GUJARAT TECHNOLOGICAL UNIVERSITY

Minor Degree - Robotics

Subject Code : N117AO01

BE Semester - 7 (w.e.f. AY 2026-27)

Subject Name : Project in Robotics

Prerequisite : Minor Degree in Robotics (Module 1, Module 2, Module 3 ,Module 4).

Rationale :

To assimilate the theoretical knowledge gained in the lecture courses for real-life practical applications in order have effective learning and skill-development, mainly, from the point of view of the employability in industries.

Teaching and Examination Scheme :

Teaching Scheme			Credits	Examination Marks						Total Marks
				Theory Marks			Practical Marks			
L	T	P	C	ESE (E)	PA (M)		PA (V)		PA (I)	
					PA	ALA	ESE	OEP		
1	0	6	4	0	0	0	70	00	00	70

Content :

Sr. No.	Content	Total Hours
1	**Literature Survey :** Theoretical and experimental methodology of Robot operations, Social impact of the selected project, Application of selected project, Hardware selection for the project, Use of different Software as per the project requirement.	**14**

This course is a project type. The plan of conducting this course is given below :

1. Participants will be divided into teams of two/four members within first week of the starting of the course by the course coordinators/managers depending on the number of participants registered in the course. The benefits of such team-based projects are listed in the Course Outcomes below.
2. The teams will have a team coordinator or leader, which will be identified by the coordinators/managers of the course (may be the first name in the list of a student team).
3. The projects could be of the following types :
    a. Literature search (LS) type: Studying about an aspect of robotics, say, vision, robot kinematics, dynamic, controls, etc.
    b. Algorithm development (AD) type: Analyse, say, a robot kinematics using RoboAnalyzer or Matlab/Octave/Freemat/Scilab or similar software or write an algorithm using any programming language (Python, etc.). For example, writing forward kinematics of a robot or image processing in Vision.
    c. Design/synthesis (DS) type: Proposing a new type of system/device for performing certain task. For example, a mobile robot for Covid-19 isolation wards.

4. The teams will be asked to contact their team members within a week and decide their topic with two weeks, i.e., within first 3 weeks of the starting of the course.

5. Students MUST spend about 6 hours in a week to discuss their progress together, study together or individually, write programmes, fabricate circuits, etc.

6. At the end of the course duration, each team will submit PPTs and project report slides in .pdf file and/or a video of working model to showcase their project hardware/software/plots, etc. generated during the project presentation.

7. Evaluation : It will be done in two parts :
    a. Peer Evaluations (30%): Presentations will be evaluated (online) by internal evaluator and grade them out of 30 marks.
    b. Expert evaluation (70%): External evaluator will take a presentation plus, Q&A and grade them marks out of 70 marks.

Suggested Specification table with Marks (Practical) :

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
0	**0**	**40**	**30**	**15**	**15**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note : This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome :

After learning the course the students will able to :

Sr. No.	CO statement	Marks % weightage
CO-1	Apply theoretical knowledge gained in Robotics lecture courses and develop Robot models for specific applications.	40
CO-2	Examine the different possible practical solutions to achieve the objectives sets for their robot model.	30
CO-3	Determine the optimum practical solution from the available possible solutions.	15
CO-4	Test the developed robot model for actual applications.	15

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