**Practical Plan**

**S.E. (ECS) (Semester IV)**

**Subject: Microprocessors and Microcontrollers Lab**

**Teacher-in-charge: Dr. Sapna Prabhu**

**Subject code: ECL 403**

**Academic Term: January–April 2023**

Prerequisites:

**Laboratory Outcomes:**

After successful completion of the course students will be able to:

ECL 403.1: To develop programming skills for Microprocessors and Microcontrollers

ECL 403.2: To interface various devices in Microprocessor and Microcontroller systems

Relationship of Lab outcomes with program outcomes:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO 11 | PO 12 | PSO1 | PSO2 |
| ECL 403.1 |  |  | 3 |  | 3 |  |  |  |  |  |  |  |  |  |
| ECL 403.2 |  |  | 3 |  | 3 |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**CO Assessment Tools:**

|  |  |  |
| --- | --- | --- |
| Lab Outcomes | *Direct Method (80%)* | *Indirect Method (20%)* |
| Attendance | Viva-voce | Journal Assessment  | End Sem Exam | Course exit survey |
| ECL 403.1 | 10% | 20% | 20% | 50% | 100% |
| ECL 403.2 | 10% | 20% | 20% | 50% | 100% |
|  |  |  |  |  |  |

CO calculation= (0.8 \*Direct method + 0.2\*Indirect method)

Rubrics for assessing Lab Outcome with each assessment tool:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Indicator |  |  |  |  |
| Timeline (3) | More than two sessions late (0) | More than one session late (1) | One session late (2) | On time (3) |
| Depth of Understanding (4) | Unsatisfactory (1) | Superficial (2) | Satisfactory (3) | Adequate (4) |
| Completeness (3) | Not submitted (0) | Major topics are omitted or addressed minimally (1) |  Most major and some minor points are covered and are accurate (2) | All major and minor points are covered and are accurate (3) |

*Practical Session Plan*

|  |  |
| --- | --- |
| CLASS | SE Electronics, Semester IV |
| Academic Term  | January–April 2023 |
| Subject | Microprocessors and Microcontrollers |
| *Evaluation System* |  | *Hours* | *Marks* |
| Practical Examination | -- | -- |
| Oral Examination | -- | 25 |
| Term work | -- | 25 |
| Total | -- | 50 |
| *Time Table* | *Day* | *Batch* | *Time* |
| *Tuesday* | *D* | *11.15 am-1.15 pm* |
| *Thursday* | *B* | *9 am-11 am* |
| *Title of Experiments* |
| **Sr. No.** | **Title** | **Attained COs** | **Attained POs** |
| 1 | 32 Bit Addition1. it Addition
 | ECL 403.1 | PO3,PO5 |
| 2 | 16 Bit Multiplication | ECL 403.1 | PO3,PO5 |
| 3 | Factorial of a number | ECL 403.1 | PO3,PO5 |
| 4 | Counting the number of ones in a number | ECL 403.1 | PO3,PO5 |
| 5 | Ascending/Descending order | ECL 403.1 | PO3,PO5 |
| 6 | Block Transfer | ECL 403.1 | PO3,PO5 |
| 7 | Hexadecimal to BCD code conversion | ECL 403.1 | PO3,PO5 |
| 8 | I/O Port programming | ECL 403.1, ECL 403.2 | PO3,PO5 |
| 9 | LCD Interfacing | ECL 403.1, ECL 403.2 | PO3,PO5 |
| 10 | Stepper Motor Control | ECL 403.1, ECL 403.2 | PO3,PO5 |
|  |
| *Practical Session Plan*  |
| *Batch* | *Dates* | *Remarks* |
| *Planned* | *Actual* |
| *Experiment No. 1 :* 32 Bit AdditionSimulation of Amplitude modulation and demodulation |
| D | 24/1/2023 | 24/1/2023 |  |
| B | 2/2/2023 | 2/2/2023 |  |
| *Experiment No. 2 :*16 Bit MultiplicationSimulation of Frequency modulation  |
| D | 31/1/2023 | 31/1/2023 |  |
| B | 9/2/2023 | 9/2/2023 |  |
| *Experiment No. 3:* Factorial of a numberSimulation of Pre-emphasis &De-emphasis |
| D | 7/2/2023 | 7/2/2023 |  |
| B | 16/2/2023 | 16/2/2023 |  |
| *Experiment No. 4:* Counting the number of ones in a numberSimulation of PPM, PWM-modulation |
| D | 14/2/2023 | 14/2/2023 |  |
| B | 23/2/2023 | 23/2/2023 |  |
| *Experiment No.5 :* Ascending/Descending orderSimulation of Binary modulation and demodulation of BASK |
| D | 21/2/2023 | 21/2/2023 |  |
| B | 2/3/2023 | 2/3/2023 |  |
| *Experiment No. 6 :* Block TransferSimulation of Binary modulation and demodulation of BPSK |
| D |  28/2/2023 |  28/2/2023 |  |
| B | 9/3/2023 | 9/3/2023 |  |
| *Experiment No. 7:* Hexadecimal to BCD code conversionSimulation of Binary modulation and demodulation of BFSK |
| D | 7/3/2023 | 7/3/2023 |  |
| B | 16/3/2023 | 16/3/2023 |  |
| *Experiment No. 8 :* I/O Port programmingSimulation of PPM, PWM-modulation |
| D | 4/4/2023 | 4/4/2023 |  |
| B | 6/4/2023 | 6/4/2023 |  |
| *Experiment No. 9:* LCD InterfacingSimulation of PPM, PWM-modulation |
| D | 4/4/2023 | 4/4/2023 |  |
| B | 6/4/2023 | 6/4/2023 |  |
| *Experiment No. 10:* Stepper Motor ControlSimulation of PPM, PWM-modulation |
| D | 11/4/2023 | 11/4/2023 |  |
| B | 13/3/2023 | 13/3/2023 |  |

|  |  |
| --- | --- |
| Submitted By  | Approved By |
| Dr. Sapna Prabhu | Dr. D. V Bhoir  |
| Sign: | Sign: |
|   |  |
| Date of Submission: | Date of Approval: |
|  |
| Remarks by PAC (if any) |
|  |
|  |