

M.Tech(Power Electronics)

About the Programme:

Master of Technology in Power Electronics is a two-year post-graduate programme dedicated to enlightening students with the research oriented knowledge and skilled as per the societal needs. M.Tech. (Power Electronics) has been accredited by **National Board of Accreditation (NBA)**. Power Electronics Program has a **Research Center** recognized by JNTU Hyderabad (The Affiliating University). Well qualified and experienced faculty ably supported by highly skilled and competent technicians are the strength of the program in the department. The Department has **37** faculty in various specializations. Department is reinforced with **21** Doctorates and four faculty are guiding **19** Ph.D. Scholars as supervisors. 50% of the Doctorates are specialized in Power Electronics. Program has all infrastructural facilities required for imparting high quality education and is structured to meet the present day needs of the society.

Brief view of the programme:

- ✓ **Programme Name:** M. Tech (Power Electronics)
- ✓ **Duration:** 2 Years (4 Semesters)
- ✓ **NBA Accreditation:** Yes (Accredited during 2015 to 2017)
- ✓ **Offered by the Department:** Electrical & Electronics Engineering
- ✓ **Programme offered since:** 2003
- ✓ **Sanctioned Intake:** 18

VISION

- **To excel in Education, Technology and Research in Electrical and Electronics Engineering leading to sustainable socioeconomic development of the nation**

MISSION

- **Excellent teaching learning environment imbued with professional ethics and social responsibility in promoting quality education**
- **Promoting research through industry collaborations and innovative projects**

Programme Highlights:

- M.Tech. Power Electronics is a PG Programme with NBA Accreditation and is approved by UGC, AICTE and JNTU Hyderabad.
- The programme is of four semesters that makes the student to explore contemporary technologies and makes the student industry ready with a focus towards research and promotes self-learning.
- Dedicated faculty with rich experience to provide exploration of good opportunities.
- The programme offers a set of core courses and elective courses, allowing students to specialize in Advanced technologies.
- Improves the research methodology and self-learning using Technical seminars and project works.
- Advanced softwares' like PSCAD/ EMTDC, MATLAB, CASPOC, MiPOWER, USB hardware lock, ETAP 14.0, LABVIEW and MULTISIM versions are available in Computer Simulation Laboratories to carry out M.Tech. projects and research work in the PG Program.
- Department has MOUS with **8** Industries to promote Knowledge Sharing and strengthen the Institute Industry Interaction through which the internships may be provided to the students.
- Department is sanctioned with **Rs.56.68 Lakhs** worth research funding projects from UGC, Department also received grants from AICTE (MODROBS, SDP, SEMINAR GRANT, CONFERENCE), DST (FIST) worth **Rs.53.63 lakhs**.
- The Dissertation (Major Project Work) in the third and final semester enables students to closely work with faculty with funded projects with good stipend / work with industry using internships that enables the student to see many opportunities after the graduation.
- The programme uses a Continuous Evaluation System, mentoring and monitoring by a dedicated programme coordinator who will assist the students in the entire journey of 2 years of the programme and motivates the students towards the dreams accomplishment. Uses the latest teaching methodologies like WIT & WIL, Course Based Projects, Learning By Doing, Lab Protocol, Story Board that escalates the learning process of the students.
- Visit to industry premises in regular time that stimulates the students to be ready for industry orientation / research promotion.

Programme Curriculum:

The programme curriculum of Power Electronics is designed that meets the aspirations of the industry with practical approach, research orientation and with great social impact. The curriculum includes courses related to Core contents of the programme, Professional electives and Open electives. In each elective the programme offers a collection of rich and contemporary courses that enables the student a good choice.

I SEMESTER								
Course Code	Name of the Course	Total Number of contact hours				Theory Credits	Practical Credits	Total Credits
		Lecture (L)	Tutorial (T)	Practical# (P)	Total Hours			
18PC1PL01	Power Electronic Converters	3	0	0	3	3	0	3
18PC1PL02	Modeling and Analysis of Electrical Machines	3	0	0	3	3	0	3
18PC1PL03	Electric Drives System	3	0	0	3	3	0	3
18PE1PL01	Advanced Microcontroller-Based Systems	3	0	0	3	3	0	3
18PE1PL02	VLSI Design							
18PE1PS01	Renewable Energy Systems							
18PE1PL03	Artificial Intelligence Techniques	3	0	0	3	3	0	3
18PE1PS04	SCADA Systems and Applications							
18PE1PL04	Digital Signal Processing For Power & Control							
18PC2PL01	Power Electronic Converters Laboratory	0	0	3	3	0	1.5	1.5
18PC2PL02	Modeling and Simulation of Electrical Drives Laboratory	0	0	3	3	0	1.5	1.5
18PW4PE01	Technical Seminar	0	0	4	4	0	2	2
18AU5CS01	Research Methodology and IPR	2	0	0	2	0	0	0
Total		17	0	10	27	15	5	20
II-Semester								
Course Code	Name of the Course	Total Number of contact hours				Theory Credits	Practical Credits	Total Credits
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours			

18PC1PL04	Advanced Power Electronic Converters	3	0	0	3	3	0	3
18PC1PL05	Digital Controllers in Power Electronic Applications	3	0	0	3	3	0	3
18PC1PL06	Advanced Control Systems	3	0	0	3	3	0	3
18PE1PL05	Electric Hybrid Vehicles	3	0	0	3	3	0	3
18PE1PL06	Embedded Systems							
18PC1PS05	Power Quality							
18PE1PL07	Electro Magnetic Interference and Compatibility	3	0	0	3	3	0	3
18PC1PS06	Flexible AC Transmission Systems							
18PE1PS08	Smart Grids							
18PC2PL03	Advanced Power Electronic Converters Simulation Laboratory	0	0	3	1.5	0	1.5	1.5
18PC2PL04	Power Electronic Control and Applications Laboratory	0	0	3	1.5	0	1.5	1.5
18PW4PL02	Mini-Project	0	0	4	2	0	2	2
18AU5EN01	English for Academic and Research Writing	2	0	0	0	0	0	0
	Total	17	0	10	27	15	5	20

III-Semester

Course Code	Name of the Course	Total Number of contact hours				Theory Credits	Practical Credits	Total Credits
		Lecture (L)	Tutorial (T)	Practical# (P)	Total Hours			
18PE1LI14	IOT Technologies	3	0	0	3	3	0	3
18PE1PL08	Energy storage technologies							
18PE1PL09	HVDC Transmission							
18OE1CN01	Business Analytics	3	0	0	3	3	0	3
18OE1AM01	Industrial Safety							
18OE1AM02	Operations Research							
18OE1AM03	Composite							

	Materials							
18OE1EE01	Waste to Energy							
18PW4PL03	Project Phase-I	0	0	16	16	0	8	8
	Total	6	0	16	22	6	8	14
IV-Semester								
		Total Number of contact hours				Theory Credits	Practical Credits	Total Credits
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours			
18PW4PL04	Project Phase-II	0	0	28	28	0	14	14
	Total	0	0	28	28	0	14	14

Total Credits: 68

Program Outcomes (POs):

PO1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO2: An ability to write and present a substantial technical report/document.

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO4: Design and conduct experiments, as well as analyze the power electronic converters & drives and interpret the data.

PO5: Function on multidisciplinary technological issues assimilating power electronics advancements.

PO6: Use the techniques, skills, and modern engineering simulation tools necessary for the design and development of power converter topologies and engage in life long learning.