MSc Materials for Energy Innovation & Sustainability Course Baskets (Cohort Matriculated in AY2027/2028 Semester 1)

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Notes:

Students may select up to two NCE courses (8 units) from either the MSc in Materials Science and Engineering (MSE) course baskets or Level 5000/6000 courses offered by other Engineering departments, subject to course availability and approval. For more details, please refer to page 3.

MEIS Core Course (Requirements at least 16 Units)

MEIS Core Course	MLE5101 Thermodynamics for Sustainability
	MLE5212 Energy Conversion & Storage
	MLE5208 Photovoltaic Materials
	MLE5224 Degradation of Materials
	MLE5245 Materials for CO2 Removal

^ All 4 Unit unless stated differently.

MEIS Elective Basket (Requirements at least 16 Units)

MEIS Elective Basket	MLE5001 Basics of Structures & Properties of Materials
	MLE5002 Materials Characterization
	MLE5003 Materials Science & Engineering Project (8 Units) *
	MLE5210 Modelling and Simulation of Materials
	MLE5213 Magnetic Materials
	MLE5217 Foundations of Machine Learning for Materials Science
	MLE5218 Materials Discovery with AI
	MLE5219 Materials Informatics: The Role of Big Data
	MLE5220 Finite Element Method in Materials: Basic Concepts and Problem Solving
	MLE5221 Designing materials for renewable fuels and clean water
	MLE5222 Nano and 2D materials for Energy applications
	MLE5223 Rational Materials Design for Sustainability
	MLE5225 Electro-Active Materials for Sustainability
	MLE5226 Problem Solving for Future Sustainability Challenges
	MLE5227 Advanced Materials for Sustainable Electrosynthesis and Clean Energy

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MEIS Elective Basket	MLE5228 Superconductivity and Superconducting Devices
	MLE5229 Advanced Materials for Microelectronics
	MLE5230 Characterization of Microelectronic Materials
	MLE5231 Optoelectronics with Organics and Nanocrystals
	MLE5232 Dielectric Materials and Applications
	MLE5233 Functional Electronic Devices of Tomorrow
	MLE5234 Materials for Optics: From Quantum Light to Nanodevices
	MLE5235 Two-Dimensional Materials
	MLE5236 Electron Transport in Novel Quantum Materials
	MLE5239 Materials for Bio-interfaces
	MLE5240 Light-Harvesting Materials for Sustainability
	MLE5241 Robotic Materials
	MLE5244 Materials and Devices for Quantum Photonics
	MLE5246 Nature-Inspired Soft Self-Healing Polymeric Materials
	MLE5247 Soft Materials for Flexible & Wearable Electronics
	MLE5248 Materials for Sustainable Macroelectronics
	MLE5249 Advanced Manufacturing of Smart Materials
	MLE4207 Microfabrication Process and Technology
	CE5320 Water-Food-Energy-Carbon Nexus
	ESE5407 Membrane Technology for Water Management

*The project must be in an area related to sustainability.

^ All 4 Unit unless stated differently.

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Other Important Pointers:

- Part-time students are not allowed to take MLE5003 due to high time commitment and heavy workload.
- MLE5208 and MLE4208 are preclusions to each other.
- MLE5224 and ME5506 are preclusions to each other.
- MLE5223 requires the pre-requisite of MLE5001 or equivalent.
- Candidates are allowed to take the courses together with their pre-requisites in the same semester.
- Not all courses will be available every semester or every academic year.
- Please make sure to check all the courses for any prerequisites/preclusions before selecting/requesting the courses during Course Registration.

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Graduation Requirements

Requirements	Pass 40 Units of MEIS and MEIS recognized courses as per breakdown below:	Remarks
1. Pass 16 Units of MEIS Core Basket	16	Refer to MEIS Core Basket
2. Pass 16 Units from MEIS Elective Basket	16	Refer to MEIS Elective Basket.
3. Pass 8 Units from the MEIS Elective Basket OR NCE Courses OR Credit Transfer	8	Refer to MEIS Elective Basket. OR NCE Courses: • Level 5000/6000 Courses from other Engineering departments. • MSc in Materials Science and Engineering (**MSE**) course baskets. • Requests are subject to availability and approval. OR NUSRI Students who credit transfer their courses will use up NCE Unit quota. Can transfer a **maximum of 2 courses** (8 Units).
Total Units	**40**	**Required Units for Graduation:** **Pass 40 Units** **Minimum GPA for Graduation:** **3.00**

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