

# Grad School Prep Four-Year Academic Plan

For accelerated Students

## B.S. in Chemical Engineering



Michigan Tech  
Chemical Engineering

If you come in with credit for a full-year of freshman chemistry and calculus I then you have some flexibility with your schedule. This suggested schedule shows you how to fit in additional math and move ahead your classes so that you have time to fit in research and additional coursework to prepare yourself for graduate school. **Undergraduate research experience and faculty references are important pieces of your grad school application.** With this schedule you would also be able to fit in a minor in *Mathematics* and/or a chemical engineering minor, such as a minor in *Alternative Energy Technology, Bioprocess Engineering, Mineral Processing, or Polymer Science and Engineering.*

### Freshman Year

#### Fall Semester

##### Fall Freshman Classes

+ Organic Chem I lect/lab + Calc II  
Most of these classes are offered in the fall, spring, and summer.

#### Spring Semester

##### Spring Freshman Classes

+ Organic Chem II lecture + Three credit Linear Algebra  
Most of these classes are offered in the fall, spring, and summer.

#### Summer Semester

Open

### Sophomore Year

#### Fall Semester

##### Fall Sophomore Classes

+ Physics II lect/lab  
Some of these classes are only offered in the fall and summer.

#### Spring Semester

##### Spring Sophomore Classes

+ PChem lect/lab + Three credit Diff. Eqns + Research  
Some of these classes are only offered in the spring and summer.

#### Summer Semester

Internship

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With only a few exceptions, you **must be done with all of your freshman and sophomore classes** (particularly MATH and CM) **before you can start the junior CM classes.**

### Junior Year

#### Fall Semester

##### Fall Junior Classes

+ ChE Thermo + Research or courses for minor  
These classes are offered in fall and spring and are prereqs for the spring junior classes.

#### Spring Semester

##### Spring Junior Classes

+ Research or course for minor  
These classes are **only** offered in the spring and are prereqs for the fall senior classes.

#### Summer Semester

##### REU Research

NSF summer research program  
+ take the GRE, grad school admissions test

### Senior Year

#### Fall Semester

##### Fall Senior Classes

+ Research or course for minor  
These classes are **only** offered in the fall and are prereqs for the spring senior classes.

#### Spring Semester

##### Spring Senior Classes

+ Research or courses for minor  
These classes are **only** offered in the spring.  
**Graduate with both industrial and research experience!**

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## Grad School Frequently Asked Questions

*Q: How do I know if graduate school is right for me?*

If you are curious about graduate school, then you should talk to professors in the research area that interests you. Ask them to discuss graduate school with you and see if this is in fact the right path for you. You could also see an advisor.

*Q: What can I do to prepare myself for graduate school in engineering?*

It is a good idea to be proactive and take advantage of your undergraduate years to prepare for graduate school. Some things you can do include:

- Participate in undergraduate research, both at Michigan Tech and through a summer research program.
- Attend research seminars and graduate defenses on campus.
- Take additional math classes because graduate engineering classes can be very math intensive.
- Improve your writing and presenting skills. If you can explain a topic well in writing or orally, you are displaying an important thinking skill you will need in graduate school.
- Don't sell back your books. You will be buying new books in graduate school, but you will often find that you need to refresh your memory of your undergraduate studies.

*Q: What classes can I take to prepare for graduate school in chemical engineering?*

Graduate school in chemical engineering is an intense study of all chemical engineering topics you explore during your BS degree, plus additional courses that allow you to specialize. You will also be performing research if you are pursuing a thesis MS or PhD. To prepare for this while still an undergraduate, we recommend the following advanced classes:

CH 4710 – Biomolecular Chemistry I  
CH 3520 – Physical Chemistry II: Molecular Structure  
CM 4650 – Polymer Rheology  
CM 5100 – Applied Mathematics for Chemical Engineers  
CM 5200 – Advanced Thermodynamics  
CM 5300 – Advanced Transport Phenomena  
CM 5400 – Advanced Chemical Engineering Kinetics  
CM 5500 – Theory and Methods of Research  
MA 3710 – Engineering Statistics  
MA 4330 – Linear Algebra  
MA 4515 – Introduction to Partial Differential Equations

*Q: Can I take graduate courses towards a graduate degree while still an undergrad?*

Michigan Tech allow this in your last year under Senior Rule (see the Registrar's web page for up-to-date details).

*Q: Does Michigan Tech offer a BS/MS program?*

Yes. The BS/MS program is called the accelerated MS program, and it comes in two forms, one that is a purely coursework masters and a second version in which a student does a masters thesis. Michigan Tech undergraduates may double count up to 6 credits of their undergraduate work towards their accelerated masters. See our FAQs online for more information.

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