

# Technology Innovation Management

This section presents the requirements for programs in:

- Master of Applied Business Analytics - Technology Innovation Management
- M.A.Sc. Technology Innovation Management
- M.Eng. Technology Innovation Management
- Master of Entrepreneurship - Technology Innovation Management

## Program Requirements

### Master of Applied Business Analytics - Technology Innovation Management (5.5 credits)

#### Requirements – Project pathway:

1. 2.5 credits in:	2.5
TIMG 5001 [0.5] Principles of Technology Innovation Management	
TIMG 5002 [0.5] Technology Entrepreneurship	
TIMG 5003 [0.5] Issues in Technology Innovation Management	
TIMG 5301 [0.5] Applied Analytics for Technology Innovation Management	
TIMG 5303 [0.5] Machine Learning for Technology Entrepreneurship Problem-Solving	
2. 1.0 credit in approved TIMG elective	1.0
3. 1.0 credit in approved electives in engineering, business, or science	1.0
4. 1.0 credit in:	1.0
TIMG 5907 [1.0] M.A.B.A. Project	
<b>Total Credits</b>	<b>5.5</b>

### M.A.Sc. Technology Innovation Management (5.5 credits)

#### Requirements - Thesis pathway (5.5 credits)

1. 1.5 credits in compulsory courses including:	1.5
TIMG 5001 [0.5] Principles of Technology Innovation Management	
TIMG 5002 [0.5] Technology Entrepreneurship	
TIMG 5003 [0.5] Issues in Technology Innovation Management	
2. 2.0 credits in approved restricted elective courses	2.0
3. 2.0 credits in thesis	2.0
<b>Total Credits</b>	<b>5.5</b>

#### Restricted Elective Courses

Students in the M.A.Sc. program must complete 1.0 credit in the field of technology innovation management and 1.0 credit in engineering, business or science. Courses in the field of technology innovation management begin with the prefix TIMG.

#### Non-Restricted Elective Courses

All students in the project option of the master's program are required to complete 1.0 credit from courses offered in engineering, business, or science.

### M.Eng. Technology Innovation Management (5.5 credits)

Students in the Master of Engineering program are required to complete a total of 5.5 credits of which at least 5.0 must be at the 5000-level or above, as follows:

#### Requirements - Project pathway (5.5 credits)

1. 1.5 credits in compulsory courses including:	1.5
TIMG 5001 [0.5] Principles of Technology Innovation Management	
TIMG 5002 [0.5] Technology Entrepreneurship	
TIMG 5003 [0.5] Issues in Technology Innovation Management	
2. 2.0 credits in approved restricted elective courses	2.0
3. 1.0 credit in approved non-restricted electives	1.0
4. 1.0 credit in a graduate project	1.0
<b>Total Credits</b>	<b>5.5</b>

#### Restricted Elective Courses

Students in the M.Eng. program must complete 1.0 credit in the field of technology innovation management and 1.0 credit in engineering, business or science. Courses in the field of technology innovation management begin with the prefix TIMG.

#### Non-Restricted Elective Courses

Students in the M.Eng. program are required to complete 1.0 credit from courses offered in engineering, business, or science.

### Master of Entrepreneurship - Technology Innovation Management (5.5 credits)

Students in the Master of Entrepreneurship program are required to complete a total of 5.5 credits of which at least 5.0 must be at the 5000-level or above, as follows:

#### Requirements - Project pathway (5.5 credits)

1. 2.5 credits in:	2.5
TIMG 5001 [0.5] Principles of Technology Innovation Management	
TIMG 5002 [0.5] Technology Entrepreneurship	
TIMG 5003 [0.5] Issues in Technology Innovation Management	
TIMG 5005 [0.5] Customer Value Creation in Technology Firms	
TIMG 5201 [0.5] Technology and Wealth	
2. 2.0 credits in approved restricted elective courses:	2.0
1.0 credit in TIMG, and	
1.0 credit in engineering, business or science.	
3. 1.0 credit in a graduate project	1.0
<b>Total Credits</b>	<b>5.5</b>

#### Admission

The normal requirement for admission to the master's program is a bachelor's degree in engineering, business, or science, with at least high honours standing.

Candidates are normally required to have two years of technical experience prior to admission.

Candidates applying for admission with degrees in other areas will be considered by the admissions committee.

The committee is responsible for establishing criteria for degree equivalencies.

## Regulations

See the General Regulations section of this Calendar.

## Technology Innovation Management (TIMG) Courses

### TIMG 5001 [0.5 credit]

#### Principles of Technology Innovation Management

Develops a common level of knowledge among students on topics in product and service development, technology entrepreneurship, and commercialization. These topics build on the literature in the fields of project management, leadership, industrial marketing, managerial economics and organizational behaviour.

Precludes additional credit for TTMG 5001 (no longer offered).

### TIMG 5002 [0.5 credit]

#### Technology Entrepreneurship

Key theories and models of technology entrepreneurship. Topics include the nature of technology products, collaborative experimentation and production of new products, assets, and their attributes, and the firm's asset ownership rights.

Precludes additional credit for TTMG 5002 (no longer offered).

### TIMG 5003 [0.5 credit]

#### Issues in Technology Innovation Management

Key readings relevant to technology innovation management. Topics include the introduction of new products to the global market, technology sourcing, intellectual property rights, industry trends, technology and ethics, new business opportunities and product identification, industry characteristics, regulation, international competition, ecosystems, economic development, and open source.

Precludes additional credit for TTMG 5003 (no longer offered).

### TIMG 5004 [0.5 credit]

#### Research Methods in Technology Innovation Management

Prepares students to undertake research in technology innovation management. Students learn to define interesting research problems and hypotheses relevant to technology innovation management, and learn the different research approaches used in the field of technology innovation management.

Precludes additional credit for TTMG 5004 (no longer offered).

Prerequisite(s): TIMG 5001 and one of TIMG 5002 or TIMG 5003.

### TIMG 5005 [0.5 credit]

#### Customer Value Creation in Technology Firms

Topics include: architecture, product/service management; technology and complementary assets; latent needs; co-design and user innovation; life-cycle management; pricing; alignment of technology and business strategy; user experience; customer retention.

Precludes additional credit for TTMG 5005 (no longer offered).

Prerequisite(s): TIMG 5001 and TIMG 5002.

### TIMG 5006 [0.5 credit]

#### Management of Software Engineering Projects

Models for the development of software. Software project management tools. Quality control. Risk assessment and management. Examples are drawn from the development of new technology products.

Includes: Experiential Learning Activity

Precludes additional credit for TTMG 5006 (no longer offered).

Prerequisite(s): TIMG 5001 or TTMG 5001 and TIMG 5002 or TTMG 5002.

### TIMG 5101 [0.5 credit]

#### Integrated Product Development

The new product introduction process and time-based competition, basic concepts of integrated product development, parallelism and concurrency of development activities, flexibility and agility, the voice of the customer, cross-functional teams, organizing for innovation, collaboration across firm boundaries, manufacturing and design.

Prerequisite(s): TIMG 5001 and TIMG 5002.

### TIMG 5103 [0.5 credit]

#### Advanced Topics in Technology Innovation Management

In-depth exploration of an advanced topic in the field of technology innovation management. A different topic is covered each semester and more than one section, with different topics, may be offered in the same semester.

Prerequisite(s): one of TIMG 5004, TIMG 5005, or TIMG 5101.

### TIMG 5104 [0.5 credit]

#### Directed Studies in Technology Innovation Management

The student explores, through extensive literature surveys, specific topics in the areas of technology innovation management. The objective is to enable study on a specific topic to acquire a suitable background to initiate and complete thesis work.

Precludes additional credit for TTMG 5104 (no longer offered). any other directed studies.

### TIMG 5105 [0.5 credit]

#### Designing Innovation Communities

This course helps entrepreneurs and product managers understand the role of communities in innovation (eg. peer production and crowdsourcing). It provides them with tools for designing communities, and guidelines for selecting the technology for supporting a community.

**TIMG 5106 [0.5 credit]****Open Source Business**

The management of open source businesses. Topics may include company participation in open source projects, capturing value from open source projects, creating and managing open source ecosystems, open-source development, role of architecture in open source projects.

**TIMG 5107 [0.5 credit]****Co-creating Inclusive Innovation**

Students apply research in technology innovation management to co-create innovative solutions that reduce inequalities caused by social, political, and economic exclusion and have local context at their core. TIM students may collaborate with Indigenous communities, other organizations, and students in science, engineering, and other areas.

Includes: Experiential Learning Activity

Prerequisite(s): TIMG 5001 and one of TIMG 5002 or TIMG 5003.

**TIMG 5201 [0.5 credit]****Technology and Wealth**

Tools, models, approaches, theories and frameworks used to deploy technology to create and appropriate wealth.

**TIMG 5301 [0.5 credit]****Applied Analytics for Technology Innovation Management**

Application of advanced business analytics in the domain of technology innovation management and technology entrepreneurship. Topics include supervised and unsupervised machine learning, anticipatory thinking, and anomaly detection, to inform managerial judgement and support strategic and operating decisions faced by managers and entrepreneurs.

Includes: Experiential Learning Activity

Prerequisite(s): TIMG 5001.

**TIMG 5303 [0.5 credit]****Machine Learning for Technology Entrepreneurship Problem-Solving**

Application of machine learning tools to co-create solutions to entrepreneurial problems, with an emphasis on unstructured text analytics. Topics include machine learning tools, application of topic modeling and text analytics, generation of practical competitive insights for managers, and analysis of publicly-available sources including websites.

Includes: Experiential Learning Activity

Prerequisite(s): TIMG 5002.

**TIMG 5901 [1.0 credit]****M.Eng. Project**

Includes: Experiential Learning Activity

Precludes additional credit for TTMG 5901 (no longer offered).

**TIMG 5905 [1.0 credit]****M.Ent. Project**

Includes: Experiential Learning Activity

**TIMG 5907 [1.0 credit]****M.A.B.A. Project**

Master of Applied Business Analytics Project.

Includes: Experiential Learning Activity

**TIMG 5909 [2.0 credits]****M.A.Sc. Thesis**

Includes: Experiential Learning Activity

Precludes additional credit for TTMG 5909 (no longer offered).