CURRICULUM FOR THE MASTERS OF SCIENCE DEGREE IN ENGINEERING IN RENEWABLE AND CLEAN ENERGY AT WRIGHT STATE UNIVERSITY

Students will be expected to take five required courses; two Core Energy courses and three Renewable and Clean Energy courses. Additionally, students will be required to take a mathematics course, two to three elective offerings, and chose a thesis or non-thesis option. Non-thesis students will be expected to take at least one project course and will make up the deficit in required credit hours with additional courses.

Distinctively, this program will require students to register for at least one course at each of the partner schools, the University of Dayton and the Air Force Institute of Technology. This course must be one of the Core or Renewable and Clean Energy courses. Additional cross-registration is encouraged; however, a majority of the courses taken must be at the host school.

REQUIRED CORE ENERGY COURSES

Students are required to take 1 course to meet the Advanced Thermodynamics requirement and one course to meet the Energy Materials requirement.

- **Advanced Thermodynamics Requirement (1 among the following required)**
  - WSU/ ME744 – Advanced Thermodynamics
  - WSU/ME760 – Thermodynamics of Solids
  - UD/MEE511 – Advanced Thermodynamics
  - UD/CME507 – Advanced Thermodynamics
  - AFIT/PHYS635 – Thermal Physics
- **Energy Materials Requirement (1 among the following required)**
  - WSU/ME780 – Advanced Energy Materials
  - UD/MEE507 – Materials for Advanced Energy Applications

REQUIRED RENEWABLE AND CLEAN ENERGY COURSES

Students are required take 3 courses in the Renewable and Clean Energy area. This area comprises four categories: Renewable Energy, Clean Energy, Energy Efficiency, and Large Scale Energy Systems. The courses can be taken in a single category or in different categories. At the University of Dayton, one of these must be in the Energy Efficiency area.

- **Renewable Energy**
  - WSU/ ME623 – Energy Conversion
  - WSU/ ME624 – Solar Engineering
  - WSU/ME750 – Photovoltaics
  - WSU/ME752 – Hydrogen Energy
  - WSU/ ME626 – Wind Power
  - UD/MEE573 – Renewable Energy Systems
  - UD/MEE590 – Advanced Fuel Technology (including biomass)
  - CSU-WSU/ME699 – Hydropower Development
  - Electrical Power Processing – (to be developed at a future date).
- **Clean Energy**
  - WSU/ ME627 – Electrochemical Storage Systems
  - WSU/ ME628 – Fuel Cell Science and Technology
  - AFIT/NENG620 – Nuclear Reactor Theory and Engineering
  - UD/MEE/CME524 – Fuel Cell Fundamentals and Technology

- UD/MEE/AEE 526 – Advanced Fuels
- CSU-WSU/ ME699 – Environmental Advances in Coal Based Power Plants

- **Energy Efficiency**
  - WSU/ ME642 – Vehicle Engineering
  - UD/MEE569 – Energy Efficient Buildings
  - UD/MEE571 – Design of Thermal Systems
  - UD/MEE 572 – Design for Environment
  - UD/MEE 578 – Energy Efficient Manufacturing

REQUIRED MATH COURSE

Students are required to take 1 graduate level math course.

ELECTIVES

Students will need to take 2 to 3 graduate level elective courses to fulfill the 45 quarter credit degree requirement. These courses can be taken in the Engineering, Computer Science, Physics, Chemistry, Biology, Microbiology, Geology, Environmental Sciences, Mathematics, and Statistics disciplines. Additional Renewable and Clean Energy courses may be taken to fulfill this elective requirement also.

THESIS OPTION

Students can take up to 12 quarter hours of thesis credits.

NON-THESIS OPTION

Students who elect to do the non-thesis option must replace thesis credits with graduate level courses. These courses must be at the 700 level or above, at UD these courses must be at the 500 level or above, and at AFIT these courses must be at the 600 level or above. At least one of these courses must be a project orientated course.

*At least half the credit hours must be taken at the student's home institution.