

Kennesaw State University
MTRE 4400 – Directed Research – Mechatronics
Course Syllabus – Fall 2019

I. Identifying information

Student(s): xxxxxxxx

Course: MTRE 4400 Robotics Laboratory, 1 credit

Instructor: Kevin McFall, PhD.

II. Course Description

The purpose of this course is for the student to learn to use ROS (Robot Operating System) to simulate and control the motion of a virtual robot and the physical robotic manipulator (The Kinova Arm). Additional goals are to derive the forward/velocity kinematics and complete path planning for a robotic manipulator (the Kinova Arm) using MATLAB programming, which are taught in the lecture section.

III. Objective of the Course

This directed research will result in knowledge in robot kinematics and their implementation in both simulation and physical environments.

IV. Detailed Schedule

Week 1: Introduction to ROS

Week 2: Publishing and subscribing to ROS topics

Week 3: Services in ROS

Week 4: Actions in ROS

Week 5: Introduction to the comprehensive project

Week 6: Completion of the comprehensive project

Week 7: Report writing for the comprehensive project

The student is expected to meet with the instructor during the regular lab period for MTRE 4200 in order to gain access to the laboratory equipment. A minimum total of 50 hours of time is required on this project. The student is expected to follow all safety guidelines when interacting with equipment as directed by instructors and laboratory technicians.

V. Basis for Evaluation

The primary deliverable is completion of an official technical report. Grades will be assigned according to the following rubric:

- A (90-100): Exceptional deliverable quality and/or completion of extended topics
- B (80-89): Satisfactory completion of deliverables
- C (70-79): Incomplete completion of deliverables
- D (60-69): Partial completion of deliverables
- F (0-59): Little or no completion of deliverables

Federal, BOR, & KSU Course Syllabus Policies

Information contained in the links below constitutes the Federal, BOR, and KSU course syllabus policies and procedures and may be referenced by faculty members in their course syllabi. These policies are updated on the Academic Affairs Website annually.

[Academic Affairs - Federal, BOR, & KSU Policies](#)

[Academic Affairs - KSU Student Resources for Syllabus](#)

Note to Faculty: The KSU faculty handbook requires the Academic Integrity Policy in the course syllabus.

Note to Faculty and Students: The Office of the Provost will work to keep the policies and links in this document as accurate as possible.

Academic Integrity Statement

Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. Section 5c of the Student Code of Conduct addresses the university's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to university materials, misrepresentation/falsification of university records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Department of Student Conduct and Academic Integrity (SCAI), which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement. See also [KSU Student Code of Conduct](#).

Electronic Communication

The University provides all KSU students with an "official" email account with the address "students.kennesaw.edu" or "kennesaw.view.usg.edu" (in D2L). As a result of federal laws protecting educational information and other data, this is the sole email account you should use to communicate with your instructor or other University officials.