

ME 497, Manufacturing Processes
Course Syllabus
School of Engineering and Applied Sciences
Western Kentucky University
Winter 2019

Instructor Information

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Class Information

- Location: SH 1102
- Time: MTWRF, 9:00am - 12:15pm

Prerequisites: Calculus II (**Math 137**), Materials and Methods of Manufacturing (**ME 240**)

Credit weight: 3.0

Course format: Face-to-face

Required Readings

S. Kalpakjian and S. Schmid, 2013, Manufacturing Engineering & Technology, 7th ed., Prentice Hall. (Other legal version/edition of this specific text may be used, but *assignments will be from the 7th edition*)

Course Description

This curriculum provides students with the basic science and engineering science background required to lead the design and manufacturing of products for profit in a globally competitive marketplace. Successful students will understand auto manufacturing in the broadest sense and emphasis is placed on the basic science of converting select raw materials into quality products. Successful graduates will know and be able to compare the difference between the mechanical behaviors of materials, select materials for automotive manufacturing based on desirable physical properties and lead the design of selected important manufacturing processes used in industry. The auto manufacturing processes studied include the engineering science of: rolling of metals, forging, extrusions and drawing of metals, sheet metal forming, turning, milling, drilling, CNC machining and some non-traditional manufacturing methods.

Course Outcomes:

- Recognize and explain major manufacturing processes: machining and material removing (e.g. drilling, milling, turning), forming (e.g. forging, extrusion, rolling, stamping), and selected advanced manufacturing methods (e.g. EDM, ECM, plasma)
- Compare and contrast manufacturing processes with consideration to the relationships among material properties, processing methods, and process machinery and their associated economics, and safety considerations
- Apply and grow the use of ethics and responsibility as it is applied to engineering work
- Dissect an engineering product by distinguishing the manufacturing processes used to manufacture its parts

Evaluation Methods

The course grade will be evaluated as follows:

Method of Evaluation	% of Final Grade
Assignments	15
Quizzes	15
Two Tests (35% each)	70

Attendance and Punctuality

Attendance in classes is critical to student success; students should seize the opportunity to share and discuss information in classes. The course is designed to move swiftly and efficiently. If a student is going to miss a class, s/he should inform the instructor before missing the class. To be considered in attendance for a class, students must arrive by the official class starting time and students must remain in class for the entire period.

Grading

Grades for the course will be consistent with the following table, per the

Letter	A	B	C	D	F
% Range	90-100	80-89	70-79	60-69	Below 60

Late or Missed Assignments

If a student is experiencing difficulty meeting a deadline, he/she is encouraged to contact the course instructor as soon as possible to discuss the situation in advance of the deadline.

Calculators

You will only be allowed to use an NCEES approved calculator on exams, the same calculators used on the FE and PE exams. I suggest you get one now and start practicing. You can find the published list at <http://ncees.org/exams/calculator-policy/>

Academic Integrity

“The maintenance of academic integrity is of fundamental importance to the Western Kentucky University. Thus it should be clearly understood that acts of plagiarism or any other form of cheating will not be tolerated and that anyone committing such acts risks punishment of a serious nature.”

Plagiarism

“To represent written work taken from another source as one's own is plagiarism. Plagiarism is a serious offense. The academic work of a student must be his/her own. One must give any author credit for source material borrowed from him/her. To lift content directly from a source without giving credit is a flagrant act. To present a borrowed passage without reference to the source after having changed a few words is also plagiarism.”

Special Accommodations:

In compliance with university policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Office of “The Student Accessibility Resource Center” (Formerly Student Disability Services) in the first floor of the Downing Student Union, 1074. The phone number is 270 745 5004. Please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

Covered Topics

The following topics list is approximate.

- General introduction- Chapter 0
- Materials-Metals- Chapters 5,6
- Theory of machining- Chapter 21
- Machining processes- Chapters 23,24
- **Test 1**
- NC and CNC machining- Chapter 37
- Cutting tools materials, tool life and geometry- Chapters 21, 22
- Bulk metal forming processes- Chapters 13,14,15

Test 2

Discrimination, Harassment, Sexual Misconduct/Assault Policies

Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's Title IX Sexual Misconduct/Assault Policy (#0.2070) at

<https://wku.edu/eoo/documents/titleix/wkutitleixpolicyandgrievanceprocedure.pdf> and

Discrimination and Harassment Policy (#0.2040) at

https://wku.edu/policies/hr_policies/2040_discrimination_harassment_policy.pdf.

Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Andrea Anderson, [270-745-5398](tel:270-745-5398) or Title IX Investigators, Michael Crowe, [270-745-5429](tel:270-745-5429) or Joshua

Hayes, [270-745-5121](tel:270-745-5121).

Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are “Responsible Employees” of the University and **MUST** report what you share to WKU’s Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU’s Counseling and Testing Center at [270-745-3159](tel:270-745-3159).