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)

- 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
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.