New Jersey Institute of Technology
Department of Engineering Technology
MET 205 Advanced CAD

COURSE NUMBER   MET 205

COURSE NAME   Advanced CAD

COURSE STRUCTURE   2-2-3 (lecture hr/wk - lab hr/wk – course credits)

COURSE COORDINATOR/   Dr. J. Sodhi / Dr. J. Sodhi
INSTRUCTOR

COURSE DESCRIPTION   This course introduces advanced topics in engineering design utilizing Computer Aided Design (CAD). This includes 3D modeling, design intent, engineering drawings, and geometric dimensioning and tolerancing (GD&T). Upon successful completion of this course, students should be able to use CAD as a design tool for both individual parts and assemblies.

PREREQUISITE(S)   MET 103

COREQUISITE(S)   None

REQUIRED, ELECTIVE OR   Required
SELECTED ELECTIVE

REQUIRED MATERIALS   No Textbook. Must purchase Solid Professor Academic Student License: https://www.solidprofessor.com/student-store/school
Class Name: F25-MET205 Advanced CAD. Class Code: SODHI
Instructor's Lecture Notes

COMPUTER USAGE   Software: SolidWorks.
COURSE OUTCOMES(CO)   By the end of the course students should be able to:
1. Develop CAD models with Parametric CAD software.
2. Apply knowledge of design criteria to CAD.
3. Develop animated mechanisms with CAD.
4. Conduct Engineering Analysis with CAD.
5. Prepare Engineering documents/reports.

CLASS TOPICS   Sketch and Extrude, Parametric Modeling Fundamentals, Constraints & Parametric Relations, Parent/Child Relationships, Mirror & Revolve, Sweep, Pattern, Assembly, Graphic Feature, Part and Assembly Drawing Formats/Templates, Blend, Surfacing, CAD Mechanisms and Animation:

CAD Project:

Each student will model the parts for an assembly. Students will prepare engineering drawings for parts and the assembly with GD&T symbols. A Project Report will be submitted.

STUDENT OUTCOMES

The Course Learning Outcomes support the achievement of the following MET Student Outcomes and TAC of ABET Criterion 9 requirements:

Student Outcome (1) - an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
Related CO – 1-4

Student Outcome (2) - an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
Related CO – 1-4

Student Outcome (3) - an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
Related CO – 5

Student Outcome (4) - an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes;
Related CO –4

GRADING POLICY

SolidProfessor Exercises/ Quizzes	25 %
Final Project	20 %
Two Midterm Exams	30 %
Final Exam/CSWA Exam	25 %

Note: There are two midterm exams during the semester. There will be no makeup exams.

ACADEMIC INTEGRITY

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity

policy that is found at: NJIT Academic Integrity Code.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu.

GENERATIVE AI

Student use of artificial intelligence (AI) is permitted in this course for certain assignments and activities. It is not permitted to be used in the assignments noted by the instructor, as doing so would undermine student learning and achievement of course learning outcomes. Additionally, if and when students use AI in this course, the AI must be cited as is shown within the NJIT Library AI citation page for AI. If you have any questions or concerns about AI technology use in this class, please reach out to your instructor prior to submitting any assignments.

MODIFICATION TO COURSE

The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course outline.

PREPARED BY

Dr. J. Sodhi

COURSE COORDINATED BY

Dr. J. Sodhi

CLASS HOURS

Monday, Wednesday   11:30 AM – 1:35 PM   MALL PC40

OFFICE HOURS:

M 10-11:30 am, R 1-2:30 pm
Or by appointment: jaskirat.sodhi@njit.edu

COURSE POLICIES

1. Attending class, completing assignments on time, and keeping up with the class material is important for success in this course and in college. Generally, late or missed assignments **will not** be accepted except for legitimate (**pre-approved when possible**) reasons as determined by the instructor. **The method of handling late or missed work is determined by the instructor.**

2. **Missing more than 4 classes will lead to an 'F' grade in the course.** Exceptions will only be made for cases of excused absences supported by relevant documentation submitted to and verified by the office of Dean of Students.
3. The class time is **11:30 am – 1:35 pm**, leaving early will be marked as an absence.
4. During laboratory, if you are finished earlier, you must show the professor your work before you leave class
5. **ANY FORM OF CHEATING ON ASSIGNMENTS OR EXAMS WILL RESULT IN AN 'F' FOR THE COURSE**. This includes looking at another person's exam or copying another person's work for exams or assignments.
6. The part file for the assignment is required to be submitted to get credit for the assignment. Non-submission of the part file will lead to zero grade for the assignment.
7. Weekly assignments are to be turned in by the due date on Canvas.
8. Taking the midterm and final exams are mandatory to receive a final grade in the course.
9. **Assignments that are more than 2 weeks late will not be accepted**.
10. Point deduction – Late Assignments: Up to 1 Week-20%, 2 Weeks-30%
11. **At least 60% of the homework has to be submitted for a passing grade.**
12. Not submitting the final project will lead to an 'F' in the course.
13. Attendance, attitude, class participation and effort can and will be used to change borderline grades up or down.
14. For special allowances associated with disabilities student must approach the Disability Resource Center.

GRADING LEGEND

GRADE	NUMERIC RANGE
A	90 to 100
B+	85 to 89
B	80 to 84
C+	75 to 79
C	70 to 74
D	60 to 69
F	0 to 59

NJIT ONLINE INFORMATION

The instructor will discuss these requirements on the first day of the course and/or post on their Learning Management System (LMS). Please become familiar

- Canvas: https://canvas.njit.edu/

- Zoom: https://njit-edu.zoom.us/

- Online Proctoring: https://ist.njit.edu/online-course-exam-proctoring

Week	Date	Topics	Assignment
1	9/3 9/8	Course Introduction, Introduction to Sketching	Solid Professor – Assignment 1
2	9/10 9/15	Sketch Tools, Sketched Features GD&T - 1	Solid Professor – Assignment 2
3	9/17 9/22	Applied Features, Reference Geometry GD&T - 2	Solid Professor – Assignment 3
4	9/24 9/29	Patterns and Mirroring, Intro to Part Modeling GD&T - 3	Solid Professor – Assignment 4
5	10/1 10/6	Recap and Practice Problems **Exam #1**	Solid Professor – Assignment 5
6	10/8 10/13	Assembly Design I GD&T - 4	Solid Professor – Assignment 6
7	10/15 10/20	Assembly Design II GD&T - 5	Solid Professor – Assignment 7
8	10/22 10/27	CSWA Exam Introduction, CSWA skills review **Exam #2**	Solid Professor – Assignment 8
9	10/29 11/3	Drafting competencies - Drawing views GD&T - 6	Solid Professor – Assignment 9
10	11/5 11/10	Interpreting drawings for 3D Modeling GD&T - 7	Solid Professor – Assignment 10
11	11/12 11/17	Basic/Intermediate Part Creation GD&T - 8	Solid Professor – Assignment 11
12	11/19 11/24	Practice exam - Intermediate/Advanced Part Creation Project Time	Solid Professor – Assignment 12
13	12/1 12/3	Practice exam - Assembly modeling Project Time	
14	12/8 12/10	Final Review FINAL PROJECT REPORT DUE	
	TBD	**Final Exam**	