New Jersey Institute of Technology
Department of Engineering Technology
MET 307 Plastics Technology

COURSE NUMBER	MET 307
COURSE NAME	Plastics Technology
COURSE STRUCTURE	2-2-3 (lecture hr/wk - lab hr/wk – course credits)
COURSE COORDINATOR/ INSTRUCTOR	Dr. J. Sodhi/ Anthony La Rosa
COURSE DESCRIPTION	An introduction to the basic concepts of plastics conversion, resin classification, processing techniques and significant engineering properties.
PREREQUISITE(S)	CHEM 301 or CHEM 126 or CHEM 122, and MET 105 or FED 101, and MET 237 or MECH 237
COREQUISITE(S)	None
REQUIRED, ELECTIVE OR SELECTED ELECTIVE	Elective
REQUIRED MATERIALS	Erik Lokensgard, **Industrial Plastics, Theory and Applications, 6th Ed.** (ISBN-9781285061238) Paul Tran, **The Complete Guide to Mold Making with SOLIDWORKS 2025.** (ISBN 978-1-63057-720-9)
COMPUTER USAGE	Software: ***SolidWorks***.
COURSE LEARNING OUTCOMES(CO)	By the end of the course students should be able to: 1. Describe and explain different plastic material properties. 2. Describe and explain different plastic processing and finishing methods. 3. Identify and explain component design features required for the design of plastic parts. 4. Apply knowledge of plastic properties and processes to design a plastic component. 5. Prepare professional engineering documents/technical reports.
CLASS TOPICS	Plastic Properties, Injection Molded Part Design, Process and Material Selection, Fundamentals of Plastic Part Design, Introduction to Molding Processes and Equipment, Injection Systems & Gating, Introduction to Tooling and Mold-Making, Plastic Part Assembly Techniques and Decoration processes,

New Jersey Institute of Technology
Department of Engineering Technology
MET 307 Plastics Technology

Introduction to Extrusion Process, Introduction to Forming and Casting.

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 – 1-5

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 – 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 – 4-5

New Jersey Institute of Technology
Department of Engineering Technology
MET 307 Plastics Technology

GRADING POLICY

Tests (2x15%)	30 %
Homework	10 %
Projects (2)	30 %
Final Exam	30 %

Note: There are two tests during the semester.

ACADEMIC INTEGRITY

NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishments range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted. For more information on the honor code, go to https://www.njit.edu/dos/university-code-academic-integrity

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.

STUDENT BEHAVIOR

- Cellular phones must be switched to vibrate mode.
- No headphones can be worn in class or text messaging.

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

Anthony La Rosa / Dr. J. Sodhi

COURSE COORDINATED BY

Dr. J. Sodhi

New Jersey Institute of Technology
Department of Engineering Technology
MET 307 Plastics Technology

Class Hours

Tuesday 6:00 PM – 10:05 PM PC MALL 40

Office Hours

By appointment: ajl47@njit.edu

Homework & Project – Important Information

1. Projects are due on indicated dates, no late projects will be accepted.
2. Homework assignments are due on indicated dates, late homework will be marked down 20% and homework later than one week will not be accepted.
3. Homework and projects should be submitted in the format required by the instructor.

Projects requires all students to have completed the following Makerspace Training courses:

- Make 101 Introduction to the Makerspace
- Make 102 Introduction to Laser Engraving and Cutting
- Make 103 Introduction to 3D Printing

Your instructor will provide the deadline for completion of training. Information can be found here:

Training Courses for the NJIT Community | NJIT Makerspace

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

New Jersey Institute of Technology
Department of Engineering Technology
MET 307 Plastics Technology

MET 307 - COURSE OUTLINE

Week	Date	Topic	Text Sections	Assignments
1	9/2	**Lecture:** General Introduction and review of Syllabus and text. Introduction to the history of plastics and Current Plastic Materials **Lab:** Injection Molded plastic part design – Process and Material Selection Basic CAD Tutorial	Chapters 1, 2 Appendix B	HWK #1 Project #1 Assigned
2	9/9	**Lecture:** Plastic properties – Thermoplastics and Thermosets **Lab:** Plastic Part Design-Part 1(Ch.1)	Chapters 6 Appendix E & F	HWK #2
3	9/16	**Lecture:** Introduction to Molding Processes and Equipment **Lab:** Plastic Part Design-Part 2(Ch.1) Surface Repair (Ch. 2)	Chapters 10	HWK #3
4	9/23	**Lecture:** Intro to Plastic Machining and Finishing **Lab:**	Chapters 9	Test #1 Preparation Core & Cavity Exercise Plastic Knob

New Jersey Institute of Technology
Department of Engineering Technology
MET 307 Plastics Technology

Week	Date	Topic	Text Sections	Assignments
		Core & Cavity Creation (Ch. 3: 3-1 through 3-8)		
5	9/30	**Test #1** **Lab:** Planar Parting Lines (Ch. 4)		Complete Project #1
6	10/7	**Project #1 Due** **Lecture:** Introduction to Tooling and Moldmaking **Lab:** Interlock Surface (Ch. 5: 5-1 through 5-18)	Chapter 22	HWK #4 Interlock Surface Exercise Round Knob
7	10/14	**IMM Facility Field Trip**		
8	10/21	**Lecture:** Plastic part assembly techniques and Decoration Processes **Lab:** Planar Parting Lines (Ch. 4)	Chapters 18 &19	HWK #5
9	10/28	**Lecture:** Rapid Prototyping **Lab:** Interlock Surface (Ch. 5: 5-1 through 5-18)	Chapter 21	HWK #6 Project #2 Assigned Interlock Surface Exercise Round Knob (Ch. 5)

New Jersey Institute of Technology
Department of Engineering Technology
MET 307 Plastics Technology

Week	Date	Topic	Text Sections	Assignments
10	11/04	**Lecture:** Introduction to Extrusion Process, Equipment and tooling **Lab:** Non-Planar Parting Lines (Ch. 6)	Chapter 11	Test #2 Preparation
11	11/11	**Test #2** **Lab:** Manual Parting Lines (Ch. 7)		
12	11/18	**Lecture:** Introduction to Forming and Casting Processes, Equipment and tooling **Lab:** Undercuts & Slide Cores (Ch. 8) Tentative Thermoforming lab/demo at NJIT Makerspace	Chapter 14 & 15	HWK #7 & #8 Complete Project #2
13	12/2	Project #2 Due Miscellaneous Processes **Lab:** Alternative Methods (Ch. 9)		
14	12/9	**Course Review for Final** **Lab:** Using the Plastics Wizard (Ch. 11) Plastics Flow Analysis (Ch. 12)		
15	TBD	**Final**		