

**Michigan Technological University**  
**Interdisciplinary Minor in Alternative Energy Technology**  
Program Code: IMAE, Academic Year 2019-20  
Department of Chemical Engineering  
Total Credits Required: 18

**Required Fluid and Heat Transfer Courses: select one set of courses, 4 to 8 credits**

Course	Credits
CM 3110 Transport/Unit Operations I (3) <i>Prereqs: CM2120 and (MA3520 or MA3521 or MA3530 or MA3560) and MA3160 and PH2100 and CM 3120 Transport/Unit Operations II (3) Prereq: CM3110 and CM2120 and (MA3520 or MA3521 or MA3530 or MA3560)</i>	
MEEM 3201 Intro Fluid Mech & Heat Trans (4) <i>Prereqs: MEEM2201 and MEEM2911(C) and MA3520 or MA3521 or MA3530 or MA3560</i>	
MET 3400 Applied Fluid Mechanics (3) <i>Prereqs: MET2130 and MET 4300 Applied Heat Transfer (3) Prereqs: MET3600 or (MET3700 and MET4360(C))</i>	
MSE 3100 Materials Processing I (4) <i>Prereqs: MSE2100 and MA2160 and MSE 3110 Material Processing II (4) Prereqs: MSE2110 and MSE3100 and (MA3520 or MA3521 or MA3530 or MA3560)</i>	

**Required Circuits Course: select one course, 3 credits**

Course	Credits
EE 2111 Electric Circuits I (3) <i>Prereqs: EE1110 and MA2160</i>	
EE 3010 Circuits and Instrumentation (3) <i>Prereqs: none</i>	
EET 3131 Instrumentation (3) <i>Prereqs: EET1411 or EET2220 or PH2230 or EE2110 or EE3010</i>	

**Required Energy Technology Courses: select 6 or more credits**

Course	Credits
CM/ENT 3979 Alternative Energy Tech and Processes (1) <i>Prereqs: (CH1112 or (CH1150 and CH1151)) and (MA1160 or MA1161)</i>	
EC 4620 Energy Economics (3) <i>Prereqs: EC2001 and UN1015 and (UN1025 or Modern Language, 3000-level or higher)</i>	
EE 3120 Electric Energy Systems (3) <i>Prereqs: EE2110 or EE3010 or (EE2111 and EE2112(C))</i>	
EET/MET 4380 Alternative Energy Applications (3) <i>Prereqs: EET2233</i>	
ENG 4510 Sustainable Futures I (3) <i>Prereqs: none</i>	
ENG 5520 Sustainable Futures II (3) <i>Prereqs: none</i>	
MEEM 4200 Principles of Energy Conversion (3) <i>Prereqs: MEEM 4201(C) or MEEM3230(C) or CM3230 or ENG3200 or MY3100</i>	
MEEM 4260 Fuel Cell Technology (3) <i>Prereqs: MEEM3230 or CM3110 or MEEM 3201 or CM/ENT 3974 Fuel Cell Fundamentals (1) Prereqs: CH1112 or (CH1150 and CH1151)</i>	
SS 3800 Energy Technology & Policy (3) <i>Prereqs: UN1015 and (UN1025 or Modern Language, 3000-level or higher)</i>	

**Elective Courses: select remaining credits, 0 to 5 credits**

Course	Credits
CM 4080 Undergrad Research in Biofuels Engineering (1-6) <i>Prereqs: none</i>	
EE 4219 Intro to Electric Machinery and Drives (3) <i>Prereqs: EE2110 or EE2112 or EE3010</i>	
EE 4227 Power Electronics (3) <i>Prereqs: EE3120 and (EE3130(C) or EE3131)</i>	
EE 4295 Introduction to Propulsion Systems for Hybrid Electric Vehicles (3) <i>Prereqs: MEEM2200 or ENG3200</i>	
EE 4296 Experimental Studies in Hybrid Electric Vehicles (3) <i>Prereqs: none</i>	
EET 3390 Power Systems (3) <i>Prereqs: EET2233</i>	
ENT 29xx Enterprise Project Work* (up to 2 credits) <i>Prereqs: none</i>	
ENT 39xx Enterprise Project Work* (up to 4 credits) <i>Prereqs: none</i>	
ENT 49xx Enterprise Project Work* (up to 4 credits) <i>Prereqs: variable</i>	
MEEM 4220 Internal Combustion Engines I (3) <i>Prereqs: MEEM 3210 or MEEM4201(C)</i>	
MEEM 4240 Combustion & Air Pollution (3) <i>Prereqs: MEEM2200 or MEEM2201</i>	
MET 4390 Internal Combustion Engines (3) <i>Prereqs: MET3600 or MET4300 or (MET3700 and MET4360(C))</i>	
MSE 4410 Science of Ceramic Materials (3) <i>Prereqs: MSE2100</i>	
XX xxxx Undergraduate Research* (1-6) <i>Prereqs: none</i>	

\*Topic must be approved by academic advisor