Arab Academy for Science and Technology & Maritime Transport

University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Computing and Information Technology
Program: Computer Science

Form No. (12)
Course Specification

1- Course Data

Course Code:	Course Title:	Academic Year/Level:
CS367	Robotics Applications	Year 3 / Semester 6
Specialization:	**No. of Instructional Units:**	**Lecture:**
Computer Science	2 hrs lecture 2 hrs lab	

2- Course Aim	This course provides an introduction to the world of robotics and their software programming applications. Topics of interest include the application of microcontrollers and sensors in robotics and from the points of view of hardware and software. The course aims at introducing the students to the mathematical background behind the equations of motion of dynamics and kinematics
3- Intended Learning Outcome:	
a- Knowledge and Understanding	**Students will be able to demonstrate knowledge of:** **K16.** Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases and computer graphics. K19. Select advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.
b- Intellectual Skills	**By the end of the course, the student acquires high skills and an ability to understand:** **I14.** Summarize the proposed solutions and their results. **I15.** Restrict solution methodologies upon their results. **I16.** Establish criteria, and verify solutions. **I19.** Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.

c- Professional Skills	**By the end of the course the student will have the ability to:** **P11.** Perform independent information acquisition and management, using the scientific literature and Web sources. **P14.** Specify, design, and implement computer-based systems. **P15.** Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem. **P16.** Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video. **P17.** Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.
d- General Skills	**Students will be able to:** **G1.** Demonstrate the ability to make use of a range of learning resources and to manage one's own learning. **G7.** Show the use of general computing facilities. **G8.** Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.
4- Course Content	

#	CLO
1	Identify and model the possible robotic motion.
2	Use Microcontroller software to develop task oriented robots
3	Use and understand sensors and transducers as well as common robotics actuators.

5- Teaching and Learning Methods	Lectures, Labs, Projects, Individual study & self-learning.
6- Teaching and Learning Methods for Students with Special Needs	• Students with special needs are requested to contact the college representative for special needs (currently Dr Hoda Mamdouh in room C504) • Consulting with lecturer during office hours. • Consulting with teaching assistant during office hours. • Private Sessions for redelivering the lecture contents. • For handicapped accessibility, please refer to program specification.
7- Student Assessment:	
a- Procedures used:	Exams and Individual Projects
b- Schedule:	Week 7 exam Projects through the semester Week 16Final exam
c- Weighing of Assessment:	7th week exam 30% Projects 20% Lab Quiz 10 % Final exam 40%

8- List of References:	
a- Course Notes	
b- Required Books (Textbooks)	Mark W. Spong, Seth Hutchinson, and M. Vidyasagar, Robot dynamics and Control, 2005
c- Recommended Books	Kilian , Modern Control Technology: Components and Systems, Second Edition, Delmar
d- Periodicals, Web Sites, ..., etc.	

Course Instructor:

Sign

Head of Department:

Sign