M.S. in Applied Science

This is a multidisciplinary program for secondary school teachers to strengthen their background in science, business, computing, engineering, architecture and/or technical communication.

Admission Requirements

Applicants should be practicing secondary school teachers who have a bachelor's degree. Individuals who seek admission to the program are considered on an individual basis and will be advised in choosing a track matching their teaching assignments as teachers. Students who lack an appropriate background for their chosen track or a particular course that they plan to take may be asked to take one or more bridge/undergraduate courses that will not count toward the degree requirements.

Degree requirements

Students must successfully complete 30 credits:

- 9 credits of core courses;
- 3 credits of master's project or 6 credits of master's thesis;
- 15 credits of courses in the chosen track when choosing the project option
- 12 credits of courses in the chosen track when choosing the thesis option; and

or 12 credits of courses in the chosen track when choosing the thesis option; and

- at least 3 credits of additional elective courses (elective courses can be from other tracks if the student has the required background or prerequisites).

Core Courses

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PTC 603</td>
<td>Identity, Technology, and Communication</td>
<td>3</td>
</tr>
<tr>
<td>PTC 629</td>
<td>Theory and Practice of Social Media</td>
<td>3</td>
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<tr>
<td>PTC 681</td>
<td>Tech in Class &amp; Learning Envir</td>
<td>3</td>
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<tr>
<td>PTC 698</td>
<td>Selected Topics in Professional and Technical Communication</td>
<td>3</td>
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Tracks

**Business**

Required Courses (3 credits)

- MGMT 620 Management of Technology

Additional Courses (choose 3 or 4 courses to earn 9 or 12 credits)

- ECON 610 Managerial Economics
- FIN 600 Corporate Finance I
- FIN 624 Corporate Finance II
- MGMT 635 Data Mining and Analysis
- MGMT 640 New Venture Management
- MGMT 650 Knowledge Management
- MGMT 691 Legal and Ethical Issues
- MGMT 692 Strategic Management

**Computer Science**

Required Courses (6 credits)

- CS 505 Programming, Data Structures, and Algorithms
- CS 506 Foundations of Computer Science

Additional Courses (choose 2 or 3 courses to earn 6 or 9 credits)

- CS 610 Data Structures and Algorithms
- CS 630 Operating System Design
- CS 631 Data Management System Design
- CS 656 Internet and Higher-Layer Protocols
### Engineering Management

**Required Courses (6 credits)**
- EM 636 **Project Management**
- HRM 601 **Organizational Behavior**

**Additional Courses (choose 2 or 3 courses to earn 6 or 9 credits)**
- ACCT 615 **Management Accounting**
- IE 673 **Total Quality Management**
- MIS 645 **Information Systems Principles**
- EM 634 **Legal, Ethical and Intellectual Property Issues for Engineering Managers**
- EM 637 **Project Control**
- EM 691 **Cost Estimating for Capital Projects**
- EM 632 **Legal Aspects in Construction**

### Information Systems

**Required Courses (6 credits)**
- IS 601 **Web Systems Development**
- IS 663 **System Analysis and Design**

**Additional Courses (choose 2 or 3 courses to earn 6 or 9 credits)**
- IS 631 **Enterprise Database Management**
- IS 665 **Data Analytics for Info System**
- IS 676 **Requirement Engineering**
- IS 678 **IT Service Management**
- IS 680 **Information Systems Auditing**
- IS 681 **Computer Security Auditing**
- IS 684 **Business Process Innovation**
- IS 688 **Web Mining**

### Engineering

**Required Courses (6 credits)**
- IE 604 **Advanced Engineering Statistics**
- IE 621 **Systems Analysis and Simulation**

**Additional Courses (choose 2 or 3 courses to earn 6 or 9 credits)**
- ECE 601 **Linear Systems**
- ECE 605 **Discrete Event Dynamic Systems**
- ECE 673 **Random Signal Analysis I**
- IE 618 **Engineering Cost and Production Economics**
- IE 672 **Industrial Quality Control**
- IE 673 **Total Quality Management**
- ME 616 **Matrix Methods in Mechanical Engineering**
- ME 632 **Mechanical Engineering Measurements**
- ME 635 **Computer-Aided Design**
- BME 669 **Engineering Physiology**
- BME 670 **Introduction to Biomechanical Engineering**
- BME 675 **Computer Methods in Biomedical Engineering**

### Architecture

**Required Courses (6 credits)**
- ARCH 545G **Structures I**
- ARCH 548G **Structures II**

**Additional Courses (choose 2 or 3 courses to earn 6 or 9 credits)**
- ARCH 555G **Architectural Graphics**
- ARCH 500G **Advanced Architectural Graphics**
- ARCH 528G **History of Architecture I**
- ARCH 529G **History of Architecture II**
- ARCH 541G **Construction I**
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ARCH 542G</td>
<td>Construction II</td>
</tr>
<tr>
<td>ARCH 543G</td>
<td>Environmental Control Systems I</td>
</tr>
<tr>
<td>ARCH 544G</td>
<td>Environmental Control Systems II</td>
</tr>
<tr>
<td>ARCH 569G</td>
<td>Building and Development</td>
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</tbody>
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**Chemistry**

**Required Courses (6 credits)**
- CHEM 605 Advanced Organic Chemistry I: Structure
- CHEM 661 Instrumental Analysis Laboratory

**Additional Courses (choose 2 or 3 courses to earn 6 or 9 credits)**
- CHEM 673 Biochemistry
- CHEM 777 Principles Pharm Chemistry
- EVSC 616 Toxicology
- EVSC 610 Environmental Chemical Science

**Mathematics**

**Required Courses (6 credits)**
- MATH 545 Introductory Mathematical Analysis
- MATH 546 Advanced Calculus

**Additional Courses (choose 2 or 3 courses to earn 6 or 9 credits)**
- MATH 611 Numerical Methods for Computation
- MATH 630 Linear Algebra and Applications
- MATH 660 Introduction to statistical Computing with SAS and R
- MATH 661 Applied Statistics

**Physics**

**Required Courses (3 credits)**
- PHYS 611 Adv Classical Mechanics

**Additional Courses (choose 3 or 4 courses to earn 9 or 12 credits)**
- PHYS 621 Classical Electrodynamic
- PHYS 641 Statistical Mechanics
- PHYS 661 Solid-State Physics
- PHYS 607 Topics in Astronomy and Cosmology

**Custom track**

Students may develop an individual track in consultation with a graduate advisor. A coherent set of courses involving mathematics, computing, physics, chemistry, biology or engineering are expected.