Catalog Description and Credit Hours of Course:

Study of chemical/physical properties of plastic materials, manufacturing processes, and mold design.

The course meets three times a week for two lecture periods (50 minutes each) and one lab period (110 minutes) for three (3) hours of credit.

Prerequisite(s): MN-354

Purposes or Objectives of Course:

1. Classify materials according to origin, properties, and applications in industry.
2. Identify and describe the various processes used to create plastic products.
3. Differentiate between material similarities and differences appropriate to the selection and use of plastics.
4. Integrate technical information necessary to select materials, design and build a part mold, and actually make the part.

Expectations of Students:

The process of manufacturing is a highly integrated and time dependant activity. As such, this class curriculum is highly integrated and designed to be time dependant as well. Therefore, students will be expected to treat each test, written assignment, and lab project as having a production deadline. Keeping in mind the very purpose of a deadline, students will be expected to:

1. Complete all projects in a timely and professional manner. Each project may be evaluated individually and as a group activity employing “normal” quality control standards. Projects are designed to demonstrate the importance of material selection and processing characteristics.
2. Satisfactorily pass all tests. These tests will include material presented in the textbook, lectures, and projects.
3. Students are responsible for all lecture notes, homework problems, quizzes, and other activities related to course content.
4. Students are responsible for completing all projects, even through time constraints may require students to complete some projects outside normal class/lab hours.
5. As a general rule, late work will not be accepted. However, it is recommended that students with later assignments set an appointment with instructor to ensure that the material in the assignment is understood within the context of this class.
6. Definitions and vocabulary of Plastic Materials and Processes are key elements in this class and will be emphasized accordingly.
Course Content or Outline:

1. Polymers including micro and macro structures                           1
2. Physical properties including mechanical and viscoelastic behavior      2 - 3
3. Plastic processes including injection, blow, and film                  4 – 8
4. Mold design and material factor constraints                           9 –10
5. Mold design project including process and set-up                       11 - 15

Textbook:


Student Evaluation:

Evaluation is based on a total accumulation of points earned on all assignments including homework problems, quizzes, and other activities related to course content. The approximate distribution of points is as follows:

- Homework 20%
- Projects/Reports 50%
- Test/Quizzes 30%

Your total score will be reflected as a percentage of 100.

A = 100 – 90
B. = 89 – 80
C. = 79 – 70
D. = 69 – 60
F. = Below 59

Required materials and Equipment:

1. Approved, ANSI Z87.1 of Fed. GG-G351b, safety glasses or goggles are required for laboratory activities and observing demonstrations unless otherwise indicated by instructor. (Safety glasses are available for purchase through the class at a cost of $4.50 each pair)

2. Other safety type clothing or equipment will be supplied by the instructor as needed.

3. However, students have the option to purchase a shop apron ($5.00) for the protection of their street clothing during laboratory activities.

4. There is a $20.00 lab fee for this course to cover the cost of the aluminum used for mold making and plastic resins. Should time allow students to do additional projects, students will need to purchase these additional materials outside class or from the class as required.

5. The lab fees and any additional fees for purchase of safety glasses, shop aprons, and additional materials will be billed to students at the end of the semester.