

# Degree Schedule – Graduate Certificate in Engineering Sustainability and Resilience

Due one semester prior to completing certificate requirements.

**Students:** Complete the form in Microsoft Word and email the docx file to your [graduate program director or assistant.](https://www.mtu.edu/gradschool/prospective/directors/#certificate)

**Graduate program:** Review the information provided, indicate your approval as noted, and [submit to the Graduate School](https://sites.google.com/mtu.edu/grad-school-form-submission/home) online. (link only accessible to Graduate Program staff)

Society, the environment, and economic/industrial development - the "triple bottom line" - are inherently interconnected, both domestically and worldwide. A high standard of living requires a sustainable future, one in which human and industrial systems support an enhanced quality of life by recognizing and seeking to understand this interconnectivity. This certificate will provide the student with the skills in systems analysis needed to understand, empirically examine, and contribute to a more sustainable and resilient society. This is a nine-credit certificate.

## Student Information

Complete the information requested below.

Name Last or Family Name, First Name or FNU

M-Number (M12345678) M

Your name will be printed on your certificate as it appears in our University records with either your legal or preferred first name. Please choose how you would like your name to appear on your certificate and type it in full. Students may contact the [Registrar’s Office](https://www.mtu.edu/registrar/students/information/preferred-name/) to change their preferred name; employees may contact Human Resources.

Selection for name Choose an item.

Typed name Name as it should appear on certificate

## Certificate Mailing Information

Your certificate will be mailed approximately six to eight weeks after the semester that all requirements have been met to the person and address that you provide below. If you request mailing to an address that you do not reside at, please indicate “in care of” and the name of the person living at the address. Please note that this will not update your regular mailing address at the University.

Mailing address Enter name and address of the person to mail your certificate

## Accelerated Certificates

Certificate programs may allow up to three (3) credits earned while an undergraduate at Michigan Tech to be used to fulfill the requirements of their bachelor’s degree and graduate certificate. To earn an accelerated certificate, students must:

* [apply for admission](https://www.mtu.edu/gradschool/prospective/apply-now/) to the certificate program following current procedures,
* follow all current policies regarding the reuse of credits, and
* mark the accelerated class(es) with “AC” in the “Semester and Year Taken” column in the tables below.

## Required Coursework (6 Credits)

In the table below, mark the classes taken for the certificate with the semester the credits were earned.

| Semester and Year Taken | Course Number | Course Title | Number of Credits |
| --- | --- | --- | --- |
| Semester | ENG 5510 OR  ENG 5515 | Sustainable Futures I  OR  Introduction to Sustainability and Resilience | 3 |
| Semester | ENG 5520  OR  ENG 5525 | Sustainable Futures II  OR  Systems Analysis for Sustainability and Resilience | 3 |

## Elective Coursework (3 Credits)

In the table below, mark the classes taken for the certificate with the semester the credits were earned.

| Semester and Year Taken | Course Number | Course Title | Number of Credits |
| --- | --- | --- | --- |
| Semester | CEE 4506 | Sustainable Engineering | 3 |
| Semester | EC 5640 | Natural Resource Economics | 3 |
| Semester | EC 5650 | Market Failure & Environment | 3 |
| Semester | EE / MEEM 5275 | Energy Storage Systems | 3 |
| Semester | EE 5290 | Selected Topics in Power Systems 1 | Variable to 4 |
| Semester | EE 5295 / MEEM 5295 | Advanced Propulsion Systems for Hybrid Electric Drive Vehicles | 3 |
| Semester | FW 4111 | Indigenous Natural Resource Management | 3 |
| Semester | FW 5550 | Geographic Information Science and Spatial Analysis | 4 |
| Semester | MEEM 5220 | Fuel Cell Technology | 3 |
| Semester | MEEM 5235 | Wind Energy | 3 |
| Semester | MEEM 5290 | Principles of Energy Conversion | 3 |
| Semester | MSE 5410 | Materials for Energy Applications | 3 |
| Semester | MSE 5490 | Solar Photovoltaic Science and Engineering | 3 |
| Semester | MSE 5760 | Vehicle Battery Cells and Systems | 3 |
| Semester | SS 4700 | Communities and Research | 3 |
| Semester | SS 5300 | Environmental and Energy Policy | 3 |
| Semester | SS 5325 | Water Policy, History, and Governance | 3 |
| Semester | UN 5400 | Climate Science and Policy | 3 |

## Coursework Substitutions

Fully complete the table with the information requested. Include any courses for the certificate that are not named in the above tables. Approval of courses not listed above is at the discretion of the program granting the certificate.

| Semester and Year Taken | Course Number  ex: CH5555 | Course Title  Include the course number (as listed above) of the substitution and a brief rationale.  The table will expand to fit your text. | Number of Credits |
| --- | --- | --- | --- |
| Semester | Course Number | Course number of substitution, and rationale | Credits |
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| Semester | Course Number | Course number of substitution, and rationale | Credits |
| Semester | Course Number | Course number of substitution, and rationale | Credits |

Graduate School Use Only: Total Credits

## Approvals

**Graduate program**: indicate your approval by typing your name below (if possible). Uploading the form to the Graduate School indicates your approval even if the form fields are not available. The Graduate School approves the form after receipt and verification.

Type name of approver

Graduate Program Director, Engineering Sustainability and Resilience OR   
Department chair, Chemical Engineering

Graduate School Approval Date