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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</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>
</tr>
</tbody>
</table>

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 in a Digital World
- 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
- 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
### M.S. in Applied Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<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>
</tr>
</tbody>
</table>

#### 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.