

EML4930-Automation in Production Engineering

Spring 2022 Syllabus

Lecture: M Period 7 (1:55 – 2:45 P.M., MAE-C 010)

Labs: MAE-C 002; *to be scheduled*

*Modifications to this syllabus may be required during the semester.
Any changes to the syllabus will be posted on the course website and announced in class.*

Instructors: Dr. Sean R. Niemi

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Office: Room 132, MAE-C

Hours: TBD, *or by appointment*

Dr Katie Basinger-Ellis

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Phone:

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Hours:

Catalog Description:

Special topic in Mechanical Engineering. Credits: 3

Course Objectives:

The principal goals of the Automation in Production Engineering

- understand the function of CNC machine tools (programming, operation, flexibility) and where they fit into the prototyping phase of design
- Gain experience programming and operating a 3, 4, and 5-axis CNC milling machine
- Become familiar with G-Code and how basic commands affect manufacturing
- Understand basic additive processes and how they differ from traditional manufacturing processes

Course Materials and Fees:

Course Fee: N/A

Required Textbooks and Software:

- **Autodesk Fusion 360** is the primary CAD/CAM software for the course. You're free to use Solidworks for part modeling; however Fusion360 is required for CAM.
- **Microsoft Teams** will be used as the primary form of communication for this course. Use of it for all communication related to the course is highly recommended.

Recommended Materials:

- [Cutting Tool Applications](#) by George Schneider Jr., CMfgE (available for free via download)

Attendance:

The majority of lecture content will be delivered asynchronously through pre-recorded video content. For in person meetings (scheduled lecture and lab times) attendance is mandatory. If you are ill, or have a University approved excused absence, please bring it to the attention of the course instructors in a timely manner so we can schedule a suitable make-up period.

Do not use your cell phones as anything other than a camera or calculator when in lab. Cell phones are a major distraction and inhibit *safe operation* of the equipment.

Course Assignments and Grade Distribution:

| Assignment | Grade Percentage |
|-------------------------|------------------|
| Assignment 1 | |
| Assignment 2 | |
| Assignment 3 | |
| Pocket NC Assigned Part | |
| VF3 Assigned Part | |
| Maze Project | |
| Design Project | |
| Final Presentation | |
| | 100% |

Grading Policy:

A: 93-100 A-: 90-92.99

B+: 88-89.99 B: 83-87.99 B-: 80-82.99

C+: 78-79.99 C: 73-77.99 C-: 70-72.99

D+: 68-69.99 D: 63-67.99 D-: 60-62.99

E: 0-59.99

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Course Schedule

The following is a tentative schedule for the semester. Slight changes are to be expected.

| Wk. | Wk. of: | Video Lecture Topic | Live "Lecture" Topic | Lab Assignment Due and/or Lab Activity |
|-----|---------|---------------------------------------|--|--|
| 0 | 3-Jan | Pre-Material: Intro to CAD/CAM/Fusion | NO MEETING WEEK 1 | |
| 1 | 10-Jan | Pre-Material: Intro to CAD/CAM/Fusion | Course Intro, Equipment Overview, Safety | No lab - course video content only (There's a lot of stuff to learn, get learnin') |
| 2 | 17-Jan | TBD | Common Tools / How to use them | Intro to PocketNC 5-Axis mill / 1st Part CAM Finished |
| 3 | 24-Jan | TBD | Pocket NC Discussion | 1st Part Finished |
| 4 | 31-Jan | TBD | Speeds and Feeds | VF3 Setup & Safety VF3 Part Assigned |
| 5 | 7-Feb | TBD | Work-holding methods | CAM Review 1st Op Machined |
| 6 | 14-Feb | TBD | VF3 Discussion | VF3 Assigned Part Finished Maze Assigned |
| 7 | 21-Feb | TBD | | Maze Designed CAM Started |
| 8 | 28-Feb | TBD | | Maze CAM Review First Op Machined |
| 9 | 7-Mar | Spring Break. Have fun; be safe. | | |
| 10 | 14-Mar | TBD | | Maze Finished |
| 11 | 21-Mar | TBD | | Final Project - Selection / Assignment |
| 12 | 28-Mar | TBD | Intro into Additive Mfg. | Final Project - CAD/CAM Finished |
| 13 | 4-Apr | TBD | | |
| 14 | 11-Apr | TBD | | Final Project - Machining Finished |
| 15 | 18-Apr | TBD | | Final Presentation |

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the [Office of Title IX Compliance](#), located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.

