

EML2023 Computer Aided Graphics and Design

Fall 2010 Syllabus

(Modifications to this syllabus may be required during the semester. Any changes to the syllabus will be posted on the course web site and announced in class.)

1. **Catalog Description:** Credit hours: 3; Sketching, descriptive geometry, computer graphics, computer aided design, and design projects.
2. **Pre-requisites and Co-requisites:** None
3. **Course Objectives:** The primary objective of the course is to educate students on the main concepts of computer aided design: solid modeling, assembly design, engineering drawing conventions, dimensioning and tolerance specification and descriptive geometry. In addition conceptual design skills such as creative thinking and idea illustration by sketching are taught.
4. **Contribution of course to meeting the professional component:** The course provides experience to work professionally in mechanical systems areas including the design and realization of such systems through a final project which provides the students an opportunity to develop the design of a mechanical device starting from the conceptual design all the way to detailed drawings with all dimensions and tolerances specified. The course content can be characterized as: 10% mathematics and 90% engineering design.
5. **Relationship of course to program outcomes:** The course addresses the following ABET program outcomes.
(g) Communicate effectively: The course teaches graphical communication language that engineers practice. **[high coverage; method of assessment is assignments, exam, project]**
(i) Recognize the need for, and engage in life long learning: The course emphasize the need for life long learning by encouraging students to learn many aspects of CAD software and its user interface on their own since such engineering tools keep evolving. **[medium coverage; method of assessment is the project]**
(k) Use the techniques, skills, and modern engineering tools necessary for engineering practice: The course teaches students free hand drawing skills, graphical techniques as well as use of modern CAD software. **[medium coverage; method of assessment is through assignments, exams and the final project]**
6. **Instructor:** Ashok V. Kumar
Office location: MAE-A, 222
Telephone: 352-392-0816
E-mail address: akumar@ufl.edu
Office hours: MWF 9th period
7. **Teaching Assistants** - To be announced.
8. **Material and Supply Fee:** \$91.67
9. **Textbooks Recommended (Not required):**
 - (i) Title: Engineering Design and Graphics with SolidWorks
Author: James D. Bethune; Publisher: Prentice Hall
Edition: Latest; ISBN: 9780135024294
 - (ii) Title: Geometric Dimensioning and Tolerancing Workbook
Author: Neumann, A.; Available at Target Copy Center, 1412 W University Ave.
 - (iii) Title: Graphics Technology
Author: James H. Earle; Publisher: Prentice Hall
Edition: 2nd edition; ISBN: 9780131476431
 - (iv) Title: Parametric Modeling with SolidWorks
Author: Randy Shih and Paul Schilling; Publisher: SDC Publication
Edition: Latest; ISBN: 9781585035205**SOFTWARE:** SolidWorks (Instructions for downloading at: <http://cimar.mae.ufl.edu/solidworks/>)

10. **Recommended Reading:** See <https://lss.at.ufl.edu/> (use sakai system)

11. **Course Contents:**

- (i) Introduction to Mechanical Design
- (ii) 3D visualization and sketching: Isometric, oblique and perspective views
- (iii) 6-view orthographic projections
- (iv) Drawing generation in CAD software
- (v) Constrained sketching in CAD software
- (vi) CAD: Solid Modeling, feature based parametric models and design intent
- (vii) Dimensioning and tolerances
- (viii) Hole basis and Shaft basis ANSI and ISO Tolerances
- (ix) Clearances and Fits
- (x) Threaded fasteners
- (xi) Geometric Dimensioning and Tolerances (GDT)
- (xii) Descriptive geometry concepts
- (xiii) Introduction to rapid prototyping

12. **Attendance and Expectations:** Attendance is mandatory and you are responsible for the knowledge of all scheduling and policy announcements in class. Please respect the rights of other students in the class and do not engage in activities that disturb or distract the class.

13. **Grading: Homework** = 30%, **Project** = 20% and **Four Exams** = 50%

14. **Grading Scale:** >93%= A, 90-90.29%=A-; 87-89.9% = B+, 84-86.9% = B, 80-83.9% = -B, 77-79.9% C+, 74-76.9% = C, 70-73.9 = C-, etc.

15. **Make-up Policy:** Late assignments will receive 50% credit if submitted within a week and will not be graded thereafter. Make up exams will be given only for students with medical reasons for missing the exam. Documentation in the form of a doctor's note must be provided for make-up exams and homework.

16. **Honesty Policy** – All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

17. **Accommodation for Students with Disabilities** – Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

18. **UF Counseling Services** – Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.

19. **Software Use** – All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.