Course Curriculum

Total credit requirement for the award of M.Tech. in EREM is 50.

Semester—1

Core courses	3	7 credits
Elective courses	2	5 credits
Compulsory Course	2	2 credits

Semester—2

Core courses	3	7 credits
Elective courses	2	5 credits

Semester—3

Masters Thesis	1	12 credits

Semester—4

Masters Thesis	1	12 credits

Core Courses

1. Introduction and general concepts to waste and waste management
2. E-waste recycling Methods: Physical Metallurgical Processes
3. Chemical hydrometallurgy: Aqueous processing of metals
4. Artificial intelligence and machine learning
5. Instrumentation and characterization
6. Supply chain management & Circular economy
7. English Communication
8. Industry Lectures

Elective Courses

A. Processes

A1:Sustainable Recycling for Mitigating Climate Change
A2: Electrometallurgy
A3: Separation Processes
A4: Industrial Waste Treatment
A5: Engineering Thermodynamics

B. 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

C. Plant Design and Instrumentation

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

D. Mathematical Modelling

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

Eligibility Criteria

1) 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 Physics/Chemistry with NET/GATE qualified
2) GATE Subjects: CE/CH/CY/EC/EE/IN/ME/ MN/MT/PH/PI/XE-C/XE-F/XE-H/XL-P
3) NET/GATE qualification is exempted for industry sponsored candidates with a minimum two years' experience OR for IIT Undergraduates with minimum CGPA of 8.0. OR for self-sponsored candidates.

How to apply ?

Eligible candidates should register and apply through COAP portal. Reservations applicable as per the GoI norms. Scholarship will be available for GATE qualified selected candidates. Candidates will be selected based on GATE scores and AIR. Self-Sponsored candidate will be selected based on written exam and/or interview. **Intake through MeitY supported scholarships: 10**

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)

Supported by MeitY, Govt. of India

Information Brochure

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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 catalyse 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.

Participating Departments

Considering the truly interdisciplinary nature of the program, faculty members from various departments (Chemical Engineering, Materials Science & Metallurgical Engineering, Civil engineering, Electrical Engineering, Physics & Chemistry) will participate in teaching and supervising the projects along with a team of C-MET scientists.

Coordinator

Dr. Chandra Shekhar Sharma
Associate Professor,
Department of Chemical Engineering,
IIT Hyderabad
Email: fic.mtech.erem@iith.ac.in

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, Hyderabad and Thrissur. Centre of Excellence (COE) on E-waste Management at C-MET 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.