Course Curriculum

Total credit requirement for the award of M.Tech. in EREM is 51.

Semester–1

Core courses	3	7 credits
Elective courses	2	5 credits

Semester–2

Core courses	6	10 credits
Elective courses	2	5 credits

Semester–3

Masters	1	12 credits

Semester–4

Masters	1	12 credits

Core Courses

1. Introduction and general concepts to waste and waste management
2. E-waste recycling Methods: Physical Metallurgical Processes
3. Advanced concepts in process metallurgy (Pyro & Hydrometallurgy)
4. AI and machine learning
5. Instrumentation and characterization
6. Supply chain management & Circular economy
7. Trace Metal Analysis
8. English Communication
9. Industry Lectures

Elective Courses

A. Processes

A1:Life Cycle Analysis in waste Management
A2:Electrometallurgy
A3:Global Policies on
A4:Computational Methods for Chemical engineering
A5:Engineering Thermodynamics

Project, business & human resources management

B1: Design concepts of project capacity to a viable scale
B2: Business calculations & break-even point
B3: SWOT analysis and risk management B4: Updated Govt. policies on E-waste

Plant Design and Instrumentation

C1:Pilot plant designs, Mechanical engineering designs
C2: Instrumentation for efficient recycling and automation

Mathematical Modelling

B1: Queuing Theory B2: Numerical Methods
B3: Detection and Estimation Theory

Eligibility Criteria

B.Tech. in Chemical Engg./Materials Sci. & Metallurgical Engg./ Civil Engg./ Environmental Engg./Electrical Engg./ Mechanical Engg./Engg. Sciences/Engg. Physics/Minerals Engg. and affiliated areas with GATE qualification OR M.Sc. in Phys- ics/Chemistry with NET/GATE qualified

GATE Subjects: CE/CH/CY/EC/EE/IN/ME/ MN/MT/PH/PI/XE-C/XE-F/XE-H/XL-P/ES

NET/GATE qualification is exempted for industry sponsored candidates with a mini- mum two years' experience OR for IIT Undergraduates with minimum CGPA of 7.0. OR for self-sponsored candidates.

How to apply and selection criteria?

Eligible candidates may register and apply through COAP portal. Reservations as per the GoI norms will be applicable. MHRD scholar- ship will be available for GATE qualified selected candidates. MHRD candidates will be selected based on GATE scores. Self-Sponsored candidate will be selected based on written exam and/or interview.

Indian Institute of Technology Hyderabad (IITH)
&
Centre for Materials for Electronics Technology (C-MET)

Two Years M.Tech. Program in E-waste Resource Engineering & Management (EREM)

(Regular and Self-Sponsored)

Information Brochure

भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

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About the Program

With rapid change in technology and more digitalization in the world, there is an explosive growth in electronics industry and subsequently that has led to enormous growth in electronic waste (e-waste). E-waste contains many hazardous and toxic substances which have serious health and environmental effects, if not managed properly. Therefore, it becomes essential to learn about various technological interventions to manage, reduce and recycle e-waste for its safe disposal.

M.Tech in E-waste Resource Engineering & Management (EREM) is being offered, from academic year 2020, jointly by IIT Hyderabad and C-MET. This M.Tech. program will catalyze the efforts towards E-waste management in the country and worldwide and will provide a necessary support for several of Government initiatives in this direction such as Skill India, Swachh Bharat, Waste-to-Wealth initiatives.

Faculty

IIT Hyderabad

Dr. Ambika S (Coordinator)
Dr. Abhinav Kumar
Dr. Ashok Kamaraj
Dr. Bhuvanesh Ramakrishna
Dr. Ch. Subrahmanyam
Dr. Chandra Shekhar Sharma
Dr. Kishalay Mitra
Dr. Lohithaksha M
Dr. Suhash Ranjan Dey

CMET

Dr. N.R. Munirathnam, DG
Dr. R.Ratheesh, Director
Dr. S.Rajesh Kumar, Scientist E
Dr. U. Rambabu, Scientist E
Dr. Ajay Kaushal, Scientists E

About IIT Hyderabad

IIT Hyderabad is one among the 2nd generation of IITs started by the Govt. of India in 2008. As of date, IITH offers 10 B.Tech programs, 21 M.Tech programs, 3 M.Sc programs, 5 M.Phil programs, 1 M.Des program and Ph.D. programs in all branches of engineering, science, liberal arts and design. The institute has about 220 faculty and 2,500 students. IITH is ranked consistently in Top 10 Engineering Institute in NIRF ranking of MHRD, GoI. The very foundation of IIT Hyderabad is based on research and innovation. The vibrant research culture is evident from the number of patents and publications that IITH has. IITH is creating a unique holistic educational ecosystem that offers interactive learning, a highly, flexible academic structure, cutting-edge research, strong industry collaboration, and entrepreneurship.

About CMET

Centre for Materials for Electronics Technology (C-MET) is an autonomous R&D institution under Ministry of Electronics & Information Technology (MeitY), Govt. of India. C-MET envisions attainment of self-sufficiency in all spheres of electronic materials, components and devices to cater to the country's strategic and industrial applications in addition to converting indigenous resources of raw materials into value added technologically suitable materials. CMET's R&D activities have been implemented in three laboratories at Pune, Hydera- bad and Thrissur. Centre of Excellence (COE) on E-waste Management at CMET Hyderabad has excellent state of the art R&D infrastructure including RoHS test facility.

Research Facilities

COE host incubation facilities to create prototypes for addressing various E-waste recycling issues, viz., dismantling, designing and automation of various process equipment for environmentally friendly recycling of PCBs, recovery of precious metals, separation of rare earth oxides from spent phosphors, recovery of Li & Co from Li-Ion batteries, nurturing of start-ups , and provide training to Indian electronics and electrical industries complying with E-waste (Management) Rules 2016.