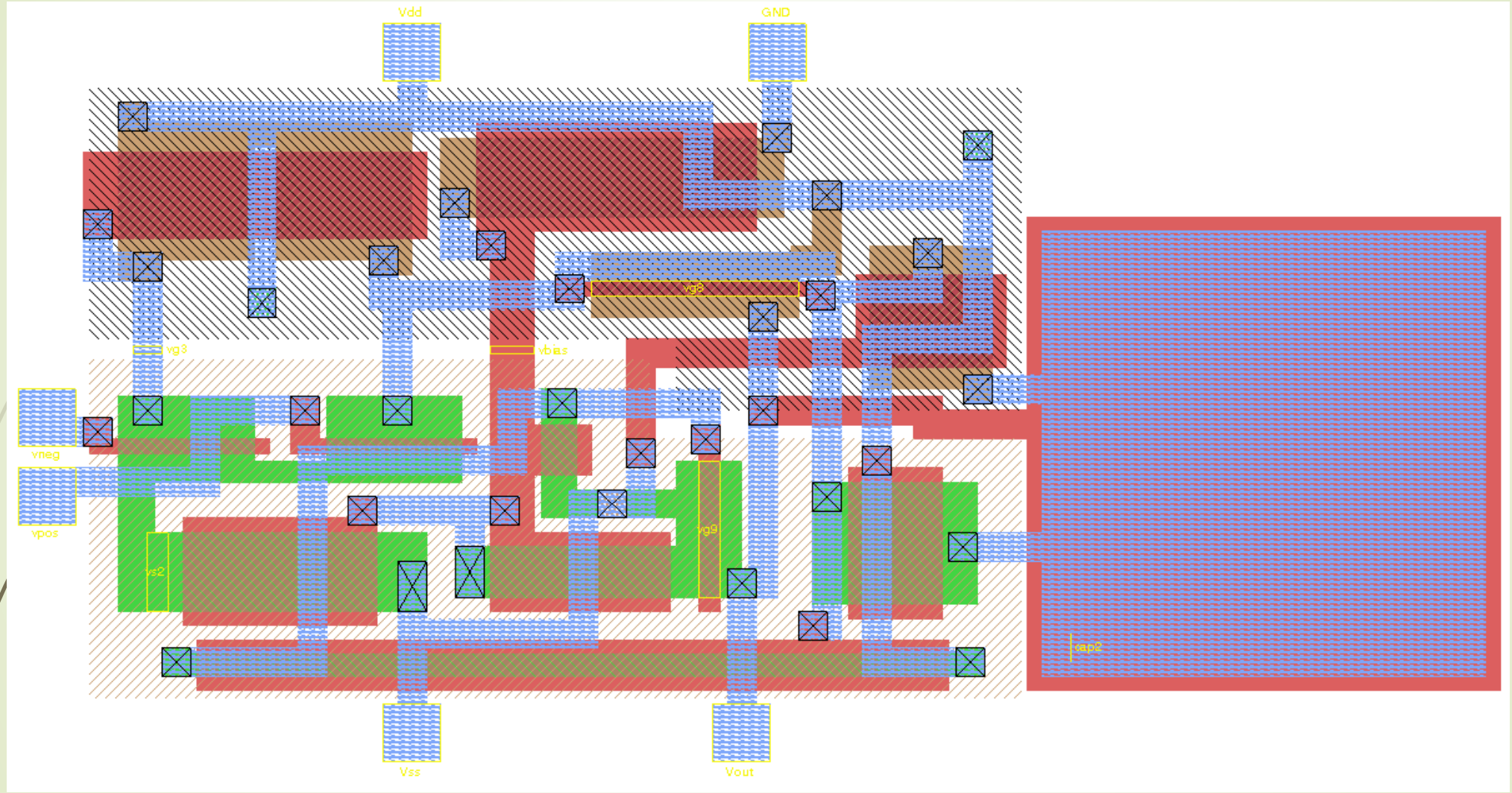
In engineering a good drawing is worth more than thousand words!



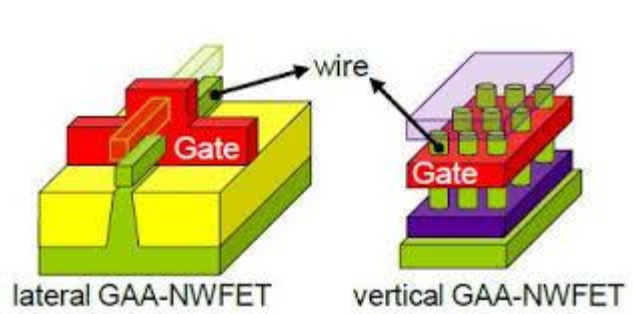

THE 'TOWER BRIDGE ACT' OF 1885 STIPULATED-
NEW BRIDGE DESIGN TO HARMONISE WITH IT'S SURROUNDINGS.
CLEAR WIDTH OF 160 FEET BETWEEN PIERS.
MINIMUM OF 135 FEET HEADWAY TO OVERHEAD FOOTWAYS.
MINIMUM OF 29 FEET HEADWAY WHEN BRIDGE CLOSED.
THIS BRIDGE IS A COMBINED 'BASCULE' AND 'SUSPENSION' TYPE
PROTECTION OF EACH BASCULE LEAF 100 FEET
ANGLE OF BASCULE WHEN OPEN 86 DEGREES
WEIGHT OF EACH BASCULE LEAF 1,200 TONS
COUNTER BALANCE WEIGHTS 280 TONS OF LEAD
60 TONS OF IRON
MAIN TOWERS WITH STAIRWAYS AND LIFTS FROM ROADWAY TO UPPER FOOTWAYS
SOUTH MAIN TOWER
UPPER FOOTWAYS HOUSED IN STEEL SUSPENSION GIRDERS
STEEL SUSPENSION CHAINS
NORTH ABUTMENT TOWER
135 FEET CLEAR WHEN BASCULES ARE OPEN
SOUTH ABUTMENT TOWER
STEEL SUSPENSION ANCHOR GIRDER
STEEL HANGERS
TOWER BRIDGE ROAD - A100 NORTH INTO TOWER HAMLETS
THE QUEEN'S WALK
TOWER BRIDGE ROAD - SOUTH INTO SOUTHWARK
POTTERS FIELDS PARK
TOWER OF LONDON GROUNDS
TOWER PIERS
OPENING BASCULES
24 FEET CLEAR
THAMES RIVER HIGH WATER
MEAN RIVER LEVEL
SUSPENSION STRUCTURE ANCHOR POINT
THAMES RIVER LOW WATER
IN 1885 PARLIAMENT ALLOWED A NEW BRIDGE TO BE BUILT
CITY ARCHITECT, SIR HORACE JONES, PROPOSED THE BASCULE PRINCIPLE
CONSTRUCTION COST £1,184,000 STERLING
ENGINEER JOHN WOLFE BARRY
BUILDING CONTRACTORS PIERS AND ABUTMENTS SIR JOHN JACKSON
STEEL SUPERSTRUCTURE SIR WILLIAM ARROL
HYDRAULIC MACHINERY MITCHELL AND CO.
MASONRY SUPERSTRUCTURE PERRAY AND CO.
WORKS COMMENCED IN APRIL 1886. FOUNDATION STONE LAID BY THE PRINCE OF WALES ON BEHALF OF QUEEN VICTORIA.
OFFICIALLY OPENED BY THE PRINCE AND PRINCESS OF WALES.
270 FEET
70 FEET
200 FEET CLEAR OPENING
70 FEET
270 FEET
RIVER WIDTH 880 FEET
GENERAL DATA
ROADWAY WIDTH 35 FEET
FOOTPATH WIDTH 12.5 FEET ON EITHER SIDE
GRANITE AND STONE 235,000 CUBIC FEET
CEMENT 20,000 TONS
CONCRETE 70,000 CUBIC YARDS
BRICKS 3½ MILLION
IRON AND STEEL 14,000 TONS
CORNISH GRANITE AND PORTLAND STONE FACINGS.
STEEL CHAINS AND PLATES MANUFACTURED IN GLASGOW.
TOWER · BRIDGE · LONDON
OFFICIALLY OPENED JUNE 30TH 1894
©COPYRIGHT 2013 DAVID ALFRED HENDERSON


R10
+15.0V
150Ω
CR1
MZ8.2
R8
1.5K
R9
1.5K
CR5
IN277
CR6
IN277
C1
50μf
R14
1.5K
CR7
IN457
RELAY
K1
Q1
2N479A
R1
100Ω
Q2
2N479
Q3
2N396
Q4
2N672
R4
150Ω
R15
300Ω
INPUT
R2
250ΩPOT
R11
4.7K
R12
330Ω
R13
3.3K
CR8
MZ3.9
R7
127Ω
R3
CR2
IN1530A
R6 150Ω
500ΩPOT
CR3
IN1530A
CR4
MZ12
R5
22Ω
-15.0V




Vdd
GND
vg3
vbias
vneg
vpos
vs2
vg9
Vss
Vout


Gate
Planar FET
FinFET
GAAFET
(Nanowire)
MBCFET™
(Nanosheet)


wire
Gate
Gate
lateral GAA-NWFET
vertical GAA-NWFET


ANNOUNCING NVIDIA A100
GREATEST GENERATIONAL LEAP – 20X VOLTA
54 BILLION XTORS
3RD GEN TENSOR CORES
SPARSITY ACCELERATION
MULTI INSTANCE GPU
3RD GEN NVLINK & NVSWITCH
54B xtors | 826mm² | TSMC 7N | 40GB Samsung HBM2 | 3rd gen Tensor Core GPU | 600 GB/s NVLink

Syllabus

Course Name	: Engineering Graphics
Course Code	: 18ESME03L
Number of Credits	: 03
L-T-P	: 0 - 2 - 2
Total Number of Modules	: 05
Total Number of Contact Hours	: 45

Engineering Graphics
18ESME03L

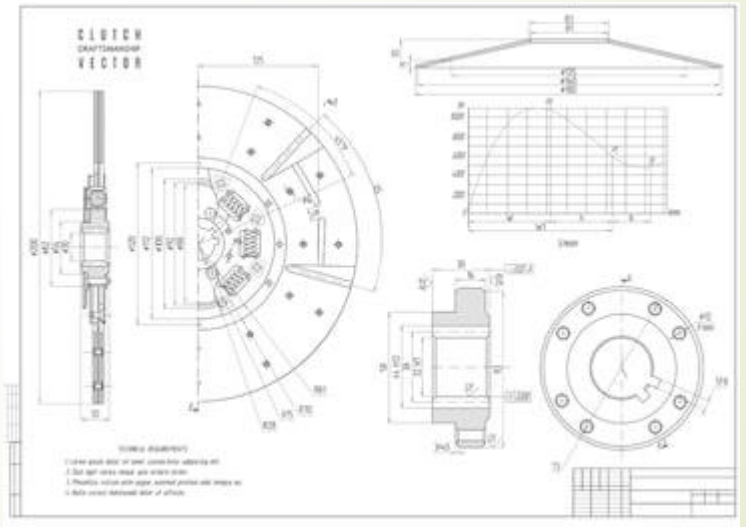
Module 1	Module 2	Module 3	Module 4	Module 5
Introduction to Engineering Drawing	Orthographic Projections	Projections of Regular Solidsandsection of solids	Isometric Projection	Demonstration of a simple team design project

Unit I : Introduction to Engineering Drawing

- Principles of Engineering Graphics and their significance
- Overview of Computer Graphics Demonstrating knowledge of the theory of CAD software consisting of set up of the drawing page and the printer, including scale settings
- Setting up of units and drawing limits, applying Annotations, layering & other functions in the CAD Tool
- Planar projection theory, including sketching of perspective, isometric, multi-view, auxiliary, and section views

Unit II : Orthographic Projections

- Principles of Orthographic
- Projections of Points and Lines inclined to both planes
- Projections of planes
- inclined Planes.

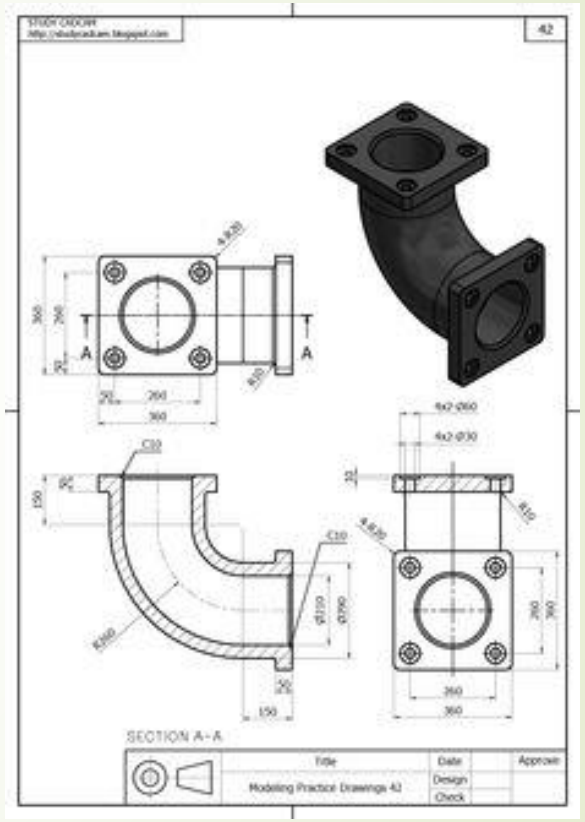


Unit III : Projections of Regular Solids and Section of Solids

- Projection of Prism
- Projection of Cylinder
- Projection of Pyramid
- Projection of Cone
- Draw the sectional orthographic views of geometrical solids
- Development of surfaces, Solids - Prism, Pyramid, Cylinder and Cone

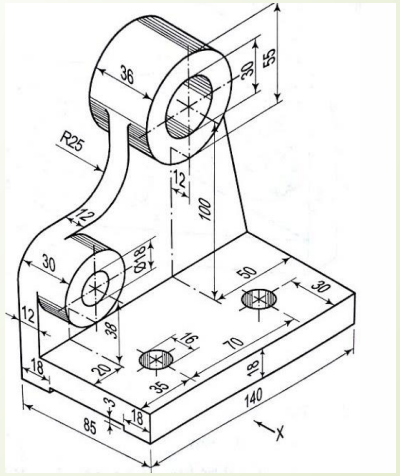
Please note:

Projection of solids are without beta calculation and freely suspended problems



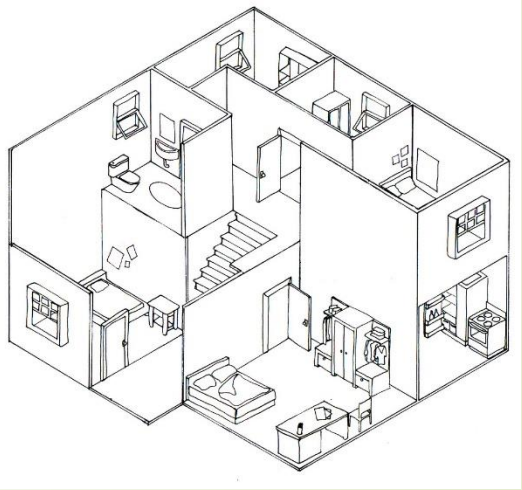
Unit IV :Isometric Projection

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



Unit V : Demonstration of a simple team design project

- Use of solid-modeling software for creating associative models at the component and assembly levels
- Floor plans that include: windows, doors, and fixtures such as
  - Bath
  - Sink
  - Shower



Text books & Reference books

Text Books

1)Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House

2)Shah, M.B. & Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education

Reference Book

1)Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers

2)Agrawal B. & Agrawal C. M. (2012), Engineering Graphics, TMH Publication

Learning Outcomes (Course Outcomes)

At the end of the course student will be able to

CO 1: Familiarize with the fundamentals and standards of Engineering graphics

CO 2: Draw the orthographic projections of points, lines and plane surfaces

CO 3: Sketch the sectional views of simple solids and extend its lateral surfaces

CO 4: Visualize and to project isometric views of simple solids

CO 5: Prepare and interpret the drawings of buildings

CO 6: Generate orthographic and isometric views through CAD software

PO's: Program Outcomes

1.	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2.	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3.	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4.	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5.	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6.	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO's: Program Outcomes

7.	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8.	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9.	**Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10.	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11.	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12.	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Thank You