

## Scientific Research CERTIFICATE

### Program Overview

This program is an excellent resume-building program, and gives students skills they can use for immediate employment in scientific industries or as a requirement for professional schools. Students in this program take core courses in research and obtain a solid background in science. Students do a semester long undergraduate research project with a faculty and/or industry mentor to gain unique hands-on experience.

### Career Opportunities

Science and Engineering Technicians and technologists work in many aspects of the laboratory industry. They work in a variety of sub-fields, such as biotechnology, microbiology, nanotechnology, pharmaceutical research, chemical technology, science manufacturing, and materials engineering.

Technicians and technologists operate equipment and instrumentation, prepare samples for processing, monitor commercial production, test for product quality, and collect and analyze samples. They conduct a variety of laboratory procedures, from routine laboratory procedures to complex research projects.

### Program Outcomes

1. Use appropriate scientific tools to design and conduct experiments and analyze results.
2. Communicate the results of experiments using appropriate scientific principles.
3. Solve science technology problems within real industrial constraints.
4. Act professionally and with ethical responsibility.

### Program Faculty

- Simran Chahal  
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- Kristyn VanderWaal Mills  
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### Program Requirements

- Check off when completed  
Science and Engineering Core: Required

Course	Cr
<input type="checkbox"/> CHEM 1711 Principles of Chemistry 1	4
<input type="checkbox"/> BIOL/CHEM 1755 Research Fundamentals	3
<input type="checkbox"/> BIOL/CHEM/ENGR 2790 Research Project for Science and Engineering Technology	3
<b>Subtotal</b>	<b>10</b>

### Science and Engineering Focus

Students should choose their remaining courses from the list below to achieve a total of 16 credits for the certificate.

- Chemistry**
- CHEM 1712 Principles of Chemistry 2 . . . . . 4
  - CHEM 2720 Organic Chemistry 1 . . . . . 5
  - CHEM 2721 Organic Chemistry 2 . . . . . 5
  - CHEM 2730 Instrumental Analysis . . . . . 4

- Biology**
- BIOL 1740 General Biology 1 . . . . . 5
  - BIOL 2750 Microbiology . . . . . 4
  - BIOL 2755 Genetics . . . . . 4

- Engineering**
- ENGR 1707 Introduction to Engineering . . . . . 3
  - PHYS 1720 Principles of Physics 1
  - OR 2700 General Physics 1 . . . . . 4-5
  - PHYS 1722 Principles of Physics 2
  - OR 2710 General Physics 2 . . . . . 4-5

**Total Program Credits . . . . . 16**

### Program Start Dates

Fall, Spring, Summer

### Course Sequence

This course sequence is recommended for a full-time student; however, this sequence is not required. Not all courses are offered each semester; a selection of courses is offered summer term. Students should consult with the Program Faculty each semester.

#### First Semester

CHEM 1711 Principles of Chemistry 1	4
BIOL/CHEM 1755 Research Fundamentals	3

#### Second Semester

BIOL/CHEM/ENGR 2790 Research Project for Science and Engineering Technology	3-4
BIOL/CHEM/ENGR Electives	5-6

**Total Program Credits . . . . . 16**

### Minimum Program Entry Requirements

Students entering this program must meet the following minimum program entry requirements:

**Reading:** Score of 250+ or grade of "C" or better in READ 0722

**Writing:** Score of 250+ on Reading Comprehension or grade of "C" or better in ENGL 0922

**Adv. Algebra & Functions:** Score of 250+ or grade of "C" or better in MATH 0920

**Assessment Results and Prerequisites:** Students admitted into Saint Paul College programs may need to complete additional courses based on assessment results and course prerequisite requirements. Certain MATH, READ, and ENGL courses have additional prerequisites.

Information is subject to change.  
This Program Requirements Guide is not a contract.