

ENTC 380 - Computer-Aided Manufacturing – Fall 2009

- OBJECTIVES:**
1. To provide the student with the ability to analyze and evaluate production systems, automation technologies, material handling and tracking technologies, and manufacturing systems. Prerequisites: ENTC 181 and MATH 151.
 2. To provide the student with the ability to recognize, describe and employ computer software and equipment needed to create a computer model and manufacture a product.
- INSTRUCTOR:** Louis McDaniels; 512-496-8768 (Mobile – NO TEXT MESSAGES) or 979-458-4509 (Campus office); Email: mcdaniels@entc.tamu.edu, Office: THOM 118F.
- LAB INSTRUCTOR:** Adam Farmer, Email: Adam@entc.tamu.edu, Office: THOM 119.
- MEETING TIME:** Lecture: MW from 10:20 – 11:10 a.m. in THOM 112D.
- OFFICE HOURS:** W 2:30-3:30 p.m. or by appointment.
- TEXT:** Groover, M.P., *Automation, Production Systems, and Computer-Integrated Manufacturing*, Prentice Hall, 2008, 3rd Edition
- ATTENDANCE:** Attendance is per University Regulations and is strongly recommended. Beginning with week 3, each unexcused absence more than three reduces your final course grade by one percentage point up to a maximum of five percentage points. See below for excused absence rules.

EXCUSED ABSENCES:

- a. See Student Rule 7 (<http://student-rules.tamu.edu/rule07>). In the event of illness, confirmation of visit to a health care professional affirming date and time of visit must be presented according to Section 7.1.6.2.b.
- b. ***Make-up of labs and scheduled exams will not be allowed except for an excused absence.*** Due dates will be set by Mr. McDaniels or the lab TA as appropriate. If a quiz is missed due to an excused absence, the student will be awarded the class average quiz grade for that quiz.

GRADING:

Exams (3x) ⁽¹⁾	60%	90% ≤ A
Optional Final Exam) ⁽¹⁾		80% ≤ B < 90%
Laboratory ⁽¹⁾	20%	70% ≤ C < 80%
Attendance and Participation	5%	60% ≤ D < 70%
Quizzes	10%	F < 60%
Homework ⁽²⁾	5%	

NOTES:

1. The three regular exams are required. The optional final exam may not replace a regular exam missed because of an unexcused absence. Makeup and late work in lecture and lab will not be accepted except for excused absences per TAMU regulations. Due dates will be set by Mr. McDaniels or the lab TA as appropriate.
2. Homework will be regularly assigned. Answers will be posted at <http://etidweb.tamu.edu/ftp/ENTC380/>
3. All changes in attendance to lab sections must be approved in writing by the lab TA.

Plagiarism and Intellectual Property: The handouts used in this course are copyrighted. “Handouts” means all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless you are expressly granted permission by the copyright holder.

As commonly defined plagiarism consists of passing off as one’s own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions regarding plagiarism, please consult the latest issue of the *Texas A&M University Student Rules*, under the section “Scholastic Dishonesty.”

ENTC 380 - Computer-Aided Manufacturing – Fall 2009

American with Disabilities (ADA) Policy Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Cain Hall, Rm. B118, or call 845-1637. For additional information visit <http://disability.tamu.edu>.

Academic Integrity: “An Aggie does not lie, cheat or steal or tolerate those who do.” The Aggie Code of Honor is an effort to unify the aims of all Texas A&M men and women toward a high code of ethics and personal dignity. For most, living under this code will be no problem, as it asks nothing of a person that is beyond reason. It only calls for honesty and integrity, characteristics that Aggies have always exemplified. The Aggie Code of Honor functions as a symbol to all Aggies, promoting understanding and loyalty to truth and confidence in each other.

See <http://student-rules.tamu.edu/rule20> and <http://www.tamu.edu/aggiehonor/> for more information about Student Rules and the Aggie Honor System.

Lecture Schedule

Week	Monday	Wednesday	Chapter ¹
1 – 08/31	Introduction	Manufacturing Operations	1 & 2
2 – 09/07	Manufacturing Operations	Manufacturing Models	2 & 3
3 – 09/14	Manufacturing Models	TPM – Reliability, Availability and Equipment Effectiveness	3 & Notes
4 – 09/21	Quiz ; Numerical Control Code Overview	Review	7
5 – 09/28	Exam 1	Introduction to Material Handling	9
6 – 10/05	Material Transport Systems	Material Transport Systems	10
7 – 10/12	Material Transport Systems	Storage Systems	10 & 11
8 – 10/19	Storage Systems	Automatic Data Capture	12
9 – 10/26	Quiz	Review	
10 – 11/02	Exam 2	Introduction to Manufacturing Systems	13
11 – 11/09	Single Station Manufacturing Cells	Manual Assembly Lines	14 & 15
12 – 11/16	Automated Assembly Systems	Cellular Manufacturing	17 & 18
13 – 11/23	Flexible Manufacturing Systems	Take Home Quiz Due	19
14 – 11/30	Review	Exam 3	
15 – 12/07	Grades available for review	Reading Day	
	Tuesday		
12/15	Optional Final Exam: 8 – 10 a.m.		

¹ Partial notes on most lecture topics are available at <http://etidweb.tamu.edu/ftp/ENTC380/>. These notes contain material that may not be mentioned in lecture and should be reviewed in preparation for exams and quizzes.

ENTC 380 - Computer-Aided Manufacturing – Fall 2009

ABET Outcomes: The following areas will receive particular emphasis as a part of the ABET accreditation process.

- Mastery of the knowledge, techniques, skills, and modern tools of manufacturing systems and processes.
- Ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology.
- Ability to identify, analyze, and solve technical problems.
- Commitment to quality, timeliness, and continuous improvement.
- An ability to apply the technologies of manufacturing processes, automation, and production operations to the solution of manufacturing problems.

Relation between ENTC 380 Course Objectives and MMET Program Outcomes

The Manufacturing and Mechanical ET program is designed to provide the student with several skills at the time of graduation. These skills and abilities are stated in the following MMET Program Outcomes:

A Manufacturing and Mechanical Engineering Technology graduate has the following abilities at the time of graduation:

- (a) *An appropriate mastery of the knowledge, techniques, skills and modern tools of manufacturing and mechanical systems and processes.*
- (b) *An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology.*
- (c) *An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes.*
- (d) *An ability to apply creativity in the design of systems, components or processes appropriate to program objectives.*
- (e) *An ability to function effectively on teams.*
- (f) *An ability to identify, analyze and solve technical problems.*
- (g) *An ability to communicate effectively.*
- (h) *A recognition of the need for, and an ability to engage in lifelong learning.*
- (i) *An ability to understand professional, ethical and social responsibilities.*
- (j) *A respect for diversity and a knowledge of contemporary professional, societal and global issues.*
- (k) *A commitment to quality, timeliness, and continuous improvement.*
- (l) *An ability to apply the technologies of engineering materials, manufacturing processes, automation, production operations, quality, statics, dynamics, strength of materials, fluid power or fluid mechanics, thermodynamics, and either electrical power or electronics, and statistics to the solution of manufacturing problems.*
- (m) *An ability to apply with an added technical depth: manufacturing processes, mechanical design, electro-mechanical devices and controls (automation), and production operations.*
- (n) *An ability to apply physics having an emphasis in applied mechanics, plus added technical topics in physics and inorganic chemistry principles related to manufacturing and mechanical systems and processes.*
- (o) *An ability to successfully complete a comprehensive design project related to mechanical or manufacturing fields.*

The following table indicates how this course contributes to the achievement of the overall programmatic educational outcomes. Entries with an “H”, “M”, and “L”, refer to high, medium, and low relevancy, respectively.

COURSE OBJECTIVE	MMET Program Educational Outcome															
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
1. To provide the student with the ability to analyze and evaluate production systems, automation technologies, material handling and tracking technologies, and manufacturing systems.																
2. To provide the student with the ability to recognize, describe and employ computer software and equipment needed to create a computer model and manufacture a product.	H	M			L	M	L				H	M				