

# M.S. in Applied Science

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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

Code	Title	Credits
Choose 3 courses(9 credits):		
PTC 603	Identity, Technology, and Communication	3
PTC 629	Theory and Practice of Social Media	3
PTC 681	Tech in Class & Learning Envir	3
PTC 698	Selected Topics in Professional and Technical Communication	3

## Tracks

Code	Title	Credits
<b>Business</b>		
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	
<b>Computer Science</b>		
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	Managing Organizational Behavior in Technology-Based Organizations

## 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 Technology and Competitive Advantage
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

ARCH 542G	Construction II
ARCH 543G	Environmental Control Systems I
ARCH 544G	Environmental Control Systems II
ARCH 569G	Professional Practice I

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

PHYS 621	Classical Electrodynamics
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.