



University of Wisconsin - Madison

College of Engineering [EGR]

Last Offered: 2013 Fall [1142]

Direct Link to this Syllabus :

<http://aefis.engr.wisc.edu/index.cfm/page/CourseAdmin.ViewABET?coursecatalogid=245&pdf=True>

1. M E 429, Metal Cutting

2. Credits : 3.00 Contact Hours : 3.0

3. Textbook and Materials : Fundamentals of Machining and Machine Tools; G. Boothroyd and W.A. Knight; third; 2006

4. Specific Course Information :

a. **Brief description of the content of the course (Course Catalog Description) :** Theory and applications of metal cutting; basic principles; significant features of current research. Chip formation mechanics, three-dimensional machining operations, tool life and machinability, economics of metal removal, and precision engineering.

b. **Pre-requisites or Co-requisites :** Sr st in engr or cons inst

c. **This is a Elective course.**

5. Specific Goals for the Course :

a. Course Outcomes :

1. To gain an understanding and appreciation of the breadth and depth of the field of metal cutting and the related area of machine tools.
2. To learn and apply the basic terminology associated with these fields
3. To become familiar with the basic principles and theories used to describe the machining process.
4. To develop an ability to solve homework problems, some done in a team environment
5. To gain some ability to recognize situations in the machining/manufacturing environment that would suggest the use of certain quantitative and qualitative methods to assist in developing solutions.
6. To increase your knowledge and broaden your perspective of the manufacturing - industrial - world in which you will contribute your talents and leadership

b. ABET Student Learning Outcomes :

- (e) Ability to identify, formulate and solve engineering problems.
- (f) Understanding of professional and ethical responsibility.
- (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- (i) Recognition of the need for and an ability to engage in life-long learning.
- (j) Knowledge of contemporary issues.
- (k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

6. Brief List of Topics to be Covered :

Machine tool and machining operations

Mechanics of metal cutting

Temperatures in metal cutting

Tool life and tool wear

Machinability

Cutting fluids and surface roughness

Economics of metal cutting

Cutting tools and chip control

Grinding

Machine tool vibrations

Plant tour - Ingersoll (Rockford, IL)