

GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)**Competency-focused Outcome-based Green Curriculum-2024 (COGC-2024)**

Semester – V

Course Title: Summer Internship - II
(Course Code:4354101)

Diploma Programme in which this course is offered	Semester in which offered
Automation and Robotics Engineering	5 th Semester

1. RATIONALE

The study of automation and robotics engineering encompasses a broad range of information from different engineering specialties, including computers, chemical, mechanical, electrical, and electronic systems. Students must understand how to use such a broad range of information in a multidisciplinary field of automation and robotics engineering during their studies. The rapid addition of new technologies is having an impact on our society. A summer internship is a great way for students to experience this cutting-edge technology and become acquainted with the business world in order to determine the extent and direction of their future career chances. The primary goal of a summer internship is to provide students with practical experience that will encourage them to consider a career in industry by allowing them to observe, comprehend, and adopt various kinds of industry work processes.

The duration of internship will be six weeks. It will be started with commencement of 5th Semester. In the internship, the option is provided to do internship in Government Agencies/skill centers/social sector/Govt. initiated social schemes/NGOs etc. Any options from following can be opted by the students:

1)Offline internship in industry - It is advised that students choose to pursue branch-specific training in any applicable industry, such as manufacturing, automation,Robotics, R&D, maintenance, or service. When participating in an offline internship in any industry, students are required to provide a letter of intent to join as well as a letter of release at the conclusion of the internship.

2)A Mini Project – If a student is unable to secure an offline internship in the industry, they can work with a faculty member to construct a project on an appropriate topic within the Instrumentation and Control engineering branch. Small-scale fabrication, experimental findings, simulations, application development, system(s) design and/or analysis, etc., can all be included. Furthermore, the department/institute may schedule industry experts' visits, technical seminars, or workshops to introduce students to cutting-edge techniques and technologies.

Students needs to report at institute every 15 days about progress to internal guide in suggested reporting format which is given in syllabus and represent his/her work carried out for monitoring and evaluation purpose.

2. COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through summer internship experiences:

- **Gain the technical know-how required to design, assemble, fabricate, automate, maintain, and troubleshoot systems, instruments, processes, electronic components, circuits, etc.**

3. COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge, and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

- Acquire knowledge of and a moral attitude about the duties and duty of the engineer.
- Gain experience working in an industrial setting for work-related activities.
- Take advantage of any opportunity to acquire, comprehend, and hone the technical abilities necessary for technical growth.
- Acquire the managerial abilities necessary for a career in the workplace.
- Develop the ability to write technical reports and create presentation posters.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme(In Hours)			Total Credits (L+T+P/2)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	CA	ESE	CA	ESE	
0	0	6	3	0	0	50	50	100

Legends: *L*-Lecture; *T* – Tutorial/Teacher Guided Theory Practice; *P* -Practical; *C* – Credit, *CA* -Continuous Assessment; *ESE* -End Semester Examination.

Miscellaneous Instructions:

- Offline internship in industry:** CA Assessment will be carried out based on submitted progress card by Industry resource person and ESE Assessment will be carried out by institute resources person.
- A Mini Project:** CA and ESE Assessment will be carried out based on project work by institute resources person

Common Note:

- The evaluation of a summer internship or mini project is based on the work completed, the caliber of the report, the viva-voce performance, the presentation, etc. Based on the student's performance in the viva-voce and work record, respectively, the internal and external assessments are made.
- If an Industry Supervisor is not available, the appropriate evaluation form can be filled out by the Institute Mentor or by External Faculty.

3. An annexure contains sample registration and evaluation forms together with reports on student attendance and a work sheet covering the previous 15 days.
4. Filling out all paperwork is required at the start and end of Summer Internship – II, respectively.
5. In order to ensure that students have adequate exposure to industry and technology, it is required to submit and map Summer Internship - I (before Semester 3) Registration and Evaluation with the corresponding forms of Summer Internship - II (before Semester 5). (Mapping does not imply the same project, firm, or industry. It may also be distinct or independent.)
6. Mapping will be done to ease CA and ESE Evaluations.
7. To enable students from various industries, institutions, and project backgrounds to exchange experiences and insights with one another, a seminar or webinar can be organized.
8. Attached formats for Registration, Completion and Evaluation are suggestive. But, adhering to these formats is anticipated.

List of Documents to be prepared for Submission:

1. All 15 Days Work Report Sheet signed by internal guide (suggested format given in syllabus).
2. Student Attendance Sheet Report for summer internship (suggested format given in syllabus).
3. Detail report duly signed and approved by the internal/external mentor.
4. Presentation softcopy approved by the internal/external mentor.
5. Poster of summer internship activities approved by the internal/external mentor.

Note: Faculty should inform students in advance about summer internship or project as First six weeks will be as summer internship. So students need to finalize offline training from industry or a mini project at institute before commencement of 5th semester and report at institute.

5. AFFECTIVE DOMAIN OUTCOMES

The following affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs. More could be added to fulfill the development of this course competency.

- a) Assume the job of Engineer and work as a team leader or member.
- b) Use procedures and approaches that are friendly to the environment.
- c) Adhere to moral principles and safety measures.

6. SUGGESTED STUDENT ACTIVITIES

The suggested co-curricular and curricular student-related activities listed below might be completed to hasten the completion of this course's numerous outcomes: The following tasks should be completed by students, together with report writing and presentation

in front of academic staff and students. Additionally, they ought to gather and document tangible proof for the student's portfolio that could be helpful in their placement interview:

- a) Perform various tasks given by industry resources person during offline internship.
- b) Perform various tasks required to complete project work under guidance of faculty member.
- c) Summer Internship program Interns are required to give a presentation before the review committee consisting of a group of academic staff members.
- d) The review committee gives feedback and suggests possible improvements in the work.
- e) At the end of the program all the Summer Internship program Interns make a poster presentation of the work carried out. The poster presentation is open to the public. It is also evaluated by faculty members.
- f) A completion certificate will be issued to all Summer Internship program Interns only after the completion of internship tenure.

7. REFERENCE

- [AICTE Internship Policy.pdf \(aicte-india.org\)](https://www.aicte-india.org/AICTE%20Internship%20Policy.pdf)

8. SUGGESTED SOFTWARE / LEARNING WEBSITES

An internship is a brief work program that firms and institutions typically offer to students who need junior-level staff support. As a result, students participating in internships have a professional learning experience that will advance both their careers and skill sets. It will sharpen current abilities and introduce fresh ones. In most cases, it is offered at the industry's entry-level.

This is merely a recommended list for your reference.

1. ROS (Robot Operating System):

Website: <https://www.ros.org/>

- **Description:** ROS is a flexible framework for writing robot software. It provides libraries and tools to help software developers create robot applications.

2. Gazebo:

• **Website:** <http://gazebo.org/>

- **Description:** Gazebo is a powerful robotics simulator used for testing and developing robot algorithms in a simulated environment.

3. MATLAB Robotics System Toolbox:

• **Website:** <https://www.mathworks.com/products/robotics.html>

- **Description:** MATLAB Robotics System Toolbox provides algorithms and tools for designing, simulating, and testing robotics applications.

4. Python and associated libraries:

• **Website:** <https://www.python.org/>

- **Description:** Python is a versatile programming language widely used in robotics for its simplicity and extensive libraries such as NumPy, SciPy, and OpenCV.

5. Robotics Academy (by Math Works):

• **Website:** <https://www.mathworks.com/academia/student-competitions/robotics.html>

- **Description:** Robotics Academy offers resources, tutorials, and competitions to help students and professionals learn and apply robotics concepts using MATLAB and Simulink.

6. Udacity - Robotics Nanodegree:

- **Website:** <https://www.udacity.com/course/robotics-software-engineer--nd209>
- **Description:** Udacity offers a comprehensive online nanodegree program focused on robotics software engineering, covering topics such as ROS, perception, localization, and control.

7. Coursera - Robotics Specialization:

- **Website:** <https://www.coursera.org/specializations/robotics>
- **Description:** Coursera offers a specialization in robotics covering fundamental concepts, algorithms, and applications in robotics, taught by experts from leading universities.

8. edX - Robotics MicroMasters Program:

- **Website:** <https://www.edx.org/micromasters/robotics>
- **Description:** edX offers a MicroMasters program in robotics, providing graduate-level courses in robot kinematics, dynamics, control, perception, and planning.

9. PO-COMPETENCY-CO MAPPING

Semester V	Summer Internship - II (Course Code:)						
	POs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/development of solutions	PO 4 Engineering Tools, Experimentation & Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Management	PO 7 Life-long learning
Competency	Develop essential technical skills for designing, assembling, fabricating, automating, maintaining and troubleshooting of Instruments/Processes/ Electronic Components and Circuits.						
CO1) Acquire knowledge of and a moral attitude about the duties and duty of the engineer.	2	2	2	1	1	3	1
CO2) Gain experience working in an industrial setting for work-related activities.	2	2	2	1	2	2	2

CO3) Take advantage of any opportunity to acquire, comprehend, and hone the technical abilities necessary for technical growth.	2	2	2	2	3	1	3
CO4) Acquire the managerial abilities necessary for a career in the workplace.	1	2	2	1	3	1	2
CO5) Develop the ability to write technical reports and create presentation posters.	1	2	1	1	2	1	2

Legend: '3' for high, '2' for medium, '1' for low and '-' for no correlation of each CO with PO.

10. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Member – Board of Studies (GTU), Electrical and Allied branches

GTU Resource Persons

Prof. S. N. Shah, IC Engineering, Government Polytechnic, Gandhinagar.

Annexure - I Summer Internship-II Registration Form

Note: Students needs to submit this registration form after finalize mode of SummerInternship and before starting Summer Internship.

Student Details											
Enrollment Number											
Student Name											
Student Details	Mobile Number :										
	Email Address:										
Course (Branch)											
Code and Name of the Institute											
Mentor Details (Institute)	Name:										
	Designation:										
	Mobile No:										
	Email Address:										

Industry Details	Name:
	Address:
	Email:
	Phone:
	Website:
Mentor Details (Industry)	Name:
	Designation:
	Mobile No:
	Email Address
Mode of Internship Carried Out	Offline internship in industry / A Mini Project at institute
Title of the Internship/ Mini Project carried out	
Nature of Work Carried Out	Designing, assembling, fabricating, automating, maintaining and troubleshooting of Instruments/Processes/ System(s)/Electronic Components/Circuits, etc. Other please Specify_____

Student Signature

Faculty Signature

Annexure-II
Summer Internship-II - Suggested Letter for Completion

[Company /Institute/ Department letter head]

No:

Date

TO WHOM SO EVER IT MAY CONCERN

This is to certify that, Mr. / Ms. / Mrs. _____

Enrollment No. _____ Student of 5th Semester, Diploma in
 Instrumentation and Control Engineering, Institute

has successfully completed a six-week Summer Internship - II in the field of
 _____ during
 the period From the date: _____ to date: _____.

[90% Attendance is mandatory for completion of Internship]

During the period of his/her Summer Internship - II program with us, he / she had been exposed to the following different processes and have gained adequate technical traits. During the Internship he / she were found sincere and hardworking.

1. _____
2. _____
3. _____
4. _____

Industrial Mentor
 (Name and Signature with
 stamp)

Institute Mentor
 (Name and Signature with
 stamp)

Head of the Department
 (Name and Signature with
 stamp)

Annexure-III
Summer Internship-II - Evaluation Rubrics
Evaluation Rubrics (Institute)

Enrollment No: _____

Course (Branch): IC

Name of the Students: _____

Date of Evaluation: _____

Internal Evaluation – 50 Marks PA (II) (To be carried out by mentor in consultation with Industry Supervisor) Minimum Passing Marks: 20					
Parameter	Excellent	Good	Average	Not up the level of Satisfaction	Obtained Marks
Mark range	8 - 10	6 - 8	4 - 6	Below 4	
Knowledge acquisition in specific domain. (10 marks)					
Skill and attitude attainment in specific domain (10 marks)					
Feedback and suggestions given are incorporated? (10 marks)					
Quality of the prepared report and poster. (10 marks)					
Quality of the presentation. (10 marks)					
Total Marks Obtained Out of 50 PA(II)					

Signature: _____

Institute Resource Examiner Name: _____

Evaluation Rubrics (Industry)

Enrollment No: _____

Course (Branch): IC

Name of the Students: _____

Date of Evaluation: _____

External Evaluation – 50 Marks ESE (II) (To be carried out by the institute mentor) Minimum Passing Marks: 20					
Parameter	Excellent	Good	Average	Not up the level of Satisfaction	Obtained Marks
Mark range	8 - 10	6 - 8	4 - 6	Below 4	
Student regularity during the Internship period and proactiveness/ responsiveness towards the given tasks (10 Marks)					
Work Plan, Execution and quality of work in forms of Outcome achieved (10 Marks)					
Engineering Tools and Techniques (10 Marks)					
Quality of poster design and presentation (10 Marks)					
Quality of the report and Skill (10 Marks)					
Total Marks Obtained Out of 50 ESE (II)					

Signature: _____

Industry resource/ External Examiner Name: _____

<u>SUGGESTED 15 DAYS WORK SHEET REPORT</u>				
Student Name :				
Enrollment No:				
Internship/Project Title				
Tools and Technologies				
Company/ Organization Name				
Student's Activity Details:				
Week Number	Start Date to End Date	Tasks to be assigned	Tasks to be completed	Remarks
Signature of Company Person				
<u>[TO BE FILLED BY INTERNAL GUIDE/FACULTY ONLY]</u>				
Any Suggestion/Remarks:				

Signature of Internal Guide/Faculty

<u>SUGGESTED STUDENT ATTENDANCE</u>								
<u>SHEET REPORT</u>								
ORGANIZATION INFORMATION								
Organization Name								
Organization Address								
Organization Email ID								
STUDENT INFORMATION								
Name of Student :								
Enrollment No :				Name of Course:				
Date of Commencement of training:				Date of Completion of Training				
Internship/ Project Title								
Student's Attendance Sheet								
Week No	Day of week(->)	Day1	Day2	Day3	Day4	Day5	Day6	COUNT (present day)
Week 1	Date							
	PR/AB							
Week 2	Date							
	PR/AB							
Week 3	Date							
	PR/AB							
Week 4	Date							
	PR/AB							
Week 5	Date							
	PR/AB							
Week 6	Date							
	PR/AB							
Total Count of student's presents during internship								
Total Working days of company during internship								
Student's percentage present during internship								
NOTE :								
1. Attendance sheet should be submitted after completion of training to internal guide of institute/department.								
2. Holidays should be marked in RED INK.								
3. Absent should be marked as "AB" in RED INK.								

Signature of Company internship person with company stamp/seal :
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Name of Company internship person:

Contact No of Company internship person :
