MARATHA VIDYA PRASARAK SAMAJ'S
KARMAVEER ADV. BABURAO GANPATRAO THAKARE
COLLEGE OF ENGINEERING
Permanently Affiliated to Savitribai Phule Pune University Vide Letter No: CA/1542
& Approved by AICTE New Delhi Vide Letter No: 740-89-32 (E) ET/98
AISHE Code - C-41622
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**Mechanical Engineering Department**

| | |
|---|---|
| Academic Year – 2021-22 | Class: TE A & B |
| Semester – I | Date : 06/12/2021 |
| CO: CO1 | PO: PO1, PO9.PO10,PO12 |

**Innovative Teaching Methods**

**Title of Innovation method/activity:** Innovative Teaching Learning Method|(Project based learning/Case study of Sensors used in industry)

1. Name of Faculty: Mrs. V.V. Shinde

2. Subject: Mechatronics

3. Objective of Method:

I. To get acquainted with different types of sensors used in Industry

II. To get familiar with function working principle, costing and manufacturers of sensors

4. **Topic Covered through Activity**:

Types, working principles & Functions of the sensors

**5. Description of method with Benefits:**

Forming different group of the students consisting of maximum four numbers. They should carry out a Project based learning activity/case study focused on different types of sensors used in Industries. Each group will gather detail information about types, working principle, function, costing and leading manufacturers of selected sensors and prepare a report. Grading will be done as per rubrics given to the report and oral performance of group during submission

Benefits of method:

- It helps students to get In-depth knowledge of sensors used in Industry
- It teaches students to discuss contents with group and improves communication skills.
- It teaches students about how to do literature survey and improves there presentation skill.

**The method**:

Monitor and support students as they work through the following in this method:

1) Forming different group of students consisting maximum 4 members in each group.

2) Each group is to select one important sensor used in Industry

3) Each group will prepare a report and teacher will ask questions during report submission

4) It will be graded based on rubrics assigned.

**Roles and Responsibilities**

- **Teacher**
    - Provide the Introduction to the entire topic.
    - Aware the student about the length, Breadth, Depth of Topic
    - Provide the Study Material and appropriate guide lines at every stage.
    - Prepare assessment methodology.
- **Student**
    - Go through all the aspects of sensors used in Industry
    - Once topic is selected, prepare a report and submit to the teacher.
    - Actively participate in group and contribute by means of discussion.
- **Group**
    - Forming the group of members as per the guidelines.
    - Understand and discuss to finalize the best content for the Selected topic.
    - Assign the work within the group to achieve the task within stipulated time period.

## 6. Assessment Tools

| | | | |
|---|---|---|---|
| **Content** | 3 | 2 | 0 |
| | **Excellent** | **Good** | **Not acceptable** |
| | The content are appropriate with no smudges | The content are acceptable with little smudges | The content are not appropriate |
| **Report** | 3 | 2 | 0 |
| | **Excellent** | **Good** | **Not acceptable** |
| | The Report is very well organized and expressive. | The Report is well organized with little expressive. | The Report does not seems to be acceptable |
| **Presentation** | 3 | 2 | 0 |
| | **Excellent** | **Good** | **Not acceptable** |
| | The content is very well explained and clarity in speech | The content is well explained with little hesitation | The content delivery is not proper and acceptable |
| **Timeliness** | 1 | 0 | |
| | **Up to due date** | **After due date** | |
| | Report Submitted on time | Report submitted after due date | |

## 7. Evaluation sheet of attendee

| Topic Name | Name of students | Content | Presentation | Report | Timeliness | Total Marks |
|---|---|---|---|---|---|---|
| Hall effect sensor | Shantanu Pradhan (135) | 3 | 2 | 3 | 1 | 9 |
| | Omkar Shirsath(156) | 3 | 2 | 3 | 1 | |
| | Mayur Shirsath(155) | 3 | 2 | 3 | 1 | |
| | Saket Singh(158) | 3 | 2 | 3 | 1 | |
| Gyroscope sensor | Rohit Pingale (133) | 3 | 3 | 2 | 1 | 9 |
| | Pratik SALUNKE (139) | 3 | 3 | 2 | 1 | |
| | Saurbh Shewale (148) | 3 | 3 | 2 | 1 | |
| | Mayur Shinde (150) | 3 | 3 | 2 | 1 | |
| ABS sensor | Dhananjay Budhvant (91) | 2 | 2 | 2 | 1 | 7 |
| | Pushpak Jain (99) | 2 | 2 | 2 | 1 | |
| | Swayam Shewale (149), | 2 | 2 | 2 | 1 | |
| | Prathamesh Vadnere (171) | 2 | 2 | 2 | 1 | |
| Crash Sensor | Nishant Bundelkhandi (21) | 2 | 2 | 2 | 1 | 7 |
| | Atharv Deshmukh (27) | 2 | 2 | 2 | 1 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Elevator Door Sensor | Aditya Sanjay Shelar (82) | 3 | 2 | 2 | 1 | 8 |
| | Monali Ramdas Shinde (85) | 3 | 2 | 2 | 1 | |
| | Jayesh Sanjay Dhatrak (29) | 3 | 2 | 2 | 1 | |
| | Pratiksha Ashok Borgude (19). | 3 | 2 | 2 | 1 | |
| LIDAR sensor : Used in Self Driving Cars | Nakshatra Patil (124) | 3 | 2 | 3 | 1 | 9 |
| | Parshuram Patil (126) | 3 | 2 | 3 | 1 | |
| | Prashant Patil (127 | 3 | 2 | 3 | 1 | |
| | Mayur Sonje (163) | 3 | 2 | 3 | 1 | |
| Infrared sensor | Deep Patel(118) | 3 | 3 | 2 | 1 | 9 |
| | Dev Patil(121) | 3 | 3 | 2 | 1 | |
| | Pratik Patil(128) | 3 | 3 | 2 | 1 | |
| | Pranav Patil(125) | 3 | 3 | 2 | 1 | |
| Alcohol sensor | Harsh Aher(01) | 3 | 2 | 1 | 1 | 7 |
| | Ganesh Ahirrao (02) | 3 | 2 | 1 | 1 | |
| | Siddhant Bachhav(08) | 3 | 2 | 1 | 1 | |
| | Bharat Bagul(09) | 3 | 2 | 1 | 1 | |
| Ultrasonic sensor | Saurabh Jadhav(97) | 3 | 2 | 3 | 1 | 9 |
| | Vivek Zade(180) | 3 | 2 | 3 | 1 | |
| | Sarthak Sarkar(142) | 3 | 2 | 3 | 1 | |
| | Gokul Sanap(141) | 3 | 2 | 3 | 1 | |
| Lidar Sensor | Samarth Boraste (18) | 3 | 3 | 1 | 1 | 8 |
| | Tejas Baviskar (11) | 3 | 3 | 1 | 1 | |
| | Ankush Derle (26) | 3 | 3 | 1 | 1 | |
| | Rohit Dugaje(31). | 3 | 3 | 1 | 1 | |
| Knock Sensor | Mrunali Atre (5) | 3 | 3 | 2 | 1 | 9 |
| | Ajinkya Giri (39) | 3 | 3 | 2 | 1 | |
| | Girish Jadhav (46) | 3 | 3 | 2 | 1 | |
| | Manav Kamble (52) | 3 | 3 | 2 | 1 | |
| LM35 Temperature Sensor | Utkarsh Malve (105 | 3 | 2 | 3 | 1 | 9 |
| | Bhushan Malsane(104) | 3 | 2 | 3 | 1 | |
| | Himanshushekhar Mandal(106) | 3 | 2 | 3 | 1 | |
| | Tejas Sanjay Nankar(112) | 3 | 2 | 3 | 1 | |
| MQ2 Sensor | Tejas Sonawane (161) | 3 | 2 | 1 | 1 | 7 |
| | Aditya Handore (96) | 3 | 2 | 1 | 1 | |
| | Gaurav Patil (123) | 3 | 2 | 1 | 1 | |
| | Aniket Karmase(102) | 3 | 2 | 1 | 1 | |
| Pressure sensor | Vedant Shingade (154) | 3 | 2 | 2 | 1 | 8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Rajat Shende (146) | 3 | 2 | 2 | 1 | |
| | Akshada Raijade (136) | 3 | 2 | 2 | 1 | |
| | Vaibhav Shevkar | 3 | 2 | 2 | 1 | |
| Soil Moisture Sensor | Aniket Lawand(72) | 2 | 2 | 2 | 1 | 7 |
| | Jay Mahale(73) | 2 | 2 | 2 | 1 | |
| | Kunal Bachav(6) | 2 | 2 | 2 | 1 | |
| | Shivraj Gunjal(42) | 2 | 2 | 2 | 1 | |
| Throttle position sensor | Sanskar Pankaj Panchariya(117). | 3 | 2 | 1 | 1 | 7 |
| | Nachiket Shinde (151) | 3 | 2 | 1 | 1 | |
| | Ritesh Jibhau Kaklij (100) | 3 | 2 | 1 | 1 | |
| | Saurabh Wagh(173) | 3 | 2 | 1 | 1 | |
| Electro-Optical/Ir Sensors | Yash Shinde (153) | 3 | 3 | 2 | 1 | 9 |
| | Vishal Nishad(113) | 3 | 3 | 2 | 1 | |
| | Sahil Muthal(111) | 3 | 3 | 2 | 1 | |
| | Tanmay Mhatre(108) | 3 | 3 | 2 | 1 | |
| Piezoelectric Sensor | Chinmay Patil (119) | 2 | 2 | 2 | 1 | 7 |
| | Gaurav Pagar (115) | 2 | 2 | 2 | 1 | |
| | Pratik Pachore (114) | 2 | 2 | 2 | 1 | |
| | Alok Pagare (116) | 2 | 2 | 2 | 1 | |
| Oximeter pulse sensor | Gayatri Patil (79) | 3 | 3 | 2 | 1 | 9 |
| | Pranali Khaire(57) | 3 | 3 | 2 | 1 | |
| | Komal Ahhirrao (03) | 3 | 3 | 2 | 1 | |
| | Aniket Tupe (89) | 3 | 3 | 2 | 1 | |
| Capacitive Fingerprint sensor | Vansh Pawar 131) | 3 | 3 | 3 | 1 | 10 |
| | Suyash Sonawane(160) | 3 | 3 | 3 | 1 | |
| | Yash Sonawane(162) | 3 | 3 | 3 | 1 | |
| | Deepak Yadav(179) | 3 | 3 | 3 | 1 | |
| Metal detector sensor | Lokesh D Kelkar ( 56 ) | 3 | 2 | 2 | 1 | 8 |
| | Rutuj S Khairnar ( 60 ) | 3 | 2 | 2 | 1 | |
| | Yashodeep Khairnar(62) | 3 | 2 | 2 | 1 | |
| | Gaurav Kothawade( 66 ) | 3 | 2 | 2 | 1 | |
| Curtain Sensor | Amit Daspute (92) | 2 | 2 | 2 | 1 | 7 |
| | Shantanu Gaikwad (95) | 2 | 2 | 2 | 1 | |
| | Gaurav Patil (123) | 2 | 2 | 2 | 1 | |
| | Rohit Patole (129) | 2 | 2 | 2 | 1 | |
| Inductive sensor | Bhushan Bharsat (90) | 3 | 2 | 3 | 1 | 9 |
| | Sujata Kamble (101), | 3 | 2 | 3 | 1 | |
| | Shraddha Kurware (103), | 3 | 2 | 3 | 1 | |
| | Sakshi Shinde (152) | 3 | 2 | 3 | 1 | |
| Ultrasonic Sensor (MB8450) | Saurabh Jadhv (97) | 3 | 2 | 3 | 1 | 9 |
| | Vivek Zade (180) | 3 | 2 | 3 | 1 | |
| | Sarthak Sarkar (142) | 3 | 2 | 3 | 1 | |
| | Gokul Sanap (141) | 3 | 2 | 3 | 1 | |
| | | | | | | |
| Biosensors | Shubham Mhaskar(107) | 3 | 2 | 2 | 1 | 8 |

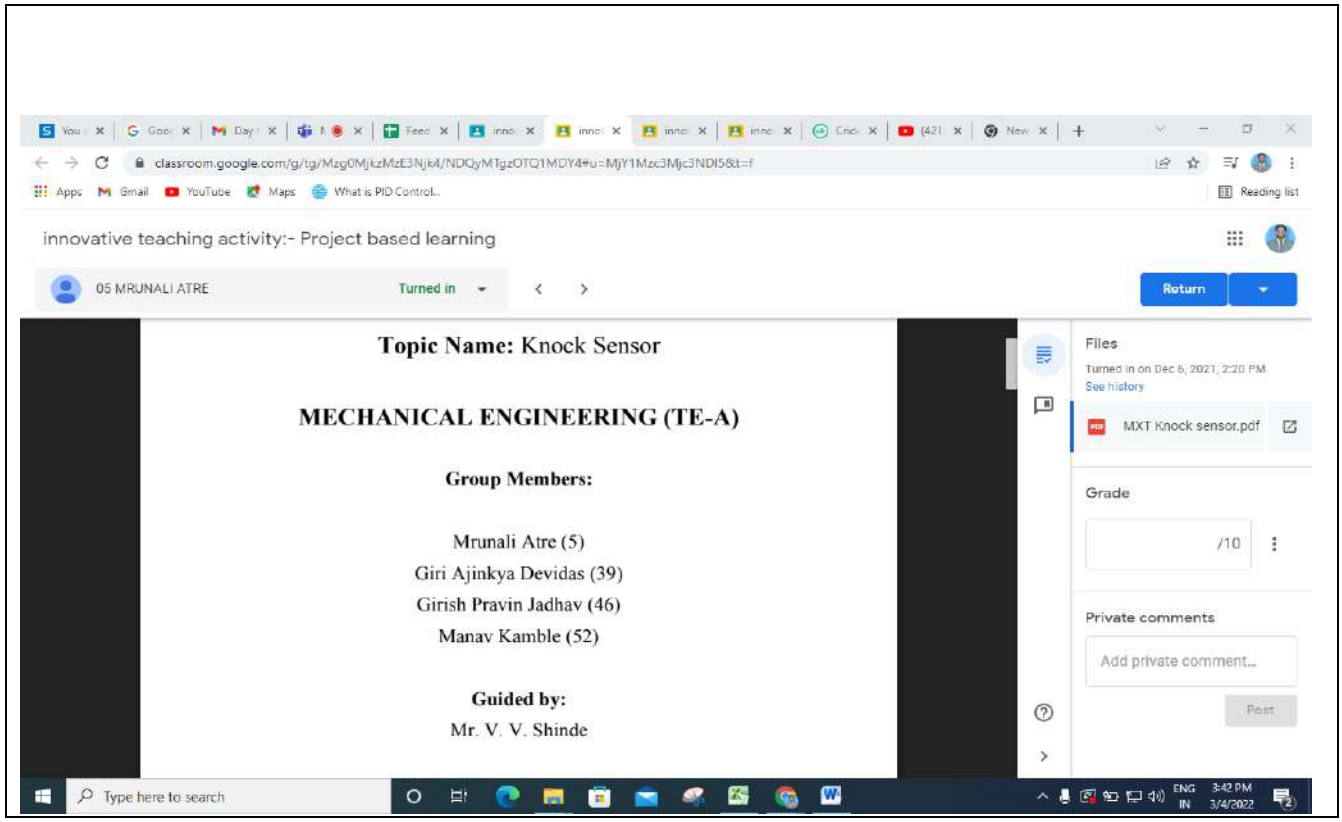
| | | | | | | |
|---|---|---|---|---|---|---|
| | Jaydatt Taskar(166) | 3 | 2 | 2 | 1 | |
| | Akshay Watpade(177) | 3 | 2 | 2 | 1 | |
| | Urvesh Waghulde(175) | 3 | 2 | 2 | 1 | |
| Curtain Sensor | Amit Dashpute(92) | 3 | 2 | 1 | 1 | 7 |
| | Shantanu Gaikwad(95) | 3 | 2 | 1 | 1 | |
| | Rohit Patole(129) | 3 | 2 | 1 | 1 | |
| | Ankit Sonawane(159) | 3 | 2 | 1 | 1 | |
| Mass Air Flow Sensor. | Abhishek Tambe (165) | 3 | 2 | 3 | 1 | 9 |
| | Rohit Salve(140) | 3 | 2 | 3 | 1 | |
| | Nishant Pimpare (132), | 3 | 2 | 3 | 1 | |
| | Pranav Rayate(138). | 3 | 2 | 3 | 1 | |
| LM35 Temperature Sensor | Bhushan Malsane(104) | 3 | 2 | 3 | 1 | 9 |
| | Utkarsh Malve(105) | 3 | 2 | 3 | 1 | |
| | Himanshushekhar Mandal(106) | 3 | 2 | 3 | 1 | |
| | Tejas Nankar(112) | 3 | 2 | 3 | 1 | |
| Level sensor | Gaurav Dhondge (30) | 3 | 2 | 2 | 1 | 8 |
| | Prathamesh Jadhav(48) | 3 | 2 | 2 | 1 | |
| | Umesh Jadhav(50) | 3 | 2 | 2 | 1 | |
| | Amey Kadam(51) | 3 | 2 | 2 | 1 | |
| Proximity sensor | Shubham Jadhav (49) | 3 | 2 | 1 | 1 | 7 |
| | Minesh Mahesh Chaure (24) | 3 | 2 | 1 | 1 | |
| Accelerometer sensor | Rohit Doke (93) | 3 | 2 | 2 | 1 | 8 |
| | Ajinkya modak(109) | 3 | 2 | 2 | 1 | |
| | Rushikesh shelke(145) | 3 | 2 | 2 | 1 | |
| | Sagar shirsath(157) | 3 | 2 | 2 | 1 | |
| PIR motion sensor | Rohit Shilwan(84), | 3 | 2 | 2 | 1 | 8 |
| | Nagesh Wadkar(89) | 3 | 2 | 2 | 1 | |
| | Rushikesh Pawar(81) | 3 | 2 | 2 | 1 | |
| throttle position sensors | Bodke Sushant ( 15 ) | 2 | 2 | 2 | 1 | 7 |
| | Bodke Aniket ( 14 ) | 2 | 2 | 2 | 1 | |
| | Chavhan Rushikesh(25) | 2 | 2 | 2 | 1 | |
| | Gaikwad Onkar (34) | 2 | 2 | 2 | 1 | |
| MQ2Gas Sensors | Aniket Karmase(102) | 3 | 2 | 1 | 1 | 7 |
| | Gaurav Patil(123) | 3 | 2 | 1 | 1 | |
| | Tejas Sonawane(161) | 3 | 2 | 1 | 1 | |
| | Aditya handore | 3 | 2 | 1 | 1 | |
| Accelerometer sensor | Yashraj Pangre (77) | 2 | 2 | 2 | 1 | 7 |
| | Sarthak Sonaskar(86) | 2 | 2 | 2 | 1 | |
| | Ishan Patil(80) | 2 | 2 | 2 | 1 | |
| Level sensor | Gaurav Dhondge (30) | 3 | 2 | 1 | 1 | 7 |
| | Prathamesh Jadhav (48) | 3 | 2 | 1 | 1 | |
| | Umesh Jadhav (50) | 3 | 2 | 1 | 1 | |
| | Amey Kadam (51) | 3 | 2 | 1 | 1 | |
| Ultra sonic sensor | Shubham Bahiram(10) | 2 | 2 | 2 | 1 | 7 |
| | Pratik Ghotekar (38) | 2 | 2 | 2 | 1 | |
| | Purushottam Mondhe(75) | 2 | 2 | 2 | 1 | |

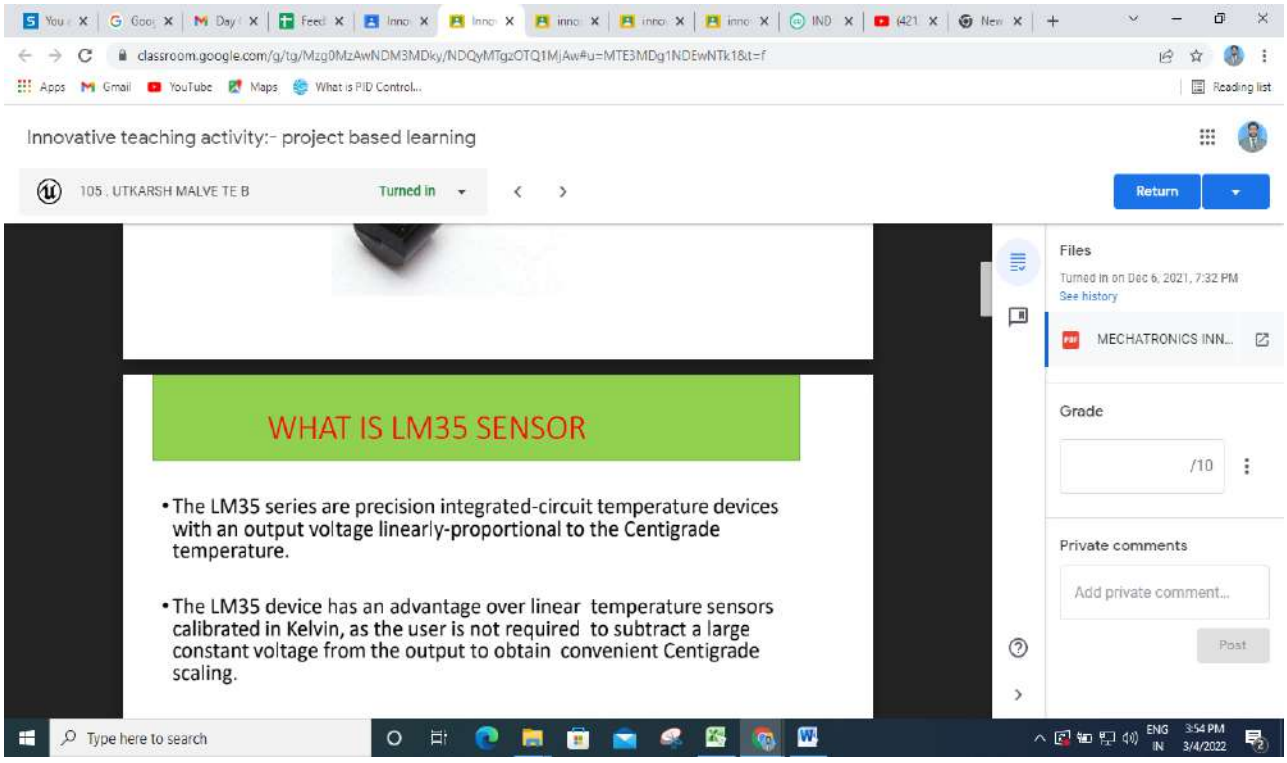
| | | | | | | |
|---|---|---|---|---|---|---|
| | ,Rohit Patale (78) | 2 | 2 | 2 | 1 | |
| Proximity sensors | Yuvraj Labhade(70) | 3 | 2 | 2 | 1 | 8 |
| | Vishal Khole(64) | 3 | 2 | 2 | 1 | |
| | Vaibhav Kushare(69) | 3 | 2 | 2 | 1 | |
| | Aniket Lahane(71) | 3 | 2 | 2 | 1 | |
| Gyroscope Sensor | Deven Patil(122) | 3 | 2 | 3 | 1 | 9 |
| | Himanshu Potdar(134) | 3 | 2 | 3 | 1 | |
| | Tanay Ugale(170) | 3 | 2 | 3 | 1 | |
| | Jayesh Thakur(168) | 3 | 2 | 3 | 1 | |
| Hall Effect Sensor | Mukta Jadhav (47) | 3 | 2 | 3 | 1 | 9 |
| | Sakshi Gadakh (32) | 3 | 2 | 3 | 1 | |
| | Shradhha Holkar(45) | 3 | 2 | 3 | 1 | |
| | Neha Kapadnis(53) | 3 | 2 | 3 | 1 | |
| LIDAR sensor | Bokil Harshal(16) | 3 | 2 | 2 | 1 | 8 |
| | Gujrati anand(41) | 3 | 2 | 2 | 1 | |
| | Kamble Manav(52) | 3 | 2 | 2 | 1 | |
| | Kardile Yash(55) | 3 | 2 | 2 | 1 | |
| Gyroscope sensor | Himanshu potdar(134) | 3 | 2 | 1 | 1 | 7 |
| | Jayesh Thakur(168) | 3 | 2 | 1 | 1 | |
| | Deven Patil(122) | 3 | 2 | 1 | 1 | |
| | Tanay Ugale(170) | 3 | 2 | 1 | 1 | |
| Hygrometer sensors | Vishwajit Gadakh(33) | 2 | 2 | 2 | 1 | 7 |
| | Swapnil borade(17) | 2 | 2 | 2 | 1 | |
| | Rushikesh Bhandare(12) | 2 | 2 | 2 | 1 | |
| | Vishal Budhwant(20) | 2 | 2 | 2 | 1 | |

**8. Impact Analysis**

| Questions | 3- High/Excellent | 2 - Moderate /Average | 1- Slight/Poor |
|---|---|---|---|
| 1. Did you understand and cover the objective of the activity? | **91** | **8** | **-** |
| 2. Do you find this activity helpful in understanding the key concept of topic?(PO1) | **88** | **10** | **1** |
| 3. Does this method helps to improve presentation skills and communication skills and team building ability?(PO9,PO10) | **90** | **9** | **-** |
| 4. Does the content covered are relevant and will be helpful as a life-long learning?(PO12) | **85** | **14** | **-** |
| 5. Can you want to conduct such activity again? | **86** | **13** | **-** |

**9. Activity Picture**


innovative teaching activity:- Project based learning
05 MRUNALI ATRE
Turned in
Return
Topic Name: Knock Sensor
MECHANICAL ENGINEERING (TE-A)
Group Members:
Mrunali Atre (5)
Giri Ajinkya Devidas (39)
Girish Pravin Jadhav (46)
Manav Kamble (52)
Guided by:
Mr. V. V. Shinde
Files
Turned in on Dec 6, 2021, 2:20 PM
See history
MXT Knock sensor.pdf
Grade
/10
Private comments
Add private comment...
Post
Type here to search


Innovative teaching activity:- project based learning
105 . UTKARSH MALVE TE B
Turned in
Return
WHAT IS LM35 SENSOR
• The LM35 series are precision integrated-circuit temperature devices with an output voltage linearly-proportional to the Centigrade temperature.
• The LM35 device has an advantage over linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from the output to obtain convenient Centigrade scaling.
Files
Turned in on Dec 6, 2021, 7:32 PM
See history
MECHATRONICS INN...
Grade
/10
Private comments
Add private comment...
Post
Type here to search

**10.** **Shinde.vishal@kbtcoe.org, hod.mech@kbtcoe.org**

| | |
|---|---|
| Mr.V. V. Shinde<br>Subject In charge | Mr. P.C. Shete<br>Module Coordinator |
| Dr. A. B. Kakade<br>NBA Coordinator | Dr. V. C. Shewale<br>HOD |