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## GOVERNMENT OF GUJARAT TECHNICAL EDUCATION DEPARTMENT

**DR. S. & S. S. GHANDHY COLLEGE OF ENGG. AND TECH., MAJURA GATE, SURAT.**  
**DEPARTMENT OF POWER ELECTRONICS**

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### **Power Electronics Department**

Since 1984, Government of Gujarat has offered 03 Year Power electronics course for the undergraduate students with an intake of 20 seats. Being multidisciplinary branch no of intake were increased from 20 to 30 and 30 to 60 from 1990 to 2001 respectively. Department has established various laboratories like power electronics lab, basic electronics lab, instrumentation lab, computer lab, project lab etc along with modern instruments for the laboratory experiments in the emerging world of power electronics and research work. Department offered six months industrial training program along with project to final year students in various industries like ESSAR, KRIBHCO, NTPC, RELIANCE, L & T, HIREL, INDUCTOTHERM, ELECTROTHERM etc. Department has well qualified and experienced staff having M.E./M.Tech degree.

To produce quality technocrats in the field of power electronics to contribute industries as well as future power sector and quality of power for the nation growth at large while maintaining professional ethics for the benefit of society.

### **VISION**

"To be a unique center of excellence in power electronics technical education innovation for sustainable growth of industry and society."

### **MISSION**

1. To impart viable technical core competence in Power Electronics.
2. To respond effectively to the needs of Power Electronics industry and community at large.
3. To promote faculty members to excel and in turn motivate the students to achieve excellence in Power Electronics.
4. To develop conducive campus environment for qualitative learning and innovation.
5. To inculcate moral, ethical and professional values amongst the students.

### **Program Educational Outcomes (PEOs)**

**PEO-1:** Provide socially responsible, environment friendly solutions to Power Electronics related problems adapting professional ethics.

**PEO-2:** Adapt state-of-the-art Power Electronics technologies to work in multi-disciplinary work environments.

**PEO-3:** Solve broad-based problems individually and as a team member communicating effectively in the world of work.

**PEO-4:** Pursue higher studies in the field of Power Electronics and allied engineering.

### **Program specific outcomes (PSOs)**

**PSO-1:** Install and maintain Power Electronics based wind and solar system.

**PSO-2:** Use modern tools/software related to circuit testing and simulation.



| SYLLABUS STRUCTURE OF DIPLOMA POWER ELECTRONICS<br>EFFECTIVE FROM NEW ADMISSION 2021 |                                 |  | TEACHING<br>SCHEME |   | LECTURE | TUTORIAL            | PRACTICAL |
|--|---------------------------------|--|--------------------|---|---------|---------------------|-----------|
|  |                                 |  |                    |   | 1HR=1CR | 1HR=1CR             | 2HR=1CR   |
| SEM.   | COURSE<br>CODE                  | COURSE TITLE   | L                  | T | P       | CREDIT<br>(L+T+P/2) | CATEGORY  |
| 1  | 4300001                         | Mathematics  | 3                  | 1 | 0       | 4                   | BS        |
| 1  | 4300006                         | Engineering Chemistry  | 3                  | 0 | 2       | 4                   | BS        |
| 1  | 4300002                         | Communication Skills in English  | 2                  | 0 | 1       | 3                   | HS        |
| 1  | 4302401                         | Electrical & Electronic Workshop LAB   | 0                  | 0 | 4       | 2                   | ES        |
| 1  | 4311101                         | Fundamentals of Electrical Engineering   | 3                  | 0 | 2       | 4                   | ES        |
| 1  | 4300012                         | Engineering Drawing and Computer Aided Design  | 0                  | 0 | 4       | 2                   | ES        |
| 1  | 4300015                         | Sports and Yoga  | 0                  | 0 | 2       | 0                   | HS        |
| 2  | 4320002                         | Engineering Mathematics  | 3                  | 1 | 0       | 4                   | BS        |
| 2  | 4300005                         | Physics  | 3                  | 0 | 2       | 4                   | BS        |
| 2  | 4322401                         | Sensors and Transducers  | 3                  | 0 | 2       | 4                   | PC        |
| 2  | 4322402                         | Basic Electronics  | 4                  | 0 | 2       | 5                   | PC        |
| 2  | 4300010                         | Basics of Information and Communication Technology LAB   | 0                  | 0 | 4       | 2                   | ES        |
| 2  | 4300003                         | Environment and Sustainability   | 3                  | 0 | 0       | 3                   | HS        |
| 2  | 4300016                         | Indian Constitution  | 2                  | 0 | 0       | 0                   | AU        |
| 3  | 4332401                         | DC machines and transformer  | 4                  | 0 | 2       | 5                   | PC        |
| 3  | 4332402                         | Digital Electronics  | 4                  | 0 | 2       | 5                   | PC        |
| 3  | 4332403                         | Linear Electronic Circuit  | 3                  | 0 | 2       | 4                   | PC        |
| 3  | 4332404                         | Elements of Power Electronics  | 3                  | 0 | 2       | 4                   | PC        |
| 3  | 4332405                         | Electrical & Electronic measurement  | 3                  | 0 | 2       | 4                   | PC        |
| 4  | 4342401                         | D.C. Power Electronic Converters & Drives  | 4                  | 0 | 2       | 5                   | PC        |
| 4  | 4342402                         | AC Rotating Machines   | 4                  | 0 | 2       | 5                   | PC        |
| 4  | 4342403                         | Electric Vehicle   | 3                  | 0 | 2       | 4                   | PC        |
| 4  | 4342404                         | Microcontroller  | 3                  | 0 | 2       | 4                   | PC        |
| 4  | 4342405                         | Modern Control Technology  | 3                  | 0 | 2       | 4                   | PC        |
| 4  | 4340001,<br>4340002,<br>4340003 | Essence Of Indian Knowledge & Tradition/<br>Contributor Personality Development/<br>Integrated Personality Development | 4                  | 0 | 0       | 2                   | OE        |
| 5  | 4352401                         | AC Power Electronic Converter & Drives   | 4                  | 0 | 2       | 5                   | PC        |
| 5  | 4352406                         | Summer Internship-II   | 0                  | 0 | 6       | 3                   | SI        |
| 5  | 4300021                         | Entrepreneurship and Start-ups   | 3                  | 0 | 0       | 3                   | HS        |
| 5  | 4352404,<br>4352405             | Internet of Things/Energy Conservation<br>and Audit  | 3                  | 0 | 2       | 4                   | PE        |
| 5  | 4352403                         | Programable Logic Controller   | 3                  | 0 | 2       | 4                   | PC        |
| 6  |                                 | Project  | 0                  | 0 | 28      | 14                  | PR        |
| <b>TOTAL CREDITS</b>   |                                 |  |                    |   |         | <b>120</b>          |           |

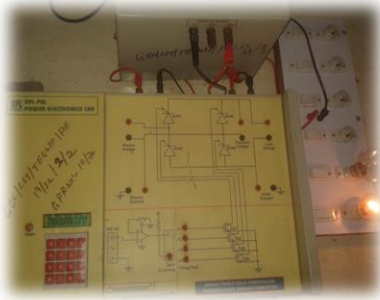
| CATEGORY DISCRPTION                       |                                      |
|---|--------------------------------------|
| Humanities & Social Sciences courses (HS) | PROGRAMME ELECTIVE (PE)              |
| BASIC SCIENCE (BS)                        | OPEN ELECTIVE COURSES (OE)           |
| ENGG. SCIENCE (ES)                        | PROJECT/SEMINAR/INTERNSHIP(PR/SE/SI) |
| PROGRAMME CORE (PC)                       | AUDIT COURSES (AU)                   |

## Laboratory Facilities

Creative thinking and experience integrated design of the systems, open ended experiments, mini projects and course project are introduced in the curriculum so as to enable students to learn problem solving skills. The department has well equipped following basic and advanced laboratories considering the demands of the industries.

### 1. Power Electronics Converter and Drives Lab

This laboratory houses a demonstration and experimental facility for various power electronics converters and AC-DC Drives.



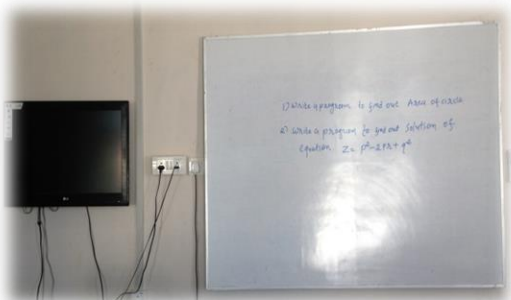
### 2. Electrical Machine Lab

This laboratory has electric motor-generator sets and power electronic drives. Students are exposed to concepts of machine characteristics and control through lab experiments.



### 3. Computer Lab

This laboratory houses highly configured computer systems which facilitate students to expose application level concept of control system, microcontroller and digitalization.



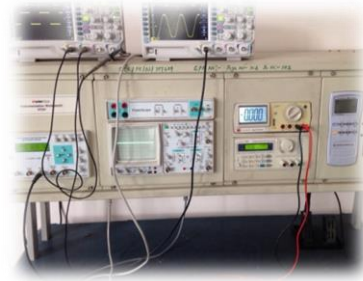
#### 4. Measurement Lab

A laboratory has various instruments in the field of measurement and transducers. This enables students to get experiences in measuring instruments and transducers.



#### 5. Electronics Lab

The laboratory intended for providing basic skills to test and use analog and digital electronic devices and circuits.



## Co-Curricular Activities and Achievements of Students

In order to impart holistic education, the Department conducts a number of co curricular and personality development activities for the students. Along with the technical skills to promote the extracurricular talents of the students we are giving many efforts to develop students in many areas. Some of the activities and achievements are listed here.

- ✓ One day workshop on “Recent Trends in Power Electronics”.
- ✓ Paper Presentation competition for students.
- ✓ Mini projects during semester.
- ✓ More than 40 Expert lecturers and seminars arranged during last 5 Year.
- ✓ Abhisek Limbasiya achieved “best ISTE student chapter award” from Gujarat section 2015.
- ✓ Rasaniya Richa achieved “best ISTE student chapter award” from Gujarat section 2010, 2011.
- ✓ Two students achieved first prize in Poster Presentation Competition at Surat.
- ✓ Two students achieved second prize in Quiz Competition at Surat.
- ✓ Two groups achieved first and third prize in Garba Competition under Swarnim Gujarat Navratra Mahotsav at surat
- ✓ Department students are working for ISTE Chapter and Sports & Cultural cell of Institute.
- ✓ Abhisek Limbasiya working as a student co-ordinator for sports & Cultural cell for the institute.
- ✓ Dubey Bhimlesh Umakant, Dudhpakwala Nainesh Rasiklal , Badgujar Charanjeetsingh , Rana Hiren secured GOLD medal from GUT since 2011,2012,2013 and 2014 sequentially.
- ✓ Kamanwar Keyur secured First Prize at Classical Instrumental during GTU Youth Festival 2013 & 2014.

## Training and Placement Opportunities

- |   |                                  |   |
|---|----------------------------------|---|
| 1. ISRO, Ahmedabad                                | 12. Essar Steel Ltd.             | 23. Suzlon India Ltd.                           |
| 2. PRL, Gandhinagar                               | 13. Hi-Rel Electronics.          | 24. Bombardier Transportation India Ltd, Baroda |
| 3. Larsen & turbo Ltd.                            | 14. Essar power ltd, Surat       | 25. ABB ltd, Baroda                             |
| 4. Gujarat Narmada Vally Fertilizers Ltd., Surat. | 15. Ceat tyre ltd.               | 26. LDC, Baroda.                                |
| 5. Gujarat Gas Cp. Ltd.                           | 16. Apollo tyres ltd.            | 27. Kakrapar power station                      |
| 6. Garden Silk Mill.                              | 17. R S Automation, Vapi.        | 28. GSECL, Ukai, Surat                          |
| 7. N. T. P. C., Hazira.                           | 18. Pal electronics, Surat.      | 29. GNFC ltd, Bharuch                           |
| 8. KRIBHCO, Surat.                                | 19. Enercon India ltd.           | 30. Torrent power ltd,                          |
| 9. Gujarat Electricity Board,                     | 20. Amtech electronics India Ltd | 31. Batliboi ltd. Surat.                        |
| 10. Reliance Industries                           | 21. Suvik Electronics Pvt Ltd.   | 32. Sarin technology, Surat                     |
| 11. N. T. P. C.                                   | 22. ONGC ltd, Bharuch.           |   |

## **Strength**

- ✓ Highly qualified staff.
- ✓ A unique course for which higher studies can be done in many countries.
- ✓ Government of India have formed group for HVDC Greed which is directly related to Power Electronics.
- ✓ In the current era of renewable Energy Power Electronic Converter is the heart of System.

## **Future Scope**

- ✓ Power Electronics deals with Manufacturing/ Servicing of Power Processing Products, Power Generation, Power transmission and Power Distribution System. Also deals in automation and instrumentation industry.

## **Institute- Industry-Interaction**

Field of power electronics is advanced branch nowadays in almost all industries starting from small scale to large scale without it control and conversion of high power along with desired frequency band would not possible. This can be implemented effectively with the necessary co-operation and support from various industries like you by starting effective interaction related to recent trends in industry with academic institute like we. Here by we are open to arrange seminars, trainings, placements, collaborations for the mutual benefits.