



Course Information Sheet

Course Name: Robotics II

Instructional Material: Goodheart-Wilcox

Software (if required):

Semester One:

Week	Topic
	1 Review of Robotics I and Advanced Concepts
	2 Safety and Ethical Considerations in Robotics
	3 Advanced Robot Programming and Control
	4 Sensors and Feedback Systems
	5 Actuators and Motor Control
	6 Robot Kinematics and Inverse Kinematics
	7 Robot Vision and Image Processing
	8 Artificial Intelligence for Robotics
	9 Machine Learning in Robotics
	10 Robot Navigation and Mapping
	11 Simultaneous Localization and Mapping (SLAM)
	12 Introduction to ROS (Robot Operating System)
	13 ROS Nodes, Topics, and Services
	14 ROS Packages and Development Environment
	15 Project-Based Learning: Autonomous Robot Challenge I
	16 Project-Based Learning: Autonomous Robot Challenge II
	17 Project-Based Learning: Autonomous Robot Challenge III
	18 Mid-Term Review and Examination

**Semester Two:**

Week	Topic
19	Advanced Robot Design and Construction
20	Electrical Systems and Power Management
21	Mechanical Design and Fabrication
22	Human-Robot Interaction (HRI)
23	Swarm Robotics and Multi-Robot Systems
24	Drones and Unmanned Aerial Vehicles (UAVs)
25	Industrial Automation and Manufacturing
26	Medical and Surgical Robotics
27	Robotics in Space Exploration
28	Collaborative Capstone Project: Design and Planning
29	Collaborative Capstone Project: Construction and Programming
30	Collaborative Capstone Project: Testing and Refinement
31	Collaborative Capstone Project: Final Presentation
32	Career Opportunities in Robotics and Automation
33	Professional Portfolio Development
34	Robotics Competitions and Showcases
35	Final Review
36	Final Examination