



**CVM**  
**UNIVERSITY**

Aegis: Charutar Vidya Mandal (Estd.1945)

## FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

**Programme:** BACHELOR OF TECHNOLOGY (Electronics and Communication)

**Semester:** V

**Course Code:** 202060505

**Course Title:** Electronics System Design

**Course Group:** Professional Elective Course

**Course Objectives:** This course is aiming to introduce the student should do the design, testing and verification of electronic systems. Although the course focus is on the analog and digital-hardware part of system design and treats other issues that arise the design process of modern system.

### Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
Lecture	Tutorial	Practical		Theory		J/V/P*		Total
				Internal	External	Internal	External	
2	0	4	4	-	-	50/18	100/35	150/53

\* J: Jury; V: Viva; P: Practical

### Detailed Syllabus:

Sr.	Contents	Hours
1	<b>Electronics Components:</b> Data Sheet study of various types of Diodes, Transistors, MOSFETs, and power electronics devices.	4
2	<b>Sensors and Transducers:</b> Introduction and classification of Sensors, Data sheet study of various sensors and transducers (Accuracy, Calibration, Calibration Error, Resolution, Dynamic characteristics, Environmental factors etc.)	4
3	<b>Signal Conditioning and Measurement:</b> Signal conditioning and its necessity, process adopted in signal conditioning, Functions of Signal conditioning, Signal Integrity.	4
4	<b>Electronics System Design Process and its phases:</b> PCB Design Software learning.	4
5	<b>Data Conversion:</b> Analog to Digital and Digital to Analog Conversion.	4
6	<b>Modelling of Systems:</b> Analog and Digital Electronics Systems.	4
7	<b>Embedded Computers:</b> Arduino, AVR, Raspberry pi, etc.	4
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## Course Practical Guidelines:

1	Project Work: Students should select a problem which addresses some household, office, industries or other real life societal applications.
2	The electronic circuit for the selected problem should have at least 20 to 25 components.
3	Students should understand testing of various components.
4	Soldering of components should be carried out by students.
5	Students should develop a necessary PCB for the circuit.
6	Students should submit the final model of application in working condition.
7	Group of maximum two or three students can be permitted to work on a project.
8	The project must have hardware part. (Software part is optional.)
9	Students shall do project demonstration and poster presentation as a part of continuous evaluation and end semester evaluation.
10	It is desirable that the electronic circuit/systems developed by the students have some novel features.
11	Student has to submit the poster, project report, short video, and/or technical article publicized by the selves as a part of end semester evaluation.

## Reference Books and Videos:

1	A Course in Electrical And Electronic Measurements And Instrumentation, A.K. Sawhney, Puneet Sawhney, Dhanpat Rai Publication, 2012.
2	<a href="https://datasheet4u.com/">https://datasheet4u.com/</a>
3	<a href="https://www.datasheets.com/en">https://www.datasheets.com/en</a>
4	<a href="https://www.electronicsforu.com/">https://www.electronicsforu.com/</a>
5	<a href="https://projects.raspberrypi.org/en">https://projects.raspberrypi.org/en</a>
6	<a href="https://atmega32-avr.com/avr-projects/">https://atmega32-avr.com/avr-projects/</a>

## Supplementary learning Material:

1	NPTEL and Coursera video lectures
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## Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods
- Seminar/Poster Presentation
- Industrial/ Field visits
- Course Projects

## Internal Evaluation:

The internal evaluation comprised of written exam (40% weightage) along with combination of various components such as Certification courses, Assignments, Mini Project, Simulation, Model making, Case study, Group activity, Seminar, Poster Presentation, Unit test, Quiz, Class Participation, Attendance, Achievements etc. where individual component weightage should not exceed 20%.



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**Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):**

Distribution of Theory Marks in %						R: Remembering; U: Understanding; A: Applying; N: Analyzing; E: Evaluating; C: Creating
R	U	A	N	E	C	
10	10	30	20	10	20	

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 Outcomes (CO):**

Sr.	Course Outcome Statements	%weightage
CO-1	Identify, formulate, review research literature, and analyze complex engineering problems considering the societal needs.	25
CO-2	Demonstrate their design skills for solving complex problems.	25
CO-3	Nurturing personal leadership and teamwork skills.	25
CO-4	Verify and test the electronics systems.	25

Curriculum Revision:	
Version:	2.0
Drafted on (Month-Year):	June -2022
Last Reviewed on (Month-Year):	-
Next Review on (Month-Year):	June-2025