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>
</tr>
</thead>
<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>
</tr>
<tr>
<td>PTC 681</td>
<td>Tech in Class &amp; Learning Envir</td>
<td>3</td>
</tr>
<tr>
<td>PTC 698</td>
<td>Selected Topics in Professional and Technical Communication</td>
<td>3</td>
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</tbody>
</table>

Tracks

Business

Required Courses (3 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 620</td>
<td>Management of Technology</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 610</td>
<td>Managerial Economics</td>
<td></td>
</tr>
<tr>
<td>FIN 600</td>
<td>Corporate Finance I</td>
<td></td>
</tr>
<tr>
<td>FIN 624</td>
<td>Corporate Finance II</td>
<td></td>
</tr>
<tr>
<td>MGMT 635</td>
<td>Data Mining and Analysis</td>
<td></td>
</tr>
<tr>
<td>MGMT 640</td>
<td>New Venture Management</td>
<td></td>
</tr>
<tr>
<td>MGMT 650</td>
<td>Knowledge Management</td>
<td></td>
</tr>
<tr>
<td>MGMT 691</td>
<td>Legal and Ethical Issues</td>
<td></td>
</tr>
<tr>
<td>MGMT 692</td>
<td>Strategic Management</td>
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</tr>
</tbody>
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Computer Science

Required Courses (6 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 505</td>
<td>Programming, Data Structures, and Algorithms</td>
<td></td>
</tr>
<tr>
<td>CS 506</td>
<td>Foundations of Computer Science</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 610</td>
<td>Data Structures and Algorithms</td>
<td></td>
</tr>
<tr>
<td>CS 630</td>
<td>Operating System Design</td>
<td></td>
</tr>
<tr>
<td>CS 631</td>
<td>Data Management System Design</td>
<td></td>
</tr>
<tr>
<td>CS 656</td>
<td>Internet and Higher-Layer Protocols</td>
<td></td>
</tr>
</tbody>
</table>
## 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: Requirements 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
ARCH 542G Construction II
ARCH 543G Environmental Control Systems I
ARCH 544G Environmental Control Systems II
ARCH 569G Building and Development

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.