ENERGY ENGINEERING, GRADUATE CERTIFICATE

With the rapid dwindling of energy resources, there is a great demand for workers in various fields to keep themselves abreast of the latest technology in solving and planning for the energy shortage and efficient use of energy. This interdisciplinary Certificate in Energy Engineering Program is open to post-baccalaureate students who are interested in continuing education for career development or gaining experience in the energy area. In particular, the Program will provide basic knowledge on the design of electrical and mechanical devices and systems and yet has adequate flexibility for students to focus on certain areas in energy according to their own discretion in advanced courses.

Application Requirements

Application Deadlines
If at any time you are unsure about a published date or deadline (http://uwm.edu/graduateschool/program-deadlines), call the Registrar's Office at (414) 229-3800 or submit a contact form (http://uwm.edu/registrar/contact-us) online.

Admission
Students must have a baccalaureate degree. A minimum 2.75 cumulative undergraduate grade point average is required.

Application
• Students wishing to obtain this certificate must declare their intention by applying to the program office or director.
• All graduate certificate applicants—even those already enrolled in a UWM graduate program—must apply to the Graduate School through the Panthera Admission Application (https://graduateschool-apply.uwm.edu).
• Graduate degree and previously admitted graduate non-degree students who decide to pursue a certificate program must submit the Panthera application before completing 6 credits in the certificate sequence.
• Applicants must possess a baccalaureate degree and have a minimum 2.75 cumulative undergraduate grade point average to be admitted in to a certificate program.

Credits and Courses
To obtain the certificate, students are required to complete a minimum of 15 credits from the lists of Groups A and B courses of which at least 12 credits must be taken at UWM.

Students must complete at least two courses from Group A to obtain an Energy Engineering Certificate. Additional electives can be chosen from Group B. At least 6 credits must be 700-level or above. A maximum of 3 credits of independent study may be applied toward the certificate.

Group A Credits

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECENG 471</td>
<td>Electric Power Systems</td>
<td>3</td>
</tr>
<tr>
<td>ELECENG 572</td>
<td>Power Electronics</td>
<td>3</td>
</tr>
<tr>
<td>ELECENG 574</td>
<td>Intermediate Control Systems</td>
<td>3</td>
</tr>
<tr>
<td>ELECENG 575</td>
<td>Analysis of Electric Machines and Motor Drives</td>
<td>3</td>
</tr>
<tr>
<td>MECHENG 432</td>
<td>Internal Combustion Engines</td>
<td>3</td>
</tr>
</tbody>
</table>

MECHENG 434 Air Conditioning System Design 3
MECHENG 435 Power Plant Theory and Design 3
MECHENG 436 Solar Engineering 3
ELECENG 781 Advanced Synchronous Machinery 3
ELECENG 872 Computer Analysis of Electric Power Systems 3
ELECENG 890 Special Topics: (Advanced Power Electronics) 3
ELECENG 890 Special Topics: (Automotive Power Systems (New Course)) 3
ELECENG 890 Special Topics: (Renewable Energy Systems (New Course)) 3
ELECENG 999 Advanced Independent Study 1-3
MECHENG 702 Advanced Engineering Thermodynamics 3
MECHENG 703 Principles of Combustion 3
MECHENG 710 Advanced Transport Processes 2
MECHENG 711 Thermal Radiation and Conduction 3
MECHENG 712 Convection Heat and Mass Transfer 3
MECHENG 714 Energy Transport in Microscale Systems 3
MECHENG 721 Fundamentals of Fluid Flow 3
MECHENG 722 Advanced Fluid Mechanics 3
MECHENG 723 Computational Fluid Dynamics and Heat Transfer 3
MECHENG 725 Fluid Power and Turbomachinery 2
MECHENG 999 Advanced Independent Study 1-3

Certificate Requirements

Transfer Credit
No more than 20% of the required credits may be transferred from energy-related, graduate-level coursework taken at an institution other than UWM. These courses are subject to Graduate School transfer policy and must be approved by the director of the certificate program.

Grade Point Average Requirement
A minimum cumulative 3.00 grade point average in certificate courses taken at UWM is required.

Articulation with Degree Programs
1. Credits and courses required for a certificate may double count toward meeting UWM graduate degree requirements subject to the following restrictions:
   • Degree programs must approve the courses from certificates that can double count toward the degree.
   • All credits taken in completion of certificate requirements may count towards a UWM graduate degree as long as they do not contribute more than 90% of the total credits needed to obtain the degree. (Note: Students in Ph.D. programs must still complete the minimum residency requirements)
   • Certificate courses used toward meeting degree requirements must be completed within the time limit for transfer credit.

2. Courses completed for a degree may be counted toward a subsequent certificate, subject to all certificate policy requirements.

3. A course may count toward no more than one certificate and one degree.
4. Students may not earn a certificate subsequent to a concentration in the same area.

**Time Limit**
Certificate program time limits shall be established as follows:

- 18 or fewer credits/Three years from initial enrollment in the certificate sequence.
- 19 or more credits/Four years from initial enrollment in the certificate sequence.

For certificates that are designed as add-ons to degree programs and are awarded concurrent with the degree, the time limit shall be the same as that of the degree program.