Course Syllabus

✎ Edit

Design for Manufacturing and Assembly

Professor: Joshua D. Summers

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E-Mail Correspondence:

Dr. Summers will set aside Thursday mornings from 8:00-10:00 am EST to respond to all course e-mails. He will respond as possible throughout the week also. All e-mails must use the following subject format:

ME 4550/6550: Learning Gate XXX: Question

Without this subject line, ***e-mails will not be answered***.

Prerequisites:

ME 3120 (or consent)

Special Accommodations:

If special accommodations are required for the student, please see the professor within 48 hours of the launch of the course so that proper arrangements may be made.

Textbooks:

Poli, C., (2001), *Design for Manufacturing: A Structured Approach*, Butterworth-Heinemann, Boston, MA: ISBN 0-7506-7341-9.

NOTE: this book should be available on-line through the library.

Additional notes will be made available to supplement this book.

Course Description:

Concepts of product and process design for manufacturing and assembly are presented. Topics include product design for manufacturing, inspection, and assembly considering both manual and automated approaches. The primary objectives of this course are to develop in the student:

1. To show students the relationships between part design and its manufacturability.
2. To teach students methods of DFM and DFA.

Learning Gates:

This course is structured to build upon the student's experiences, encourage the student to discover new material independently, and foster a habit of self-critique. To do this, assignments is designed to help the student understand the material, not to create "busy work".

- Learning Gates should be professional quality (clear, concise, correct, and conscientious).
- Learning Gates should be submitted with a **standard cover sheet** 📄.
- Ethical behavior and professional standards are expected in this class. All work submitted is to be that of the individual student unless cooperative effort is authorized in specific instances. The University and College honor codes will be observed. Refer to your student handbook regarding University policies on academic dishonesty.

Computer Usage

Word processing, spreadsheet, Internet, and mathematical computation utilities will be used by the students throughout the course. Out of class tutorials may be offered to augment students' existing capabilities.

Academic Integrity

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form

Graduate Term Paper (ME 6550)

Graduate students are expected to write a term paper on a topic related to material covered in the course, but not explicitly addressed. A proposal must be submitted and approved by the professor before the term project is completed. The proposal should consist of three parts:

- Title and brief description of the topic

- Justification for why this topic is of interest
- Brief explanation of the work entailed in addressing the term project

The proposals will be evaluated for effort and for intellectual challenge. Once approved, the student will complete the term project and submit the paper in ASME Conference format, using correct citations. The term papers are limited to 10 pages.

Grading:

Each Learning Gate will be evaluated for completeness, correctness, and conciseness. If a Learning Gate is deemed to be acceptable, students will receive full credit. The number of Learning Gates to be completed for each grade are as follows.

- A: 25/27 Learning Gates
- B: 20/27 Learning Gates
- C: 15/27 Learning Gates
- D: 10/27 Learning Gates (NOTE: for Graduate Students, a D is considered an F)

In addition, students will be evaluated against the number of completed and acceptable DFX rules:

- A: >40 rules
- B: >30 rules
- C: >15 rules
- D: >5 rules

The **DFX rule template** and examples (**1**, **2**, **3**) are available.

Finally, Graduate Students will be graded (A, B, C, F) on their submitted term projects. A is exceptional, B is good quality, and C is acceptable.

The final grade in the course is the lowest of the components:

- ME 4550: Learning Gate and DFX rules
- ME 6550: Learning Gate, DFX rules, and Term Project

The Engineer's Creed:

As a Profession Engineer, I dedicate my professional knowledge and skill to the advancement and betterment of human welfare.

I pledge:

- to give the utmost of performance
- to participate in none but honest enterprise
- to live and work according to the laws of man and the highest standards of professional conduct
- to place service before profit, the honor and standing of the profession before personal advantage, and the public welfare above all other considerations

In humility and with need for Divine Guidance, I make this pledge.

Engineering Ethics (The Canons):

1. Engineers shall hold paramount the safety, health, and welfare of the public in the performance of their professional duties.
2. Engineers shall perform services only in areas of their competence.
3. Engineers shall continue their professional development throughout their careers, and should provide opportunities for the professional and ethical development of engineers under their supervision.
4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest or the appearance of conflicts of interest.
5. Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
6. Engineers shall associate only with reputable persons or organizations.
7. Engineers shall issue public statements only in an objective and truthful manner.
8. Engineers shall consider environmental impact in the performance of their professional duties.

Course Summary:

Date	Details	
Fri Jul 13, 2018	📝 **Term Project Proposal** (https://clemson.instructure.com/courses/45896/assignments/317589)	due by 11:59pm
Wed Aug 1, 2018	📝 **Rules 1-5** (https://clemson.instructure.com/courses/45896/assignments/317580)	due by 11:59pm
	📝 **Learning Gate 1a** (https://clemson.instructure.com/courses/45896/assignments/317552)	due by 11:59pm
	📝 **Learning Gate 1b** (https://clemson.instructure.com/courses/45896/assignments/317553)	due by 11:59pm
	📝 **Learning Gate 2a** (https://clemson.instructure.com/courses/45896/assignments/317554)	due by 11:59pm
	📝 **Learning Gate 2b** (https://clemson.instructure.com/courses/45896/assignments/317555)	due by 11:59pm
	📝 **Learning Gate 2c** (https://clemson.instructure.com/courses/45896/assignments/317556)	due by 11:59pm
	📝 **Learning Gate 2d** (https://clemson.instructure.com/courses/45896/assignments/317557)	due by 11:59pm
	📝 **Learning Gate 2e** (https://clemson.instructure.com/courses/45896/assignments/317558)	due by 11:59pm
	📝 **Learning Gate 2f** (https://clemson.instructure.com/courses/45896/assignments/317559)	due by 11:59pm

Date	Details	
	📝 **Learning Gate 2g** **(https://clemson.instructure.com/courses/45896/assignments/317560)**	due by 11:59pm
	📝 **Learning Gate 2h** **(https://clemson.instructure.com/courses/45896/assignments/317561)**	due by 11:59pm
	📝 **Learning Gate 2i** **(https://clemson.instructure.com/courses/45896/assignments/317562)**	due by 11:59pm
	📝 **Learning Gate 2j** **(https://clemson.instructure.com/courses/45896/assignments/317563)**	due by 11:59pm
	📝 **Learning Gate 2k** **(https://clemson.instructure.com/courses/45896/assignments/317564)**	due by 11:59pm
	📝 **Learning Gate 2l** **(https://clemson.instructure.com/courses/45896/assignments/317565)**	due by 11:59pm
	📝 **Learning Gate 2m** **(https://clemson.instructure.com/courses/45896/assignments/317566)**	due by 11:59pm
	📝 **Learning Gate 2n** **(https://clemson.instructure.com/courses/45896/assignments/317567)**	due by 11:59pm
	📝 **Learning Gate 2o** **(https://clemson.instructure.com/courses/45896/assignments/317568)**	due by 11:59pm
	📝 **Learning Gate 3a** **(https://clemson.instructure.com/courses/45896/assignments/317569)**	due by 11:59pm
	📝 **Learning Gate 3b** **(https://clemson.instructure.com/courses/45896/assignments/317570)**	due by 11:59pm
	📝 **Learning Gate 3c** **(https://clemson.instructure.com/courses/45896/assignments/317571)**	due by 11:59pm
	📝 **Learning Gate 3d** **(https://clemson.instructure.com/courses/45896/assignments/317572)**	due by 11:59pm
	📝 **Learning Gate 3e** **(https://clemson.instructure.com/courses/45896/assignments/317573)**	due by 11:59pm
	📝 **Learning Gate 3f** **(https://clemson.instructure.com/courses/45896/assignments/317574)**	due by 11:59pm
	📝 **Learning Gate 3g** **(https://clemson.instructure.com/courses/45896/assignments/317575)**	due by 11:59pm
	📝 **Learning Gate 4a** **(https://clemson.instructure.com/courses/45896/assignments/317576)**	due by 11:59pm
	📝 **Learning Gate 4b** **(https://clemson.instructure.com/courses/45896/assignments/317577)**	due by 11:59pm
	📝 **Learning Gate 4c** **(https://clemson.instructure.com/courses/45896/assignments/317578)**	due by 11:59pm
	📝 **Rules (extra)** **(https://clemson.instructure.com/courses/45896/assignments/317587)**	due by 11:59pm

Date	Details	
	📝 **Rules 11-15** **(https://clemson.instructure.com/courses/45896/assignments/317579)**	due by 11:59pm
	📝 **Rules 16-20** **(https://clemson.instructure.com/courses/45896/assignments/317581)**	due by 11:59pm
	📝 **Rules 21-25** **(https://clemson.instructure.com/courses/45896/assignments/317582)**	due by 11:59pm
	📝 **Rules 26-30** **(https://clemson.instructure.com/courses/45896/assignments/317583)**	due by 11:59pm
	📝 **Rules 31-35** **(https://clemson.instructure.com/courses/45896/assignments/317584)**	due by 11:59pm
	📝 **Rules 36-40** **(https://clemson.instructure.com/courses/45896/assignments/317585)**	due by 11:59pm
	📝 **Rules 6-10** **(https://clemson.instructure.com/courses/45896/assignments/317586)**	due by 11:59pm
	📝 **Term project** **(https://clemson.instructure.com/courses/45896/assignments/317588)**	due by 11:59pm