ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ
("ವಿ ಟಿ ಯು ಅಧಿನಿಯಮ 1994"ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ)
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REGISTRAR

REF: VTU/BGM/BOS/Syllabus/557/2024-25/

DATE:

REF: VTU/BGM/BOS/Syllabus/558/2024-25/ 553

DATE: 6 MAY 2024

CIRCULAR

Subject: 21MTL66-Robotics Lab missing syllabus regarding...

Reference: Email from chairperson BoS inME dated 04.05.2024

This relates to the subjectmentionedabove; the course/subject **21MTL66—Robotics Laboratory**—is missing in the curriculum of the Mechatronics Engineering program that was uploaded to the VTU website. The Chairperson of the Board of Studies in Mechanical Engineering has submitted the missing syllabus; a copy of the syllabus is included with this circular for the benefit of the concerned students and teachers.

All the principals of engineering colleges are hereby informed to bring the content of this circular to the notice of all concerned.

Encl: As mentioned above.

06/05/24

REGISTRAR

To,

- **The Principals of all Engineering Colleges under the ambit of the university**

Copy to;

1. The Hon'ble Vice-Chancellor through the secretary to the VC for information
2. The Registrar (Evaluation) VTU Belagavi for information and needful.
3. The Director, ITI SMU VTU Belagavi for information and to make provision for uploading of the circular
4. The Special Officer QPDS Examination section for information and needful
5. The Special Officer, academic section for information
6. Office copy

ROBOTICS LAB			
Course Code	**21MTL66**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0:0:2	SEE Marks	50
Credits	1	Exam Hours	3

Course Learning Objectives:

CLO 1. Understand the importance and application of robots in virtual environment
CLO 2. Design the robot system for point to point operation
CLO 3. Design the robot program for drilling operation
CLO 4. Design robot programming for continuous path operation

Sl.NO	Experiments
1	Design robot program for drilling operation using single cubes
2	Design robot program for drilling operation using double cubes
3	Design robot programming for continuous path operation on cylinder
4	Design a robot system for point to point operation on a square
5	Design a robot system for circular path operation
6	Design a robot system for point to point operation on a triangle
7	Design a robot system for continuous path operation for any 3 objects (cube, circle, triangle)
8	Design robot program for drilling operation using cubes and cylinder
	Demonstration Experiments (For CIE)
9	Design a robot program for multi-move operation
10	Design a robot program using smart components
11	Design a robot system for pick and place operation
12	Design a robot program for conveyer tracking system

Course outcomes (Course Skill Set):

At the end of the course the student will be able to:

CO1. Understand the importance and application of robots in virtual environment
CO2. Design the robot system for point to point and continuous operation
CO3. Design the robot program for drilling operation

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). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each course. The student has to secure not less than 35% (18 Marks out of 50) in the semester-end examination(SEE).

Continuous Internal Evaluation (CIE):

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

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

- Each experiment to be evaluated for conduction with observation sheet and record write-up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments designed by the faculty who is handling the laboratory session and is made known to students at the beginning of the practical session.
- Record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.
- Total marks scored by the students are scaled downed to 30 marks (60% of maximum marks).
- Weightage to be given for neatness and submission of record/write-up on time.
- Department shall conduct 02 tests for 100 marks, the first test shall be conducted after the 8th week of the semester and the second test shall be conducted after the 14th week of the semester.
- In each 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**.** Rubrics suggested in Annexure-II of Regulation book
- The average of 02 tests is scaled down to **20 marks** (40% of the maximum marks).

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

Semester End Evaluation (SEE):

SEE marks for the practical course is 50 Marks.

SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the University

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 internal /external 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% Marks allotted to the procedure part to be made zero.

The duration of SEE is 03 hours

Rubrics suggested in Annexure-II of Regulation book

Suggested Learning Resources:

1. Mikell P. Groover, Mitchel Weiss, Roger N. Nagel, Nicholas G. Odrey and Ashish Dutta, "Industrial Robotics: Technology, Programming and Applications", 2nd Edition, Tata McGraw Hill, 2012.

2. Roland Siegwart, Illah R. Nourbakhsh, and Davide Scaramuzza, "Introduction to Autonomous Mobile Robots", 2nd Edition, PHI, 2011