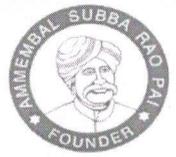


CANARA ENGINEERING COLLEGE

An Autonomous Institution, Approved by AICTE, Accredited by NAAC with A Grade

SUDHINDRA NAGARA, BENJANAPADAVU, BANTWAL, MANGALURU - 574219



Department Electronics and Communication Engineering

Date: 13.01.2026

TO
HOD/EC
PA for PO/CEC
*

To,
The Principal
CEC, Benjanapadavu

Through
Dean Academics
CEC, Benjanapadavu

Through
Dean Administration
CEC, Benjanapadavu

Forwarded to Honr. Secretary
for approval
N. Srinivas
14/01/26

Respected Sir,

Subject: Forwarding of procurement of IoT Laboratory equipment – Reg.

With reference to the above subject, I hereby submit the **approved requirement of IoT laboratory equipment** for the **VI Semester B.E. (ECE)** students, as prescribed under the **VTU syllabus (BEC657C – IoT Laboratory)**.

The requirement was initially proposed by the **Physical In-Charge (Software Lab-2)** and subsequently placed before the **Departmental Purchase Committee**. The committee thoroughly reviewed the list of equipment with respect to **syllabus relevance, quantity justification, and academic necessity**, and has **unanimously approved** the procurement of the listed items.

The **Minutes of the Purchase Committee Meeting**, along with:

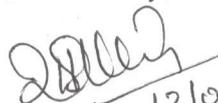
- Requirement letter
- Approved list of equipment are enclosed herewith for your kind perusal and necessary action.

In view of the upcoming semester and to ensure **smooth and uninterrupted conduct of laboratory sessions**, I kindly request you to accord permission to initiate the procurement process as per institutional norms.

Rs 35435 / - forwarded for approval.

Thanking you,

Yours sincerely,


13/01/26

Dr. Raghavendra M Shetty K
Head of the Department
Electronics and Communication Engineering
Canara Engineering College Benjanapadavu

The proposal is recommended for approval and procurement process. as proposed items are useful in future lab syllabus also.

Forwarded with
recommendation
MM
14/01/26

Enclosures:

1. Requirement letter from Physical In-Charge
2. Minutes of Purchase Committee Meeting





CANARA ENGINEERING COLLEGE

Sudhindra Nagara, Benjanapadavu, Bantwal TQ. D.K - 574219



Department of Electronics and Communication Engineering

Date: 07.01.2026

From,

The Physical In charge (Software Lab2).
Dept. of ECE.
Canara Engineering College, Benjanapadavu.

To ,

The HOD.
Dept. of ECE.
Canara Engineering College, Benjanapadavu.

Respected Sir,

Sub: Letter for requirement of IOT lab equipment's

As per the 22-scheme syllabus for IOT lab BEC657C given by the VTU for 6th semester students we require below mentioned equipment's at the earliest for smooth conduction of the lab.

Sl. No	Component / Module	Quantity
1	ESP32 S3 Board	25
2	USB Cable + Power Supply	20
3	Jumper Wires (Male-Male / Male-Female)	20 set each
4	LEDs RGB (4 lead)	40
5	Buzzer Module	20
6	Push Button Switch	20
7	LDR Sensor	20
8	IR Sensor	20
9	DHT11 Sensor	20
10	OLED Display Module	20
11	Relay Module (1-Channel)	20
12	DC Motor / Load	20
13	Soil Moisture Sensor	20
14	Ultrasonic Sensor (HC-SR04)	20
15	ESP32 ESP32S 30 Pin Black Expansion Board	25
16	Servo motor	20
17	Rotary encoder	20
18	Bread Board Small Size	20
19	1k Resistors	100
20	10 K Pot	25

Requesting you to do the needful for the above.

Thanking you,


Physical Incharge,
Software Lab2
Encl: Syllabus Copy

Recommended
and Forwarded to purchase committee
for recommendation 28/11/26
07/01/26

IoT (Internet of Things) Lab		Semester	6
Course Code	BEC657C	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0:0:2:0	SEE Marks	50
Credits	01	Exam Hours	3
Examination type (SEE)	Practical		
Course Objectives:			
This course will enable students to			
<ul style="list-style-type: none"> To impart necessary and practical knowledge of components of the Internet of Things To develop skills required to build real-life IoT-based projects. 			
Sl.No.	Experiments		
1(i)	To interface LED/Buzzer with Arduino /Raspberry Pi and write a program to 'turn ON' LED for 1 sec after every 2 seconds.		
1(ii)	To interface the Push button/Digital sensor (IR/LDR) with Arduino /Raspberry Pi and write a program to 'turn ON' LED when a push button is pressed or at sensor detection.		
2 (i)	To interface the DHT11 sensor with Arduino /Raspberry Pi and write a program to print temperature and humidity readings.		
2(ii)	To interface OLED with Arduino /Raspberry Pi and write a program to print its temperature and humidity readings.		
3	To interface the motor using a relay with Arduino /Raspberry Pi and write a program to 'turn ON' the motor when a push button is pressed.		
4(i)	Write an Arduino/Raspberry Pi program to interface the Soil Moisture Sensor.		
4(ii)	Write an Arduino/Raspberry Pi program to interface the LDR/Photo Sensor.		
5	Write a program to interface an Ultrasonic Sensor with Arduino /Raspberry Pi.		
6	Write a program on Arduino/Raspberry Pi to upload temperature and humidity data to thingspeak cloud.		
7	Write a program on Arduino/Raspberry Pi to retrieve temperature and humidity data from thingspeak cloud.		
8	Write a program to interface LED using Telegram App.		
9	Write a program on Arduino/Raspberry Pi to publish temperature data to the MQTT broker.		
10	Write a program to create a UDP server on Arduino/Raspberry Pi and respond with humidity data to the UDP client when requested.		
11	Write a program to create a TCP server on Arduino /Raspberry Pi and respond with humidity data to the TCP client when requested.		
12	Write a program on Arduino / Raspberry Pi to subscribe to the MQTT broker for temperature data and print it.		
Course outcomes (Course Skill Set):			
At the end of the course, the student will be able to:			
<ul style="list-style-type: none"> Explain the Internet of Things and its hardware and software components. Interface I/O devices, sensors & communication modules. Remotely monitor data and control devices. 			

- Develop real-life IoT-based projects.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation (CIE):

CIE marks for the practical course are **50 Marks**.

The split-up of CIE marks for record/ journal and test are in the ratio **60:40**.

- Each experiment will be evaluated for conduction with an observation sheet and record write-up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments are designed by the faculty who is handling the laboratory session and are made known to students at the beginning of the practical session.
- The record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.
- The total marks scored by the students are scaled down to **30 marks** (60% of maximum marks).
- Weightage is to be given for neatness and submission of record/write-up on time.
- The department shall conduct a test of 100 marks after the completion of all the experiments listed in the syllabus.
- In a test, test write-up, conduction of experiment, acceptable result, and procedural knowledge will carry a weightage of 60% and the rest 40% for viva-voce.
- The suitable rubrics can be designed to evaluate each student's performance and learning ability.
- The marks scored shall be scaled down to **20 marks** (40% of the maximum marks).

The Sum of scaled-down marks scored in the report write-up/journal and marks of a test is the total CIE marks scored by the student.

Semester End Evaluation (SEE):

- SEE marks for the practical course are 50 Marks.
 - **SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the Head of the Institute.**
 - The examination schedule and names of examiners are informed to the university before the conduction of the examination. These practical examinations are to be conducted within the schedule mentioned in the university's academic calendar.
 - All laboratory experiments are to be included for practical examination.
 - (Rubrics) Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. **OR** based on the course requirement evaluation rubrics shall be decided jointly by examiners.
 - Students can pick one question (experiment) from the questions lot prepared by the examiners jointly.
 - Evaluation of test write-up/ conduction procedure and result/viva will be conducted jointly by examiners.
- General rubrics suggested for SEE are mentioned here, writeup-20%, Conduction procedure and result in -60%, Viva-voce 20% of maximum marks. SEE for practical shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, rubrics shall be decided by the examiners)
- Change of experiment is allowed only once and 15% of Marks allotted to the procedure part are to be made zero.

The minimum duration of SEE is 02 hours

Suggested Learning Resources:

- Vijay Madiseti, Arshdeep Bahga, Internet of Things. "A Hands-on Approach", University Press
- Dr. SRN Reddy, Rachit Thukral, and Manasi Mishra, "Introduction to Internet of Things: A Practical Approach", ETI Labs
- Pethuru Raj and Anupama C Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press
- Jeeva Jose, "Internet of Things", Khanna Publishing House, Delhi
- Adrian McEwen, "Designing the Internet of Things", Wiley
- Raj Kamal, "Internet of Things: Architecture and Design", McGraw Hill



Department of Electronics and Communication Engineering

Software Lab2

Date: 7/1/26

Venue: Department of ECE Seminar Room

Minutes of Meeting

**Purchase Committee – Department of ECE
Canara Engineering College, Benjanapadavu**

Agenda: Approval of procurement of IoT Lab equipment as per the 22-scheme syllabus for **BEC657C (IoT Laboratory)** prescribed by VTU for 6th semester students.

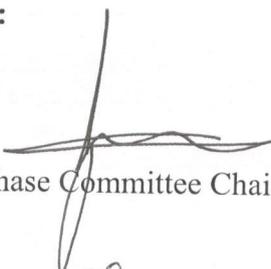
Proceedings

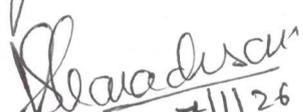
1. The meeting commenced with the Physical In-Charge (Software Lab-2) presenting the requirement letter addressed to the HOD, highlighting the urgent need for IoT lab equipment to ensure smooth conduction of practical sessions.
2. The committee reviewed the list of equipment requested:
3. The committee discussed the relevance of the equipment with respect to the VTU syllabus and confirmed that the listed items are essential for conducting experiments in the IoT laboratory.
4. Budgetary considerations were reviewed, and the committee agreed that procurement should be initiated at the earliest to avoid disruption in the academic schedule.

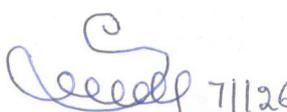
Resolution

It was unanimously resolved that the above-mentioned equipment list be **approved for procurement** under the Department of ECE, Canara Engineering College, Benjanapadavu. The due process of purchase shall be initiated, with the necessary approvals from the concerned authorities.

Signatures:


Purchase Committee Chairperson 7/1/26


Faculty Representative(ECE) 7/1/26


Physical In-Charge, Software Lab-2 7/1/26


Faculty Representative(ECE)

MANOHAR RADIO HOUSE
1ST CROSS ROAD, HAMPANKATTA, MANGALURU
5001
Phone: 9448058377
GSTIN/UIN: 29AAEFM3327J1Z5

Quotation No. **QN/25/00253** Dated **10-01-2026**
Place of Supply **29 - Karnataka** Mode/Terms of Payment
PO Number & Date Due Date

Buyer (Bill to)
MANARA ENGINEERING COLLEGE
ASRP ROAD, KODIALBAIL MANGALORE, Dakshina Kannada
PIN: 575003
GSTIN/UIN: 29AAAAC0920C1ZF

SL	Description of Goods/Services	Qty	Unit	Rate	Disc.%	Disc.	Amount
1	ESP32 WIFI MODULE	25.00	NOS	375.00			7944.92
2	USB DATA CABLE N with charger	25.00	NOS	200.00			4237.28
3	JUMPER WIRE ,,RIBBON mm/mf	40.00	NOS	60.00			2033.90
4	LED 5MM rgb 4 lead	40.00	NOS	5.00			169.50
5	MODULE/SENSOR N buzzer module	20.00	NOS	50.00			847.46
6	PUSH SWITCH micro	20.00	NOS	3.00			50.84
7	LDR MODULE	20.00	NOS	40.00			677.96
8	IR MODULE	20.00	NOS	35.00			593.22
9	DHT11 SENSOR MODULE	20.00	NOS	70.00			1186.44
10	O LED DISPLAY	20.00	NOS	175.00			2966.10
11	RELAY BOARD 5/12V 5v1ch	20.00	NOS	50.00			847.46
12	DC MOTOR	20.00	NOS	50.00			847.46
13	SOIL M SENSOR	20.00	NOS	85.00			1440.68
14	ULTRASONIC SENS	25.00	NOS	100.00			2118.64
15	MODULE/SENSOR N esp32 expansion	20.00	NOS	90.00			1525.42
16	SERVO SG90	20.00	NOS	60.00			1016.94
17	MODULE/SENSOR N rotary encoder	20.00	NOS	25.00			423.72
18	BREAD BOARD small	100.00	NOS	0.50			42.38
19	RESISTER MIX N 1k	25.00	NOS	10.00			211.86
20	POTENTIOMETRE 10k						
							30029.64
							2702.68
							2702.68
							35435.00
	Total	540.00					35435.00

Amount Chargeable (in words): **Thirty Five Thousand Four Hundred Thirty Five Rupees Only**
Tax Amount (in words): **Five Thousand Four Hundred Five Rupees And Thirty Six Paise Only**

HSN/SAC	Taxable Value	Central Tax		State Tax		Total Tax Amount
		Rate	Amount	Rate	Amount	
85381010	16419.48	9%	1477.76	9%	1477.76	2955.52
85444299	4237.28	9%	381.36	9%	381.36	762.72
85441990	2033.90	9%	183.05	9%	183.05	366.10
85415000	169.50	9%	15.25	9%	15.25	30.50

P.O. Manohar Radio House

10-11-2026



Account Name: Manohar Radio House
Account No. 007005300000187
Dhanlaxmi Bank, MG Road, Mangalore IFSC: DLXB0000070

for MANOHAR RADIO HOUSE

Authorised Signatory

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Page No. 1

MANOHAR RADIO HOUSE AN 1ST CROSS ROAD, HAMPANKATTA, MANGALURU 575001 Phone: 9448058377 GSTIN/UIN: 29AAEFM3327J1Z5		Quotation No. QN/25/00253	Dated 10-01-2026
		Place of Supply 29 - Karnataka	Mode/Terms of Payment
		PO Number & Date	Due Date
Buyer (Bill to) CANARA ENGINEERING COLLEGE ASRP ROAD, KODIALBAIL MANGALORE, Dakshina Kannada PIN: 575003 GSTIN/UIN: 29AAAAC0920C1ZF			

HSN/SAC	Taxable Value	Central Tax		State Tax		Total Tax Amount
		Rate	Amount	Rate	Amount	
85365090	50.84	9%	4.58	9%	4.58	9.16
85423100	677.96	9%	61.02	9%	61.02	122.04
8531	2966.10	9%	266.95	9%	266.95	533.90
85364900	847.46	9%	76.27	9%	76.27	152.54
8501	2372.88	9%	213.56	9%	213.56	427.12
85331000	42.38	9%	3.81	9%	3.81	7.62
85339000	211.86	9%	19.07	9%	19.07	38.14
Total	30029.64		2702.68		2702.68	5405.36

including GST
 351435/2

Forwarded for Approval.

[Signature]



Scan to Pay

Account Name: Manohar Radio House
 Account No. 007005300000187
 Dhanlaxmi Bank, MG Road, Mangalore IFSC: DLXB0000070

for MANOHAR RADIO HOUSE

Authorised Signatory