**GOVERNMENT POLYTECHNIC**

**CHHAPRA**



COURSE FILE (Lecture Plan)

OF

**Basic Electrical & Electronics Lab (2033408)**

Faculty Name:

Prof. SAURAV KUMAR

Lecturer

**DEPARTMENT OF AUTOMOBILE ENGINEERING**

|  |
| --- |
| **STATE BOARD OF TECHNICAL EDUCATION** |
| Bihar, Patna  SS.JPG  &  CC.JPG |

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Department of Automobile Engineering

**Vision**

To be a centre of excellence in the field of Automobile Engineering offering value based world class education and research producing well qualified engineers, who can contribute favorably to the technological and socio-economic development of the nation.

**Mission**

1. To ensure sufficient modern technological exposure to the students in order to create skilled professionals.

2. To frequently update the labs keeping in view the requirement of the current industry scenario.

3. To extend counseling and career guidance facility to the students to help them to achieve their goal.

4. To encourage faculties and staffs to pursue higher education and to do the research work.

5. To encourage faculties and staffs to participate in various seminars, conferences and workshops to keep themselves updated of the state-of-the-art technology.

**Course Description:-**

It offers an unparalleled exposure to the entire gamut of topics such as Electricity Fundamentals, Network Theory, Electro-magnetism, Electrical Machines, Transformers, Measuring Instruments, Power Systems, Semiconductor Devices, Digital Electronics and Integrated Circuits. Extensive use of illustrations, examples and exercises in accordance with the progressive development of the concepts covered within the chapter make the reading more exciting. The course extensively includes number of illustrations, examples and exercises in accordance with the progressive development of the concept covered within the chapter to make the reading more exciting Features.

**Course Objectives:-**

The aim of this course is to help the students to attain the following industry identified competency through various teaching learning experiences:

Electricity Fundamentals, Network Theory, Electro-magnetism, Electrical Machines, Transformers, Measuring Instruments, Power Systems, Semiconductor Devices, Digital Electronics and Integrated Circuits

**Course Syllabus**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** | **Practical** | | |  | | | **Credits** |
| **2033408** | **No. of Periods Per Week** | | | **Full Marks** | **:** | **50** | **02** |
|  | **L** | **T** | **P/S** | **ESE** | **:** | **50** |
|  | **—** | **—** | **04** | **Internal** | **:** | **15** |
|  | **—** | **—** | **—** | **External** | **:** | **35** |

**BASIC ELECTRICAL & ELECTRONICS LAB**

**CONTENTS: PRACTICAL**

## Skills to be developed:

Intellectual Skills:

* Select equipment such as motors, meters & components
* To interpret circuits

Motor Skills:

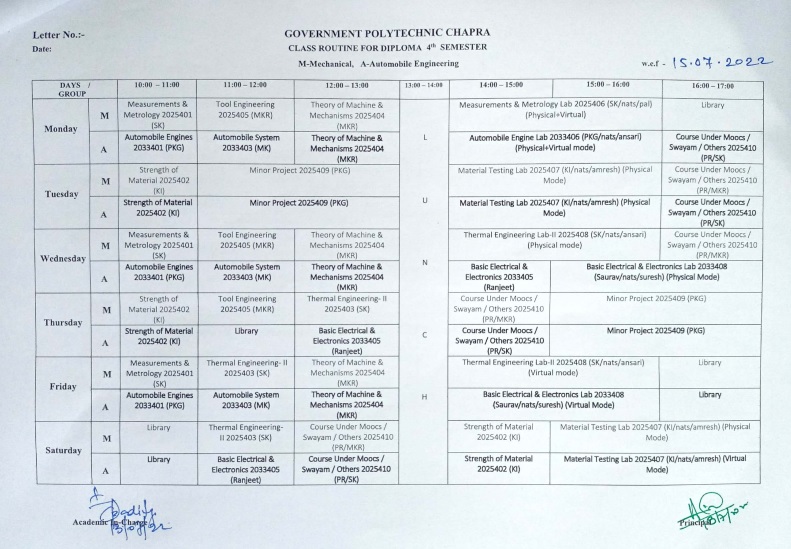
* To draw circuits
* To measure various parameters

List of Practical:

1. For a given resistive & inductive series & parallel circuit, select ammeter, voltmeter & wattmeter. Make the connections and measure current, voltage and power drawn by the circuit. Measure it by clip on meter & compare it.
2. For a given DC Shunt/Series motor, select suitable meters, make connections as per diagram, check the connections and run the motor. Take the meter readings to draw speed torque characteristics. Make suitable changes in the connections to reverse the direction of rotation.
3. For the above given motor prepare a circuit to control its speed above & below normal, plot its graph.
4. Testing of components like diode, LED, SCR, diac, triac, Zener diode, inductor, capacitor using a multimeter
5. Verify truth tables for logic gates-. NOT, AND, OR, NAND, NOR.
6. Calculation of Vdc of half and full wave rectifier with and without filter.
7. Line & load regulation of alternator output using Zener diode.
8. To measure shaft speed by using Stroboscope. Study and observe the characteristics of LVDT.

**Course outcomes:** A knowledge of the fundamentals of electronics and major functioning of electronic devices can assist a mechanical engineer to better communicate with electrical and electronics engineers collaborating for the design/manufacturing of these systems.

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<https://www.gpchhapra.org.in/2022/07/13/class-routine-notice/>

**TIME TABLE**

**FACULTY:-** Prof.Saurav Kumar (Electronics Engineering Department)

**GOVERNMENT POLYTECHNIC CHAPRA**

**CLASS ROUTINE FOR DIPLOMA 4th SEMESTER EC- Automobile Engineering**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1st  10:00-11:00 | 2nd  1:00-12:00 | 3rd  12:00-1:00 |  | 4th  2:00-3:00 | 5th  3:00-4:00 | 6th  4:00-5:00 |
| MON |  |  |  | L  U  N  C  H |  |  |  |
| TUE |  |  |  |  |  |  |
| WED |  |  |  |  | **Basic Electrical & Electronics Lab 2033408 (Saurav Kumar/nats/suresh) (Physical Mode)** | |
| THU |  |  |  |  |  |  |
| FRI |  |  |  | **Basic Electrical & Electronics Lab 2033408 (Saurav Kumar/nats/suresh) (Physical Mode)** | |  |
| SAT |  |  |  |  |  |  |

**Student list**

**Automobile Engineering.**

|  |  |
| --- | --- |
| **Roll Number** | **Name Of the Student** |
| 311131220001 | PANKAJ KUMAR |
| 311131220002 | TUSHAR |
| 311131220003 | DHIRAJ KUMAR |
| 311131220004 | SHASHIKANT KUMAR |
| 311131220005 | MANISH KUMAR CHAURASIYA |
| 311131220006 | DHRUV KUMAR |
| 311131220007 | ABHISHEK KUMAR SINGH |
| 311131220008 | ANKIT KUMAR |
| 311131220009 | RUPESH KUMAR TIWARI |
| 311131220010 | THAKUR ANISH ADARSH |
| 311131220011 | PAWAN KUMAR |
| 311131220012 | MUKESH KUMAR SAH |
| 311131220014 | ABHIJIEET KUMAR |
| 311131220015 | ARJUN KUMAR RAM |
| 311131220016 | VISHAL KUMAR |
| 311131220019 | SANTOSH KUMAR |
| 311131220020 | ANKESH KUMAR |
| 311131220021 | RAHUL RAY |
| 311131220022 | SONI KUMARI |
| 311131220023 | MUNNA KUMAR SHARMA |
| 311131220024 | ADITYA KUMAR |
| 311131220025 | AKSHAY KUMAR NIRALA |
| 311131220026 | AMIT KUMAR RAM |
| 311131220027 | SUMIT SAURABH |
| 311131220028 | ABHISHEK KUMAR RAM |
| 311131220029 | ANISH KUMAR |
| 311131220030 | MD ALHARISH |
| 311131220031 | SAURABH ANAND |
| 311131220032 | ADARSH BHARDWAJ |

|  |  |
| --- | --- |
| 311131220033 | VIVEK SAURAV |
| 311131220034 | DEEPAK KUMAR |
| 311131220035 | KAUSHAL KUMAR |
| 311131220036 | UTKARSH KUMAR |
| 311131220037 | AMAR KUMAR |
| 311131220038 | AYUSH RAJ |
| 311131220039 | AYUSH KUMAR |
| 311131220040 | AMAN KUMAR DEV |
| 311131220041 | KRISHNA PANDIT |
| 311131220042 | SHIVAM KUMAR |
| 311131220043 | RAVI KUMAR SAH |
| 311131220044 | SAURABH KUMAR |
| 311131220045 | VISHWAJEET KUMAR |
| 311131220046 | RAJEEV KUMAR CHAUHAN |
| 311131220047 | SHIPRA BHARTI |
| 311131220048 | ADITYA KUMAR |
| **401/A/21** | **SUBHAM KUMAR SINGH** |
| **402/A/21** | **ARUN KUMAR** |
| **403/A/21** | **AVINASH KUMAR** |
| **601/A/21** | **AMARJEET KUMAR** |
| **602/A/21** | **NIHAL KUMAR** |
| **603/A/21** | **SHAHNAWAZ ALAM** |
| **604/A/21** | **MUSKAAN KUMARI** |
| **605/A/21** | **ANUP KUMAR** |
| **606/A/21** | **AARIF PRAWEJ** |
| **607/A/21** | **BISHWASH SINGH** |
| **608/A/21** | **ABHISHEK KUMAR SINGH** |
| **609/A/21** | **SHIVAM KUMAR** |
| **610/A/21** | **ANURAG PRASAD** |
| **611/A/21** | **LALAN KUMAR YADAV** |

**LECTURE PLAN**

|  |  |
| --- | --- |
| **Topics** | **Lecture Number** |
| Intellectual Skills: |  |
| Select equipment such as motors, meters & components | 1-2 |
| To interpret circuits | 3-4 |
| Motor Skills: |  |
| To draw circuits | 5-7 |
| To measure various parameters | 8-9 |
| List of Practical’s: |  |
| For a given resistive & inductive series & parallel circuit, select ammeter, voltmeter & wattmeter. Make the connections and measure current, voltage and power drawn by the circuit. Measure it by clip on meter & compare it | 10-15 |
| For a given DC Shunt/Series motor, select suitable meters, make connections as per diagram, check the connections and run the motor. Take the meter readings to draw speed torque characteristics. Make suitable changes in the connections to reverse the direction of rotation | 16-19 |
| For the above given motor prepare a circuit to control its speed above & below normal, plot its graph | 20-24 |
| Testing of components like diode, LED, SCR, diac, triac, Zener diode, inductor, capacitor using a multimeter | 25-30 |
| Verify truth tables for logic gates-. NOT, AND, OR, NAND, NOR | 31-34 |
| Calculation of Vdc of half and full wave rectifier with and without filter | 35-38 |
| Line & load regulation of alternator output using Zener diode | 39-42 |
| To measure shaft speed by using Stroboscope. Study and observe the characteristics of LVDT | 43-48 |

**This document is approved by**

|  |  |  |
| --- | --- | --- |
| **Designation** | **Name** | **Signature** |
| Course Coordinator | Prof. Saurav Kumar |  |
| HoD | Prof. Sushant kumar |  |
| Principal | Dr.Anil Kumar Singh |  |
| Date |  |  |