## Electronics \& Telecommunication Engineering

| Academic Year - 2020-2021 | Class: Second Year |
| :--- | :--- |
| Semester - I | Date : Dec 2020 |
| Subject : MIII / Data Structure | PO: $1,2,4,5,9,10,12$ |

## Innovative Teaching Methods

Title of Innovation method/activity: Experiential/Practical Learning

1. Name of Faculty: Dr.Satishkumar M. Bhati , Ms. Tejaswini Sachin Deshmukh
2. Subject: MIII / Data Structure
3. Objective of Method:
4. To co-relate Numerical method with C programming.
5. Apply the knowledge of mathematics, software engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.
6. To create awareness in Numerical method in MIII.

## 4. Topic Covered through Activity:

Numerical Method, C Language.

## 5. Description of method with Benefits ( $\mathbf{8} \mathbf{- 1 0}$ lines) :

A Experiential/Practical Learning is the process of learning through experience, and is more specifically defined as "learning through reflection on doing". Experiential learning entails a hands-on approach to students learning that moves away from just the teacher at the front of the room imparting and transferring their knowledge to students. It makes learning an experience that moves beyond the classroom and strives to bring a more involved way of learning.

The learner should possess and use analytical skills to conceptualize the experience. The learner must possess decision making and problem solving skills in order to use the new ideas gained from the experience.

## The method:

1. An assigned task /activity is completed by an individual student.
2. The guidelines and material are provided in class room.
3. The students are given 10 numerical out of which 3 numerical are to be solved and its programming should be done in C language.
4. Student also have to give comparative analysis between theoretical value and value obtained from program.

## Roles and Responsibilities

- Teacher
- Provide the Introduction to all the topic.
- Aware the student about the length, Breadth, Depth of Topic
- Provide the Study Material and appropriate guide lines at every stage
- Remain available all the time during all stages of process.
- Prepare assessment methodology.
- Student
- Go through all the material provided on particular topic
- Once topic assigned understand and gain expertise on topic through collaboration.
- Actively participate, contribute by means of discussion, hand-out.


## 6. Assessment Tools \& Rubrics:

1. Mathematical Part [15 Mark]

- Full correctly solved. (15 Mark)
- Partial correctly solved (8 Mark)

2. Programming Part [20 Mark]

- Correct programming (20 Mark)
- Partial correct programming. (12 Mark)


## 3. Comparison [5 Mark]

- Comparison done (5 Marks).
- Comparison not done(0 marks)


## 4. Timely Submission [10 Mark]

- Submission on the time (10 marks)
- Submission done late(5 marks )

| Criteria | 3- High | 1- Slight |
| :--- | :--- | :--- |
| Mathematical Part | Full correctly solved. (15 Mark) | Partial correctly solved (8 Mark) |
| Programming Part | Correct programming (20 Mark) | Partial correct programming. (12 <br> Mark) |
| Comparison <br> between <br>  <br> Programming <br> values | Comparison done | Comparison not done |
| Timely Submission | Submission on the time | Submission done late |


| Sr.no | Name of Students | Mathematical <br> Part | Programming Part | Comparison | Timely Submission |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Shirsat Aarti | 15 | 20 | 5 | 5 |
| 2 | Adhav Srushti | 15 | 20 | 5 | 5 |
| 3 | Aher Sagar | 15 | 20 | 5 | 5 |
| 4 | Andhalkar Sunny | 0 | 0 | 0 | 0 |
| 5 | Avhad Komal | 0 | 0 | 0 | 0 |
| 6 | Bafana Siddhi | 15 | 20 | 5 | 10 |
| 7 | Bedse Rituja | 15 | 20 | 5 | 5 |
| 8 | Bhamare Gayatri | 10 | 20 | 5 | 5 |
| 9 | Bhangale Nimish | 15 | 20 | 5 | 5 |
| 10 | Bharwad Sagar | 0 | 0 | 0 | 0 |
| 11 | Bhavsar Vaishnavi | 15 | 20 | 5 | 5 |
| 12 | Bhavsar Yash | 8 | 20 | 5 | 5 |
| 13 | Birari Madhura | 15 | 20 | 5 | 10 |
| 14 | Bodke Dipendra | 12 | 20 | 5 | 5 |
| 15 | Borse Jagruti | 12 | 20 | 5 | 5 |
| 16 | Borse Priyanka | 15 | 20 | 5 | 5 |
| 17 | Chaudhari Payal | 15 | 20 | 5 | 5 |
| 18 | Deore Nilesh | 0 | 0 | 0 | 0 |
| 19 | Desale Janhvi | 15 | 20 | 5 | 5 |
| 20 | Devkar Ishwar | 15 | 20 | 5 | 5 |
| 21 | Dhake Niket | 15 | 20 | 5 | 5 |
| 22 | Gabale Yash | 15 | 20 | 5 | 5 |
| 23 | Gaikwad Chaitrali | 15 | 20 | 5 | 5 |
| 24 | Gangurde Aditya | 15 | 20 | 5 | 5 |
| 25 | Gharate Jayesh | 0 | 0 | 0 | 0 |
| 26 | Gorade Kamlesh | 15 | 20 | 5 | 5 |
| 27 | Gore Dipali | 8 | 20 | 5 | 5 |
| 28 | Gosavi Nikita | 15 | 20 | 5 | 5 |
| 29 | Jadhav Ayush | 15 | 20 | 5 | 5 |
| 30 | Jadhav Dipak | 13 | 20 | 5 | 5 |
| 31 | Jadhav Gayatri | 15 | 20 | 5 | 5 |


| 32 | Jadhav Hemant | 15 | 20 | 5 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 33 | Jadhav Shubham | 13 | 20 | 5 | 5 |
| 34 | Jorwar Prachi | 15 | 20 | 5 | 10 |
| 35 | Kalgude Pooja | 0 | 0 | 0 | 0 |
| 36 | Kansepatil Durva | 15 | 20 | 5 | 5 |
| 37 | Kardile Kaveri | 15 | 20 | 5 | 5 |
| 38 | Kothawade Atharva | 12 | 20 | 5 | 5 |
| 39 | Mogal Vaishali | 15 | 20 | 5 | 5 |
| 40 | Navale Nikita | 15 | 20 | 5 | 5 |
| 41 | Patel Dhvani | 15 | 20 | 5 | 5 |
| 42 | Pathak Jaydip | 0 | 0 | 0 | 0 |
| 43 | Patil Aditya | 0 | 0 | 0 | 0 |
| 44 | Patil Chetan | 0 | 0 | 0 | 0 |
| 45 | Patil Gautami | 15 | 20 | 5 | 5 |
| 46 | Patil Nikhil | 12 | 20 | 5 | 5 |
| 47 | Patil Parth | 15 | 20 | 5 | 5 |
| 48 | Patil Tanvi | 15 | 20 | 5 | 5 |
| 49 | Pelmahale Hemant | 15 | 20 | 5 | 5 |
| 50 | Phadtare Shivani | 15 | 20 | 5 | 5 |
| 51 | Pingle Rutuja | 15 | 20 | 5 | 5 |
| 52 | Saind ane Dhirajkumar | 0 | 20 | 0 | 5 |
| 53 | Sali Apurva | 15 | 20 | 5 | 5 |
| 54 | Shewale Sakshi | 15 | 20 | 5 | 10 |
| 55 | Shirsat Aarti | 15 | 20 | 5 | 5 |
| 56 | Sonawane Anushka | 15 | 20 | 5 | 5 |
| 57 | Sonawane Dhanashri | 12 | 20 | 5 | 5 |
| 58 | Sonawane Vaishnavi | 15 | 20 | 5 | 5 |
| 59 | Suryawanshi Sanika | 15 | 20 | 5 | 5 |
| 60 | Tayade Mandar | 0 | 0 | 0 | 0 |
| 61 | Tipare Manisha | 8 | 20 | 5 | 5 |
| 62 | Udawant Sakshi | 15 | 20 | 5 | 5 |
| 63 | Vishe Janhavi | 15 | 20 | 5 | 5 |
| 64 | Yeola Yash | 8 | 20 | 5 | 5 |
| 65 | Phegade Chandan | 0 | 0 | 0 | 0 |

5. Evaluation Sheet

| Sr. | Name of Students | Mathematical Part | $\begin{gathered} \text { Programming } \\ \text { Part } \end{gathered}$ | Comparison | Timely <br> Submission | Final <br> Mark |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Shirsat Aarti | 15 | 20 | 5 | 5 | 45 |
| 2 | Adhav Srushti | 15 | 20 | 5 | 5 | 45 |
| 3 | Aher Sagar | 15 | 20 | 5 | 5 | 45 |
| 4 | Andhalkar Sunny | 0 | 0 | 0 | 0 | 0 |
| 5 | Avhad Komal Govind | 0 | 0 | 0 | 0 | 0 |
| 6 | Bafana Siddhi | 15 | 20 | 5 | 10 | 50 |
| 7 | Bedse Rituja | 15 | 20 | 5 | 5 | 45 |
| 8 | Bhamare Gayatri | 10 | 20 | 5 | 5 | 40 |
| 9 | Bhangale Nimish | 15 | 20 | 5 | 5 | 45 |
| 10 | Bharwad Sagar | 0 | 0 | 0 | 0 | 0 |
| 11 | Bhavsar Vaishnavi | 15 | 20 | 5 | 5 | 45 |
| 12 | Bhavsar Yash | 8 | 20 | 5 | 5 | 38 |
| 13 | Birari Madhura | 15 | 20 | 5 | 10 | 50 |
| 14 | Bodke Dipendra | 12 | 20 | 5 | 5 | 42 |
| 15 | Borse Jagruti | 12 | 20 | 5 | 5 | 42 |
| 16 | Borse Priyanka | 15 | 20 | 5 | 5 | 45 |
| 17 | Chaudhari Payal | 15 | 20 | 5 | 5 | 45 |
| 18 | Deore Nilesh | 0 | 0 | 0 | 0 | 0 |
| 19 | Desale Janhvi | 15 | 20 | 5 | 5 | 45 |
| 20 | Devkar Ishwar | 15 | 20 | 5 | 5 | 45 |
| 21 | Dhake Niket | 15 | 20 | 5 | 5 | 45 |
| 22 | Gabale Yash | 15 | 20 | 5 | 5 | 45 |
| 23 | Gaikwad Chaitrali | 15 | 20 | 5 | 5 | 45 |
| 24 | Gangurde Aditya | 15 | 20 | 5 | 5 | 45 |
| 25 | Gharate Jayesh | 0 | 0 | 0 | 0 | 0 |
| 26 | Gorade Kamlesh | 15 | 20 | 5 | 5 | 45 |
| 27 | Gore Dipali | 8 | 20 | 5 | 5 | 38 |
| 28 | Gosavi Nikita | 15 | 20 | 5 | 5 | 45 |
| 29 | Jadhav Ayush | 15 | 20 | 5 | 5 | 45 |
| 30 | Jadhav Dipak | 13 | 20 | 5 | 5 | 43 |
| 31 | Jadhav Gayatri | 15 | 20 | 5 | 5 | 45 |


| 32 | Jadhav Hemant | 15 | 20 | 5 | 5 | 45 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 33 | Jadhav Shubham | 13 | 20 | 5 | 5 | 43 |
| 34 | Jorwar Prachi | 15 | 20 | 5 | 10 | 50 |
| 35 | Kalgude Pooja | 0 | 0 | 0 | 0 | 0 |
| 36 | Kansepatil Durva | 15 | 20 | 5 | 5 | 45 |
| 37 | Kardile Kaveri | 15 | 20 | 5 | 5 | 45 |
| 38 | Kothawade Atharva | 12 | 20 | 5 | 5 | 42 |
| 39 | Mogal Vaishali | 15 | 20 | 5 | 5 | 45 |
| 40 | Navale Nikita | 15 | 20 | 5 | 5 | 45 |
| 41 | Patel Dhvani | 15 | 20 | 5 | 5 | 45 |
| 42 | Pathak Jaydip | 0 | 0 | 0 | 0 | 0 |
| 43 | Patil Aditya | 0 | 0 | 0 | 0 | 0 |
| 44 | Patil Chetan | 0 | 0 | 0 | 0 | 0 |
| 45 | Patil Gautami | 15 | 20 | 5 | 5 | 45 |
| 46 | Patil Nikhil | 12 | 20 | 5 | 5 | 42 |
| 47 | Patil Parth | 15 | 20 | 5 | 5 | 45 |
| 48 | Patil Tanvi | 15 | 20 | 5 | 5 | 50 |
| 49 | Pelmahale Hemant | 15 | 20 | 5 | 5 | 45 |
| 50 | Phadtare Shivani | 15 | 20 | 5 | 5 | 45 |
| 51 | Pingle Rutuja | 15 | 20 | 5 | 5 | 45 |
| 52 | Saind ane Dhirajkumar | 0 | 20 | 0 | 5 | 25 |
| 53 | Sali Apurva | 15 | 20 | 5 | 5 | 45 |
| 54 | Shewale Sakshi | 15 | 20 | 5 | 10 | 50 |
| 55 | Shirsat Aarti | 15 | 20 | 5 | 5 | 45 |
| 56 | Sonawane Anushka | 15 | 20 | 5 | 5 | 45 |
| 57 | Sonawane Dhanashri | 12 | 20 | 5 | 5 | 42 |
| 58 | Sonawane Vaishnavi | 15 | 20 | 5 | 5 | 45 |
| 59 | Suryawanshi Sanika | 15 | 20 | 5 | 5 | 45 |
| 60 | Tayade Mandar | 0 | 0 | 0 | 0 | 0 |
| 61 | Tipare Manisha | 8 | 20 | 5 | 5 | 38 |
| 62 | Udawant Sakshi | 15 | 20 | 5 | 5 | 45 |
| 63 | Vishe Janhavi | 15 | 20 | 5 | 5 | 45 |
| 64 | Yeola Yash | 8 | 20 | 5 | 5 | 38 |
| 65 | Phegade Chandan | 0 | 0 | 0 | 0 | 0 |

## 6. Impact Analysis

| Questions | 4 <br> Excellent | 3 <br> Good | 2 <br> Average | 1 <br> Poor |
| :--- | :---: | :---: | :---: | :---: |
| Did you find methodology helpful? | 24 | 19 | 02 |  |
| Does the content covered are <br> relevant? | $\mathbf{2 4}$ | $\mathbf{2 0}$ | $\mathbf{0 1}$ |  |
| Are you able to formulate <br> mathematical equation from <br> available numerical data? | $\mathbf{2 0}$ | $\mathbf{2 4}$ | $\mathbf{0 1}$ |  |
| Questions | $\mathbf{Y e s}$ | $\mathbf{N o}$ | $\mathbf{M a y b e}$ |  |
| No | $\mathbf{3 9}$ |  | $\mathbf{6}$ |  |
| 3. Were you able to correlate <br> numerical method \& c program? | $\mathbf{4 3}$ |  | $\mathbf{2}$ |  |
| 5. Would you like to participate in <br> this methodology again? | $\mathbf{4 1}$ | $\mathbf{0 1}$ | $\mathbf{0 2}$ |  |
| 6.Will you be able to develop C <br> program for any future <br> mathematical problem |  |  |  |  |



6. Activity Picture

7. For review and critique contact: e-mail address of faculty and HOD deshmukh.tejaswini@kbtcoe.org
bhati.satish@kbtcoe.org hod@kbtcoe.org

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Subject In charge
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