

Madonna University

Integrated Science • College of Science and Mathematics

About the Program

Overview

The Integrated Science major is especially intended for the Secondary (grades 6-12) science teacher. It is a comprehensive major and does not require a minor for teacher certification. Students must choose an emphasis in either Biology, Chemistry, or Physics.

Students selecting an interdisciplinary science major as preparation for professional or graduate studies are referred to the Natural Science major.

Program Requirements

The student must complete:

- All the required core and required Mathematics support courses
- All the courses listed for one of the three groups: Biology emphasis, or Chemistry emphasis, or Physics emphasis
- A starred (*) course from one of the remaining two emphasis course groups.

Science and mathematics courses taken more than seven years previously may need to be repeated, at the discretion of the program director. (*This policy is general across all College of Science and Mathematics programs.*)

Integrated Science Major: Bachelor of Science (58-62 s.h.)

Required Core Courses

| | <i>Credits</i> |
|--|-------------------|
| BIO 1030 General Biology I | 4 s.h. |
| BIO 1040 General Biology II | 4 s.h. |
| BIO 2240 Basic Human Physiology | 4 s.h. |
| ESS 2160 Earth Science | 4 s.h. |
| ESS 3030 Oceans: Our Continuing Frontier | 4 s.h. |
| ESS 3290 Astronomy | 4 s.h. |
| CHM 1110 General Chemistry I | 4 s.h. |
| CHM 1120 General Chemistry II | 4 s.h. |
| CHM 2210 Organic Chemistry I | 4 s.h. |
| PHY 2530 General Physics I | 4 s.h. |
| PHY 2540 General Physics II | <u>4 s.h.</u> |
| <i>Subtotal</i> | <i>44 s.h.</i> |
| Selected * course | 4 s.h. |
| Selected Emphasis Group | <u>10-14 s.h.</u> |
| Total | 58-62 s.h. |

Biology Emphasis Group

| | |
|-------------------------------------|----------------|
| *BIO 2260 Microbiology | 4 s.h. |
| BIO 3010 Genetics | 4 s.h. |
| BIO 4950 Senior Seminar | 2 s.h. |
| <i>Also required:</i> | |
| MTH 2350 Probability and Statistics | <u>4 s.h.</u> |
| Total | 14 s.h. |

Chemistry Emphasis Group

| | |
|--------------------------------|----------------|
| *CHM 2220 Organic Chemistry II | |
| OR | |
| *CHM 3610 Biochemistry | 4 s.h. |
| CHM 3310 Quantitative Analysis | 4 s.h. |
| CHM 4950 Senior Seminar | <u>2 s.h.</u> |
| Total | 10 s.h. |

Physics Emphasis Group

| | |
|---|----------------|
| PHY 2710 Fundamental Electronics | 4 s.h. |
| PHY 3510 Modern Physics: Atomic and Nuclear | 4 s.h. |
| *PHY 4510 Electronics: Digital Techniques | 4 s.h. |
| NSC 4950 Senior Seminar | <u>2 s.h.</u> |
| Total | 14 s.h. |

Required Mathematics Support Course(s)

| | |
|---|-----------------|
| MTH 1050 and 1060 Intermediate Algebra and Trigonometry | |
| OR | |
| MTH 1210 Precalculus | 5-7 s.h. |



The Integrated Science major may find it enhances college studies to add the following minor to the major:

Mathematics Minor (minimum of 22 s.h.)

| | |
|---|---------------|
| MTH 2350 Probability and Statistics | 4 s.h. |
| MTH 2510 Calculus with Analytic Geometry I | 5 s.h. |
| MTH 2520 Calculus with Analytic Geometry II | 4 s.h. |
| *MTH 3300 Modern Algebra | 3 s.h. |
| *MTH 3410 Linear Algebra | 3 s.h. |
| *MTH 4650 Foundations of College Geometry | <u>3 s.h.</u> |
| | 22 s.h. |

* Required for teacher preparation.

For Admissions Information

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For Program Information

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See Advisor/Admissions Office for current information.

Madonna University guarantees the right to equal educational opportunity without discrimination because of race, religion, sex, national origin, age, or disabilities.