FAU

FLORIDA ATLANTIC UNIVERSITY

NEW COURSE PROPOSAL
Undergraduate Programs

Department Ocean & Mechanical Engineering

College COECS

*(To obtain a course number, contact **erudolph@fau.edu**)*

UUPC Approval 4-26-21
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner Posted _____
Catalog _____

Prefix EML **Number** 4800	*(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)* **Lab Code**	**Type of Course** Lecture	**Course Title** Introduction to Robotics

Credits *(Review Provost Memorandum)* 3	**Grading** *(Select One Option)* **Regular** (•) **Pass/Fail** ( ) **Sat/UnSat** ( )	**Course Description** *(Syllabus must be attached; Syllabus Checklist recommended; see Guidelines)* An introductory course for robotics which include: Robotics arms configuration, trajectory planning, controls, sensors and simple applications.
Effective Date *(TERM & YEAR)* Fall 2021		

Prerequisites, with minimum grade* None	**Corequisites**	**Registration Controls** *(Major, College, Level)* Senior Standing

Default minimum passing grade is D-.* ***Prereqs., Coreqs. & Reg. Controls are enforced for all sections of course*

WAC/Gordon Rule Course ( ) Yes (•) No WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See WAC Guidelines.	**Intellectual Foundations Program (General Education) Requirement** *(Select One Option)* None General Education criteria must be indicated in the syllabus and approval attached to the proposal. See GE Guidelines.

Minimum qualifications to teach course
Ph.D Degree in mechanical engineering and Equivalent

Faculty Contact/Email/Phone	**List/Attach comments from departments affected by new course**
Dr. O. Masory/masoryo@fau.edu, 297-3424	

Approved by	***Date***
Department Chair Mauricio Cruz	4-2-21
College Curriculum Chair Daniel Meeroff	4-15-21
College Dean Fred Bloetscher	4-15-21
UUPC Chair Jerry Haky	4-26-21
Undergraduate Studies Dean Edward Pratt	4-26-21
UFS President	
Provost	

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

Department of Ocean and Mechanical Engineering, Florida Atlantic University
Course Syllabus

1. Course title/number, number of credit hours	
EML 4800 Introduction to Robotics	3 credit hours

2. Instructional Method

This class consists of lectures which will be conducted in-class and/or live using WebEx or Zoom, and recorded so students can watch the lectures at a later time and date. . Students will be accommodated as much as possible with their needs during the pandemic.

You will need to have a computer (or laptop), a reliable WIFI access, and a webcam and micro-phone connected to your computer for this course.

In the event you might not have a computer, there is a Laptop Loaner Program at FAU for first-generation, low-income students.
https://www.fau.edu/newsdesk/articles/fau-announces-laptop-loaner-program.php

In the event you might not have reliable internet access remotely, you may use the internet connection on campus. There will be no physical participation in classes, labs. Quizzes and exams will be conducted online . Note that there are only reduced seating capacities in the classroom, and only those who do not have reliable internet access should use the classroom. Social distancing must be strictly followed in the classroom at all times. You will need to make reservation for your seating every week on Canvas. The instructions for the reservation are provided at the following link:
https://fau.edu/oit/instructional/support/files/seatReservationTool_student.pdf

3. COVID 19 Statement

All students in face-to-face classes are required to wear masks during class, and students must sanitize their own workstations upon entering the classroom. Taking these measures supports the safety and protection of the FAU community. Students who do not adhere to these rules will be asked to leave the classroom and/or be removed from the course. Students experiencing flu-like symptoms (fever, cough, shortness of breath), or students who have come in contact with an infected person should immediately contact FAU Student Health Services (561-297-3512).

4. Course pre-requisites, co-requisites, and where the course fits in the program of study

List Prerequisites, Co-requisites:

Senior Standing

5. Course logistics

Term: Summer 2021

Lectures: TR 8:00-9:20 ,Taping + zoom
Phil Smith hall 101

6. Instructor contact information	
Instructor's name	Oren Masory
Office address	Bldg 36 (EW) room 112
Office Hours	M 10:00-12:00
Contact telephone number	297-3424
Email address	masoryo@fau.edu

7. TA contact information	
TA's name	
Office address	
Office Hours	
Contact telephone number	
Email address	

Department of Ocean and Mechanical Engineering, Florida Atlantic University
Course Syllabus

8. Course description

An introductory course for robotics which include: Robotics arms configuration, trajectory planning, controls, sensors and simple applications.

9. Course objectives/student learning outcomes/program outcomes

Course objectives	I. Introduce student to the technology. II. Teach students coordinate transformation. III. Introduce velocity and position controllers. IV. Introduce industrial sensors and their applications V. Have students develop applications in the lab
Student learning outcomes & relationship to ABET 1-7 objectives	Student Learning Outcomes: (numbers in parentheses indicate correlation of the outcome with the appropriate program assessment outcomes 1-7) 1. Students should be able to implement simple automation solutions (1) 2. Students should be able to function in teams (5) 3. Students should be able to develop and conduct appropriate experiments(6)

10. Course evaluation method

Homework – 20%
Midterm exam - 20%
Final Examination – 30%
Lab - 30%

11. Course grading scale

93 and above: "A",
90-92: "A-",
87-89: "B+",
83-86: "B",
80-82: "B-",
77-79: "C+",
73-76: "C",
70-72: "C-",
67-69: "D+",
63-66: "D",
60-62: "D-",
59 and below: "F."

12. Policy on makeup tests, late work, and incompletes

Makeup tests are given only if there is solid evidence of a medical or otherwise serious emergency before the tests that prevented the student of participating in the exam. Makeup exams should be administered and proctored by department personnel unless there are other pre-approved arrangements.

***Late work* without verifiable justification will NOT be graded.**

Incomplete grades are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.

13. Special course requirements

14. Classroom etiquette policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.

1. No cell-phones, i-pads, or other electronic devices are allowed during any exams or quizzes.
2. No watches capable of taking picture or communication with others are allowed during the exam.
3. In case of an emergency where you need to carry an electronic device to the exam, you must ask for permission from the instructor.
4. Only simple calculators can be used

Violation of any of the above exam rules will, at a minimum, result in receiving a zero on the exam.

15. Attendance Policy Statement

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

16. Disability Policy Statement

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at *www.fau.edu/sas/*

17. Counseling and Psychological Services Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to http://www.fau,edu/counseling/

18. Code of Academic Integrity Policy Statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

Cell phones are not allowed during exams. If cell phones are detected during any exam periods, this will result in a **grade of "zero" on that exam and a note in the student's academic file.**

19. Required texts/reading/Lab kits

Stephan J. Chapman, Matlab Programming with Applications for Engineers, CENGAGE Learning ISBN 978-0-495-66607-7, 2013

Every FAU student is entitled to install matlab for free, on their own computer. Either windows or mac. And, in order to reduce load on our system, and also to reduce load on their own wifi, Instructions are here:

https://hpc.fau.edu/matlab-individual-install/

20. Supplementary/recommended readings

Stephan J. Chapman, Matlab Programming with Applications for Engineers, CENGAGE Learning ISBN 978-0-495-66607-7, 2013

Every FAU student is entitled to install matlab for free, on their own computer. Either windows or mac. And, in order to reduce load on our system, and also to reduce load on their own wifi, Instructions are here:

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21. Course topical outline, including dates for exams/quizzes, papers, completion of reading

Course Topics:

1. Introduction
2. Robotic configuration
3. Coordinate transformation
4. Forward/Inverse kinematics
5. Joint's control
6. Trajectory planning
7. Controls
8. Sensors
9. Applications

Lab Activities

1. Robot programming
2. Accuracy/Repeatability measurements
3. Pick-N-Place application
4. Sensors interface