

UNIVERSITY OF NORTH TEXAS SYLLABUS
MEEN 4800.007, 5800.7/607 INTRODUCTION to ROBOTICS & AUTOMATION
SPRING 2020 3 hours

Instructor: Dr. Mark Wasikowski

Office Hours: NTDP F101L. TR: 10 - 11 am

Contact: (940) 369-8030, mark.wasikowski@unt.edu (emergencies only)

Lectures: NTDP F175, MW 3 – 4:50

Teaching Assistant: TBD

Course Description: Robotic mechanisms, 3-d motion, forward and inverse kinematics, dynamics, sensors, actuators, feedback control. Project based using MATLAB and lab experiments.

PREREQUISITES: NOT be pre-engineering major and passed the following “C” or better:

- 1) MEEN 2240 Programming for Mechanical Engineers using MATLAB
- 2) MATH 2700 Linear Algebra and Vector Calculus
- 3) MEEN 3230 System Dynamics and Control (implies 2301/2302 Statics and Dynamics)

TEXT: None required, several recommended.

ABET OUTCOMES: This course addresses following ABET program outcome(s):

1. Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

COURSE OBJECTIVES: Apply ABET Outcomes to following applications, depending on schedule;

1. 3-D spatial position and velocity
2. forward and inverse kinematics and dynamics
3. joint control
4. classical control methods, sensors and actuators

GRADING RUBRIC: standard 90/80/70/60

1. 15%: **Attendance & Participation:** must be present when roll taken and remain engaged during class. No late attendance. Excessive preoccupation voids attendance.
2. 30%: **Home Projects:** weekly home practice. Some software enabled, CANAS facilitated
3. 25%: **Quiz Projects: 5@5% each,** in class. Some software enabled, CANAS facilitated
4. 15%: **Laboratory:** robot programming labs using UR3 and UR-10
5. 15%: **Final Project:** in class project during final exam time
6. Additional required work (typically theory) for 5800 enrollments

REGRADE REQUESTS: accepted day assignment returned/discussed. Once class is over, regrade requests not accepted. Entire assignment will be regraded, which may result in lower score.

PROJECTS: MATLAB/SIMULINK/ROS/RTB: For projects submitted to Canvas, code may be run to verify working correctly and provide accurate results. Codes may be submitted to Turnitin to check for copying. Codes showing more than 75% similarity receive 0 score.

SOLUTION MANUALS/ON-LINE RESOURCES: It is common knowledge that solution manuals (i.e. Chegg) are online. If you use them, use correctly. Simply copying solution is not beneficial, but detrimental to learning and grade. To use them properly, attempt problems on your own. If you get stuck, work more. Only use on-line resources if you have a solution. Check work and find mistakes. Figure out why and learn from mistakes. Your goal in practice is to learn how to apply material learned in class to variety of problems. The only way is to work problems on your own. This not only improves your understanding but leads to better problem solving skills.

ACCEPTABLE BEHAVIOR: I consider this room to be place where you will be treated with respect. All expected to contribute to respectful and inclusive environment. Students engaging in unacceptable behavior will be directed to leave and may refer to Dean of Students to consider Code of Student Conduct violation, deanofstudents.unt.edu/conduct.

ACADEMIC INTEGRITY STANDARDS AND SANCTIONS FOR VIOLATIONS: According to UNT Policy 06.003, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. Academic dishonesty will not be tolerated and will result in 0 assignment score and reported to Office of Academic Integrity. No exceptions.

ADA STATEMENT: UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify eligibility. For additional information see the ODA website at disability.unt.edu

STUDENT PERCEPTIONS OF TEACHING EFFECTIVENESS (SPOT) Course participates in SPOT evaluations (<http://spot.unt.edu/> or email spot@unt.edu).

RETENTION OF STUDENT RECORDS Course follows Family Educational Rights and Privacy Act (FERPA) laws and UNT Policy 10.10, Records Management and Retention.

SYLLABUS CHANGES Instructor reserves right change syllabus. Any changes announced in class and posted to CANVAS with an accompanying email to student's UNT email address.