Effective: Fall 2017
Last Reviewed: 03/09/2017

Course Outline

BASIC COURSE INFORMATION

Course Number:	ENGR 226
Course Title:	ENGINEERING DRAWING
Lecture Hours Per Week:	3.00
Lab Hours Per Week:	3.00
Contact Hours Per Week:	6.00
Total Lecture Hours:	54.00
Total Lab Hours:	54.00
Total Contact Hours:	108.00
Credits:	4.00

Fall semester term is 18 weeks. Spring semester term is 17 weeks. The term length multiplier is 17.5 weeks. Curriculum is calculated off of 18 weeks.

Catalog Description:
Introduces engineering drawing using AutoCAD (2D) and Solidworks (3D). Topics include geometric construction, orthographic projection, isometrics, sectionals, auxiliaries, descriptive geometry, fasteners, dimensioning and tolerances, working drawings, and the engineering design process.

Schedule Description:
Introduces engineering drawing using AutoCAD (2D) and Solidworks (3D). Transfer: CSU; UC. (formerly ENGR26)

Division:	Engineering & Technology
Department:	Engineering
Minimal Qualification Discipline Designation (MQDD):	Engineering OR Engineering Support OR Engineering Technology
Degree Applicability:	Credit - Degree Applicable

Methods of Instruction:

- Lecture and/or discussion
- Laboratory/Studio/Activity
- Distance Education
- Lecture/Lab

Grading Method:

- Letter Grade Only

Repeatability:
Course Cap: 30

STUDENT LEARNING OUTCOMES

1. Use CAD software to create 2D engineering drawing given a 2D sketch.
2. Use CAD software to create multiviews and sections views from pictorials.
3. Use CAD software to: -find the true length of lines. -find the area of a first auxiliary shape. -find the area of a second auxiliary shape. -create pictorials.
4. Use CAD software to: -Apply standards of dimensioning and tolerancing to engineering drawings. -Draw basic 3D objects using 3D modeling software.

COURSE CONTENT

Objectives:
Upon completion of this course the student will be able to:

1. describe the engineering design process.
    - Quizzes/Exams
    - Written/Typed Homework
2. use basic engineering drawing concepts to construct drawings.
    - Quizzes/Exams
3. visualize objects given a drawing,
    - Quizzes/Exams
4. use of engineering/architect scales.
    - Quizzes/Exams
5. construct multiview drawings.
    - Quizzes/Exams
6. draw first auxiliary views.
    - Quizzes/Exams
7. draw second auxiliary views.
    - Quizzes/Exams
8. draw isometric drawings.
    - Quizzes/Exams
9. construct section views.
    - Quizzes/Exams
10. fully dimension multiview drawings according to the standards.

- Quizzes/Exams

11. apply basic tolerances to drawings.
    - Quizzes/Exams
12. apply the basic concepts of Geometric Dimension Tolerances (GDT).
    - Quizzes/Exams
13. use different threaded fastener terminology.
    - Quizzes/Exams
14. draw detail and assembly drawings.
    - Quizzes/Exams
15. use AutoCAD to construct 2D drawings.
    - Quizzes/Exams
16. use Solidworks to draw simple objects in 3D.
    - Quizzes/Exams

Topics & Scope:

1. Engineering Design
   (Obj 1)
2. Basic engineering drawing concepts
   (Obj 2)
3. Visualization skills
   (Obj 3)
4. Use of engineering/architect scales
   (Obj 4)
5. Multiview drawings
   (Obj 3, 4, 5)
6. Auxiliary Views
   (Obj 3, 6)
7. Descriptive Geometry
   (Obj 7)
8. Pictorial projections
   (Obj 3, 8)
9. Section Views
   (Obj 3, 5, 9)
10. Tolerancing
    (Obj 10, 11)
11. Dimensioning
    (Obj 10)
12. Threaded fastener terminology
    (Obj 13)
13. Detail and Assembly Drawings
    (Obj 14)
14. AutoCAD (2D)
    (Obj 15)
15. Solidworks (3D)
    (Obj 16)

Assignments:
2 hours of independent work done out of class per each hour of lecture or class work, or 3 hours lab, practicum, or the equivalent, per unit.

1. Complete homework assignments using AutoCAD. (Obj 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18)
2. Complete homework assignments using Solidworks. (Obj 11, 19)

Class participation and assignments require and develop critical thinking.

1. Take an isometric drawing and construct mutiviews. (Obj 8)
2. Take a multiview drawing and apply dimensions according to the standards. (Obj 13, 14, 15)

Methods of Evaluation:

- Written/Typed Homework
- Quizzes/Exams

Texts, Readings, and Materials:

- **Textbooks**
  Jones, J *Engineering Drawing* Class4me, (2016).
- **Software**
  AutoCAD 2016 or later Autodesk, Drawing program.
  Solidworks 2015 or later Dassault Systèmes SOLIDWORKS Corp., Drawing software.

UC Transfer Course

University of California, Santa Barbara

CSU Transfer Course

California Polytechnic State University