

Plastics Product Design Specialty

Department of Mechanical Engineering



M.E. Plastics Products students get hands-on experience with the Injection Molding Machine in Kettering's Polymer Processing Lab.

Kettering University

Origin of Plastics Product Design at Kettering University

In the early 1960's when Kettering University was known as GMI, the Process Engineering Department purchased its first plastic processing machinery. At that time Don Paulson and William Frizelle were our plastics faculty. Don developed a cavity-pressure sensor and went on to found Control Processes, which still serves the industry. Bill chose an academic career and is now a

distinguished faculty member at Rochester Institute of Technology in Rochester, NY. Within this same time period, Dr. G. Reginald Bell developed a course in Polymer Science, which he continues to teach here at Kettering. Dr. Bell is a member of the Chemistry Department and a recipient of multiple distinguished teaching awards.

Evolution & Growth

When the Mechanical Engineering Department was formally constituted in the late 1970's, the existing Polymer Processing course and the Polymer Science course were integrated into a manufacturing concentration, which also included courses in more traditional manufacturing. About that time Prof. Dave Harry, Emeritus, created a design/properties course offering, which further broadened our program.

The strength and growth of the plastics industry allowed the M.E. Department to create a stand-

alone concentration in Plastics.

About 30 Mechanical Engineering students elect and complete this concentration each year. In addition to the courses noted above, there are two other courses that include "Introduction to Finite Elements" and a concentration elective. The program, like all specialties, makes up 10% of the Mechanical Engineering program. It is not a degree in Plastics Engineering. It is, however, a unique course of study and a guaranteed entry into a dynamic and growing industry.

What Courses Will I Take?

Regardless of the chosen concentration, every student pursuing an M.E. degree at Kettering takes 39 courses and a thesis. Four of the 39 courses define a

specialty. A representative program for a Plastics Product Design student follows on the back page of this flyer.



Students pursuing the Plastics Product Design may someday find themselves involved in the design and manufacturing of child restraints for automobiles like the one above.

Freshman I Term

CHEM-135/136	Principles of Chemistry & Lab
MECH-100	Engineering Graphical Communication ³
ORTN-101	Orientation
MATH-101	Calculus I
COMM-101	Written & Oral Communication I

Freshman II Term

HUMN-201	Introduction to Humanities
MATH-102	Calculus II
IME-100	Interdisciplinary Design & Manufacturing ³
PHYS-114/115	Newtonian Mechanics & Lab

Sophomore I Term

ECON-201	Economic Principles
MATH-203	Multivariate Calculus
MECH-210	Mechanics I
PHYS-224/225	Electricity and Magnetism & Lab

Sophomore II Term

CHEM-145/146	Industrial Organic Chemistry & Lab
EE-212 &	Applied Electrical Circuits Lecture
MECH-231L	Signals for Mechanical Systems Lab
MATH-204	Differential Equations & Laplace Transforms
MECH-212	Mechanics II

Junior I Term

IME-301	Engineering Materials
MATH-305	Numerical Methods and Matrices
MECH-310	Mechanics III
MECH-311	Intro. to Mechanical System Design
SSCI-201	Introduction to the Social Sciences

Junior II Term

COMM-301	Written & Oral Communication II
MATH-408	Probability & Statistics
MECH-300	Computer Aided Engineering ⁴
MECH-312	Mechanical Components I
MECH-320	Thermodynamics

Senior I Term

IME-507	Polymer Processing
MECH-322	Fluid Mechanics
MECH-330	Dynamic Systems I
	Advanced Humanities Elective
	Specialty Related M.E. Elective ^{5,8}

Senior II Term

MECH-420	Heat Transfer
MECH-430	Dynamic Systems II
MECH-580	Properties of Polymers
	Advanced Social Science Elective

Senior III Term

LS-489	Senior Seminar
MECH-422	Energy Systems Lab
MECH-584	Plastics Product Design
	Specialty Related Elective ^{5,8}



Material considerations is a key component in Plastics Product Design and can include materials ranging from polypropylene to engineering plastics such as polystyrene, ABS, polyurethanes, polycarbonates and nylons.

³Approximately one-half of the students take MECH-100 FR-I and IME-100 FR-II, the other one-half take IME-100 FR-I and MECH-100 FR-II.

⁴Approximately one-half of the students take MECH-300 JR-II and MECH-311 JR-I, the other one-half take MECH-311 JR-II and MECH-300 SR-I.

⁵Students select a Specialty Related Elective with approval of their M.E. Specialty Advisor.

⁸Elective courses may vary in lecture and/or laboratory credits and terms from those shown.