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

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

<table>
<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

<table>
<thead>
<tr>
<th>Business</th>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Required Courses (3 credits)</td>
<td>MGMT 620</td>
<td>Management of Technology</td>
<td></td>
</tr>
<tr>
<td>Additional Courses (choose 3 or 4 courses to earn 9 or 12 credits)</td>
<td>ECON 610</td>
<td>Managerial Economics</td>
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<tr>
<td></td>
<td>FIN 600</td>
<td>Corporate Finance I</td>
<td></td>
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<tr>
<td></td>
<td>FIN 624</td>
<td>Corporate Finance II</td>
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<td></td>
<td>MGMT 635</td>
<td>Data Mining and Analysis</td>
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<td></td>
<td>MGMT 640</td>
<td>New Venture Management</td>
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<td></td>
<td>MGMT 650</td>
<td>Knowledge Management</td>
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<tr>
<td></td>
<td>MGMT 691</td>
<td>Legal and Ethical Issues</td>
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<tr>
<td></td>
<td>MGMT 692</td>
<td>Strategic Management</td>
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<table>
<thead>
<tr>
<th>Computer Science</th>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Required Courses (6 credits)</td>
<td>CS 505</td>
<td>Programming, Data Structures, and Algorithms</td>
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<tr>
<td></td>
<td>CS 506</td>
<td>Foundations of Computer Science</td>
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<tr>
<td>Additional Courses (choose 2 or 3 courses to earn 6 or 9 credits)</td>
<td>CS 610</td>
<td>Data Structures and Algorithms</td>
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<tr>
<td></td>
<td>CS 630</td>
<td>Operating System Design</td>
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<td></td>
<td>CS 631</td>
<td>Data Management System Design</td>
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<td></td>
<td>CS 656</td>
<td>Internet and Higher-Layer Protocols</td>
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### 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  Tools and Techniques I
- ARCH 500G  Tools and Techniques II
- ARCH 528G  History of Architecture I
- ARCH 529G  History of Architecture II
- ARCH 541G  Construction I
<table>
<thead>
<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>Professional Practice I</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 Electrodynmaic
- 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.