GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
Semester-V

Course Title: Summer Internship-II
(Course Code: 4352406)

Diploma programme in which this course is offered	Semester in which offered
Power electronics Engineering	5th Semester

1. RATIONALE

Summer internship is a good option by which students to get flavor of such emerging technology and familiar with industry environment to identify scope and focus of their career development opportunities. Main objective of summer internship is hand-on practice to expose students for thinking about professional career by observing, understanding working mechanism of ongoing work of relevant industry and to obtain various types of skills throughout internship program.

2. COMPETENCY

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

- **Develop essential industrial technical and managerial skills by Operating, maintaining, troubleshooting, assembling and designing of Power Electronics circuits with professional ethics.**

3. COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with the identified competency are to be developed in the student for the achievement of the following COs:

CO 1) Learn and adopt the engineer's role and responsibilities with ethics.
CO 2) Get exposure to the industrial environment for professional activities.
CO 3) Get possible opportunities to learn, understand and sharpen the technical skills required for technical advancement.
CO 4) Develop managerial skills required for professional career.
CO 5) Attain skill for writing technical report and prepare poster for presentation.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P/2)	Examination Scheme				
				Theory Marks		Practical Marks		Total 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.*

Any options from following can be chosen by the students for the summer internship:

1. **Offline internship in industry:** Students can join competency relevant industry to fulfill course outcome. For that student is supposed to produce joining letter for starting and relieving letter once the internship is over in case of Offline internship in any industry. *Continuous Assessment (CA) will be carried out based on submitted progress card by Industry resource person and End Semester Examination (ESE) Assessment will be carried out by institute resources person and/or external Faculty by means of viva voc.*

2. **Online internships:** Student can select from any of approved /supported / recommended by the All India Council of Technical education (AICTE) for online Internship (like Intershala/ NEAT/ Gujarat Knowledge Society and other skill Initiatives etc.) or online courses conducted by the state government/Central government/AICTE approved University. *Continuous Assessment (CA) will be carried out based on submitted certificate and End Semester Examination (ESE) Assessment will be carried out by institute resources person and/or external Faculty by means of viva voc.*

3. **Mini Project:** Students can make a mini project related to suggested application area individually. It can be small circuits / experimental results/ simulations/ Application development / Design and / or Analysis of System(s) etc. *Continuous Assessment (CA) will be carried out based on submitted project work by institute resources person and End Semester Examination (ESE) Assessment will be carried out by institute resources person and/or external Faculty by means of viva voc.*

***Note:** 20 marks out of 100 in ESE will be allotted based on micro Project/Model/Audit Report/Internship work report under offline internship/online internship/Project. Assessment will be carried out by institute resources person and/or external Faculty.*

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) Work as a leader/a team member as role of Engineer.
b) Practice environmentally friendly methods and processes.
c) Follow safety precautions and ethical practices.

6. SUGGESTED STUDENT ACTIVITIES

Following are the suggested student-related curricular, **co-curricular** activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities and prepare reports and give presentation in front of students and faculty members. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Perform various tasks given by industry resources person during offline internship.
b) Perform various tasks given during online internship.
c) Perform various task required to complete mini project work under guidance of faculty member.
d) Make a presentation before reviewcommittee consisting of a group of academic staff members.
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.

Note

I. The review committee gives feedback and suggests possible improvements in the work.

II. A completion certificate will be issued to all Summer Internship program Interns only after the completion of internship tenure.

7. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course. It is desirous to verify that title or subject of internship / training is from the current syllabus and applications of what has been already studied. It may be similar to or fall within any of groups categorized broadly as under:

Sr. No	Application Area	Specific Application
1	Core Power Electronics	DC Motor Drives
2	Core Power Electronics	AC motor Drives
3	Core Power Electronics	Chopper
4	Core Power Electronics	Controlled Rectifier
5	Core Power Electronics	Cycloconverter
6	Core Power Electronics	Regulator
7	Core Power Electronics	Inverter
8	Core Power Electronics	Electric Vehicle
9	Core Power Electronics	Electric traction
10	Core Power Electronics	Triggering circuits.
11	Electrical	Operating, Maintaining and troubleshooting of electrical motors.
12	Electrical	Operating, Maintaining and troubleshooting of Transformers.
13	Electrical	Energy audit
14	Electronics	Digital Electronics
15	Electronics	Linear Electronic Circuits
16	Electronics	Sensors and Transducers
17	Electronics	Microcontroller Application Development
18	Electronics	Operating, Maintaining and troubleshooting of Consumer Electronics circuits.
19	Electronics	Renewable Energies & Emerging Trends in Electronics
20	Electrical and Electronics	Electrical and Electronic Measurements & Instruments
21	Control system	Closed loop control of Drives
22	Control system	Automation
23	Control system	PLC
24	Diversified Application	IoT
25	Diversified Application	Robotics
26	Programming & Software Practices	MATLAB
27	Programming & Software Practices	PSIM
28	Programming & Software Practices	MultiSim
29	Programming & Software Practices	Hardware Programming In C with Arduino and controller

8. SUGGESTED SOFTWARE / LEARNING WEBSITES

An internship is a short-term work program usually offered to students by companies and institutes who require staff for assistance at junior levels. Thus, for the students undergoing internship a professional learning experience is provided to benefit them in their skills as well as career. It will brush existing skills and provide exposure to new skills. Generally, it is provided at

entry level in the industry. Here is a suggestive list for reference only.

- **http://www.gksgujarat.org/**
- **https://anubandham.gujarat.gov.in/home**
- **https://kaushalyaskilluniversity.ac.in/**
- **https://www.internshala.com**
- **https://swayam.gov.in**
- **https://nptel.ac.in/**
- **https://neat.aicte-india.org/**
- **https://www.internship.com**
- **https://shodhgangotri.inflibnet.ac.in/**
- **https://shodhganga.inflibnet.ac.in/**

9. PO-COMPETENCY-CO MAPPING

Semester V	Summer Internship-II (Course Code: 4352406)						
	POs						
Competency & Course Outcomes	PO 1 Basic &Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/development of solutions	PO 4 Engineering Tools, Experiments & Testing	PO 5 Engineering practices for society, sustainability& environment	PO 6 Project Management	PO 7 Life-long learning
Competency	**Develop essential industrial technical and managerial skills by Operating, maintaining, troubleshooting, assembling and designing of Power Electronics circuits with professional ethics.**						
CO 1) Learn and adopt the engineer's role and responsibilities with ethics.	2	2	2	1	1	3	1
CO 2) Get exposure to the industrial environment for professional activities.	2	2	2	1	2	2	2
CO 3) Get possible opportunitiesto learn understand and sharpen the technical skills required for technical advancement.	2	2	2	2	3	1	3
CO 4) Develop managerial skills required for professional career.	1	2	2	1	3	1	2
CO 5) Attain skill for writing technical report and prepareposter for presentation.	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

Sr. No.	Name and Designation	Institute	Contact No.	Email
1	Mr. Sunil A. Patel, Lecturer - Power Electronics	Dr. S. & S. S. Ghandhy College of Engineering &	+91- 9898073753	Patel_sunil5@gtu.edu.in

		Technology, Surat		
2	Shailesh L Dhoriyani Lecturer - Power Electronics	Dr. S. & S. S. Ghandhy College of engineering and technology, Surat	+91-9913776990	shailesh.dhoriyani@gmail.com

Annexure-I

Summer Internship-II Registration Form

Note: Students needs to submit this registration form after finalizing mode of internship.

Student Details												
Enrollment Number												
Student Name												
Student Details	Mobile Number :											
	Email Address:											
Branch	Power electronics											
Code of the Institute	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	Online / Offline/ Mini Project											
Title of the Project/ Internship carried out												
Nature of Work Carried Out	Web Design / Application development (Web / Mobile), Experimentalresults/ simulations/ Analysis of System(s) etc.…. Other please Specify_____											

Student Signature **Faculty Signature**

Annexure-II

Summer Internship-II -Suggested Letter for Completion

[Company or Institute letter head]

No: Date

TO WHOM SO EVER IT MAY CONCERN

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

Enrollment No._____Student of_____

Has successfully completed a two-week Internship in the field of_____

From the date:_____to date:_____.

[90% Attendance is mandatory for completion of Internship]

During the period of his/her summer internship program with us, He / She were exposed to following different processes and were found sincere and hardworking.

1. _____

2. _____

3. _____

4._____

Mentor Signature **Head of Department**

Stamp Stamp

Annexure-III

Summer Internship-II -Evaluation Rubrics for Continuous Assessment

Evaluation Rubrics (CA)

Enrollment No: _____

Branch: Power Electronics

Name of the Student: _____

Date of Evaluation: _____

Internal Evaluation – 50 Marks (CA) **(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 (CA)					

Institute Resource Examiner Name: _____

Signature:_____

Annexure-IV
Summer Internship-II - Suggested Evaluation Rubrics for End Semester Examination

Evaluation Rubrics (ESE)

Enrollment No: _____

Branch: Power Electronics

Name of the Student: _____

Date of Evaluation: _____

External Evaluation – 100 Marks (ESE) **(To be carried out by the External Examiner) (Minimum Passing Marks: 40)**					
Parameter	**Excellent**	**Good**	**Average**	**Not up the level of Satisfaction**	**Obtained Marks**
Mark-Range	**16-20**	**12-16**	**8-12**	**Below 8**	
Student regularity during the Internship period and activeness/ responsiveness towards the given tasks **(20 Marks)**					
Work Plan, Execution and quality of work in forms of Outcome achieved **(20 Marks)**					
Engineering Tools and Techniques (20 **Marks)**					
Quality of poster design and presentation **(20 Marks)**					
Quality of the report and Skill **(20 Marks)**					
Total Marks Obtained Out of 100 (ESE)					

External Examiner Name: _____

Signature: _____

Miscellaneous Instructions:

1) *For Summer Internship / Projects / Seminar etc. Evaluation can be done based on work done, quality of report, performance in viva-voce, presentation etc. The internal / external assessment is based on the student's performance in viva- voce /work record respectively.*
2) *In case Industry Supervisor is not available / Institute Mentor and External Faculty can fill up respective evaluation.*
3) *Both forms are mandatory to be filled at the commencement and completion of SI-II respectively.*
4) *Mapping will be done to ease CA and ESE Evaluations.*
5) *A Seminar / Webinar can be arranged so that students coming from different industry / institute / project background can share experiences and learning's to their peers.*
6) *Attached formats for Registration, Completion and Evaluation are suggestive. But, adhering to these formats is anticipated.*

List of Documents to be prepared for Submission:

- Detail report duly signed and approved by the internal/external mentor.
- Presentation softcopy approved by the internal/external mentor.
- Poster of summer internship activities approved by the internal/external mentor.