MAHATMA GANDHI UNIVERSITY, KERALA

Abstract

Bachelor of Science (Honours) Electronics with Computer Technology and Computer Science (Double Major Programme) - Fourth Semester - Modifications to the Course Outcomes and Course Content - Approved - Orders Issued.

ACA 16

No. 11130/ACA 16/2025/MGU Priyadarsini Hills,Dated: 25.11.2025

Read:-1. U.O.No.5797/AC A16/2024/MGU, dated.27.06.2024.

2. Minutes of the meeting of the Expert Committee on Electronics (UG).

3. Orders of the Professor in charge of the Vice Chancellor under Section 10(17), Chapter III of the Mahatma Gandhi University Act 1985, dated. 18.11.2025.

ORDER

The syllabi of various Honours Under Graduate Programmes coming under The MGU-UGP (Honours) Regulations, 2024, have been approved vide paper read as (1) above and published on the website of the University.

The Expert Committee on Electronics (UG), discussed the need to modify the Course Outcomes and Course Content of DSC/DSE/SEC type courses, to modify the References of the course MG4DSCECC200: Electronics Service Technology, in the Fourth Semester syllabus of **Bachelor of Science (Honours) Electronics with Computer Technology and Computer Science (Double Major Programme)** and has submitted recommendations vide paper read as (2) above.

(Recommendations are attached as Annexure)

Considering the urgency, sanction has been accorded by the Professor in charge of the Vice Chancellor, in exercise of the powers of the Academic Council vested upon him under Section 10(17), Chapter III of the Mahatma Gandhi University Act 1985, vide paper read as (3) above, to approve the said recommendations.

Hence, the Course Outcomes and Course Content of the said courses in the Fourth semester syllabus of **Bachelor of Science (Honours) Electronics with Computer Technology and Computer Science (Double Major Programme)** stands modified to this extent.

Orders are issued accordingly.

SUDHA MENON J

ASSISTANT REGISTRAR III

(ACADEMIC)

For REGISTRAR

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1. PS TO VC
2. PA to Registrar/CE
3. Convenor, Expert Committee, Electronics (UG)
4. JR 2 (Admin)/DR 2, AR 3 (Academic)
5. JR/DR/AR (Exam)
6. Tabulation/Academic Sections concerned
7. AC C1/AC C2 Sections
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Section Officer

Annexure

SEMESTER IV

Course Name: IOT System Design
Course Code : MG4DSEECC200

COURSE CONTENT
Content for Classroom Transaction (Units)

Module	Units	Course Description (Modified)	Hrs	CO No.	Page No.
1	1.1	Introduction to embedded system, Building blocks of IoT, Sensors & Actuators, Cloud based monitoring systems	No Change		64,65
	1.2	Layers of IoT- Perception layer, Network layer, Cloud layer, Application layer			
	1.3	Things in IoT-Sensors and actuators, Application Areas			
	1.4	Familiarization IoT Gadgets in daily life - IP Camera, Smart lamp, Smart FAN, Automated water pump, Home automation and security			
2	2.1	Operation and applications of sensors: IR sensor, LDR sensor, PIR sensor, Ultrasonic sensor, Gas sensor, Gyroscope sensor, Heart beat sensor (concept only), Actuators and examples: hydraulic, pneumatic, magnetic, and mechanical (Concept level only)			
	2.2	IoT supported hardware -ESP32, ESP 8266, Raspberry Pi Zero (specifications and features only)	No Change		
	2.3	Basic Concepts of IoT communication protocols – MQTT (subscribe/publish activity), CoAP, XMPP, DDS			
	2.4	IoT platforms- Blynk, ThingSpeak, Arduino cloud, FireBase			
3	3.1	IoT classification-Consumer, Industrial, Commercial IoT, Agri IoT, medical IoT			
	3.2	Applications - Home automation, Smart cities, smart power grid, logistics &transportation, agriculture, health and life style, Industry 2.0			
	3.3	Challenges -Legal challenges, privacy issues, design ethics, environmental issues.			

	3.4	AI in IoT-Automated vehicles, Drone delivery system, smart wearable gadgets		
4	4.1	**IoT System Design (Practical) (14 experiment out of 20)** 1. Familiarization of development board ESP8266 and Arduino IDE 2. Blinking of a LED 3. Control LED using button switch 4. PIR sensor interfacing & alert using Blynk 5. Ultrasonic sensor interfacing 6. Obstacle/infrared sensor interfacing and alert using Blynk 7. LM35 interfacing: Read temperature and display the measurement in serial monitor 8. Interface DHT11 sensor and display the output in serial monitor 9. Soil moisture sensor interfacing 10. Rain drop sensor interfacing 11. Servo motor with blynk control 12. Generate PWM signal and observe the output in a CRO 13. Brightness control of LED using PWM 14. DC motor interfacing with blynk 15. LCD display interfacing 16. LM35 interfacing with IoT (Blynk): Read temperature and display on Blynk dashboard 17. DHT11 sensor interfacing with IoT (Blynk): Display humidity and temperature on Blynk app 18. Soil moisture sensor interfacing with IoT (Blynk): Monitor soil condition remotely 19. Rain drop sensor interfacing with IoT (Blynk): Display rain status on mobile app 20. IoT-based Home appliances control using relay and Blynk app **One experiment, 21/22, is mandatory:** 21. LED/Device control using Blynk server/app 22. LED/Device control using ThingSpeak		
5	Teacher Specific Content			

Course Name: Electronics Service Technology
Couse Code: MG4DSCECC200

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome (Modified)	Learning Domains	PO No.	Page No.
3	Apply appropriate techniques to test and evaluate various electronics components	No Change		67

COURSE CONTENT
Content for Classroom Transaction (Units)

Module	Units	Course Description (Modified)	Hrs (Modified)	CO No.	Page No.
1	1.1	No Change	No Change		68
	1.2				
	1.3				
	1.4	Electrical measuring instruments, voltage/current/power measurement, power factor and energy meter reading and power quality basics.			
2	2.1	Knowledge of basic tools, Power tools - driller, hack saw blade, jig saw, bench vice, Mechanical measurement tools - Angular measurements- sine bar, angle gauges, levels, taper gauges			
	2.2	Electrical Measurement tools: Voltmeter, Ammeter, Multimeter (Digital and Analog), Clamp meter, LCR Meter			
	2.3	Energy Measurement: Single Phase and Three Phase Energy Meters, Instrument Transformers: Current Transformer (CT) and Potential Transformer (PT)			
	2.4	Measurement of Temperature: Thermocouples, RTDs, Thermistors, Measurement of Flow: Electromagnetic Flow Meters,			

		Ultrasonic Flow Meters, Measurement of Displacement and Strain: LVDT, Strain Gauge, and Load Cells		
3	3.1	No Change		
	3.2			
	3.3	Advanced testing of passive and active components – resistor and capacitor color coding, precision testing of resistor, capacitor, inductor, diode, transformer, fuse, and NTC thermistor using multimeter and LCR meter, identification of component faults, and interpretation of datasheets.		
	3.4	Testing of active components – transistor and FET identification, pin configuration, and functional testing using multimeter and fault detection.	3	No Change
4	4.1		No Change	
	4.2		10	
	4.3		10	
5	Teacher Specific Content			

References (Modified)

1. H.S. Kalsi, Electronic Instrumentation,McGraw Hill. 2. A.K. Sawhney, *A Course in Electrical and Electronic Measurements and Instrumentation*, Dhanpat Rai & Sons	**Page No.** 69

Course Name: Solar Technology and Applications
Couse Code: MG4SECECC200

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome (Modified)	Learning Domains (Modified)	PO No.	Page No.
1	Understand the components and working principles of photovoltaic (PV) based power plants	No Change	No Change	78
2	Interpret energy consumption data to estimate power requirements and outline the basic design of a solar power plant	U		

3	Recall common faults in solar power systems and identify appropriate troubleshooting techniques	K		
4	List standard procedures and tools used in the installation and maintenance of a solar power plant	K		

COURSE CONTENT
Content for Classroom Transaction (Units)

Module	Units	Course Description (Modified)	Hrs	CO No.	Page No.
2	2.1	On-grid PV System Configuration, OFF grid PV System Configuration	No Change		79
	2.2	PV System Design: Site Assessment, Sizing, Performance Estimation			
	2.3	Hybrid PV System Configuration			
	2.4	Electrical Wiring, Safety Practices, Solar Power Regulations			
3	3.1	Solar PV in Electric Vehicles and Water Pumping Systems			
	3.2	Monitoring, Data Analysis, and Troubleshooting of PV Systems			
	3.3	Emerging Trends - Familiarisation of Organic Photovoltaics (OPVs), Quantum Dot Solar Cells			
	3.4	Case Study Report on Implementation, Maintenance and Performance Analysis			
4	Teacher Specific Content				