



**Carleton  
University**

Technology Innovation  
Management



**Institute for Technology Entrepreneurship and Commercialization**  
**TIMG 5001 Principles of Technology Innovation Management (A)**  
**Fall 2024 (September to December)**

**Time and place**

Wednesday 6-9pm EST

In Person: NI5010

Online: <https://carleton-ca.zoom.us/j/93073557843>

Website for course resources and online participation: <https://brightspace.carleton.ca/d2l/home/292106>

**Instructor**

Professor Nusa Fain

5025 Nicol Building

[nusa.fain@carleton.ca](mailto:nusa.fain@carleton.ca)

**Office hours**

The instructor is available by email at any time. Email is the preferred mode of communication.

The instructor will be available for office hours, either on campus or online, by appointment as needed.

**Target audience**

TIMG 5001 is the first of three required core courses for all Technology Innovation Management (TIM) program graduate students. It provides a common level of knowledge and skills required to complete other TIM courses successfully.

Students registered in all five TIM degree pathways – the Master of Science (MS), the Master of Engineering (MEng), the Master of Entrepreneurship (MEnt), the Master of Applied Business Analytics (MABA), and the Master of Digital Transformation and Entrepreneurship (MDTE) – complete this course in their first term of study.

**Calendar description**

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 project

management, leadership, industrial marketing, managerial economics and organizational behaviour.

### **Course Objectives**

This course introduces students to scholarly research literature and applied practitioner literature in the field of technology innovation management. We learn about critical topics for technology-based companies competing in the global products and services market. These topics include (i) product and service development and (ii) technology entrepreneurship and commercialization.

These topics cut across functional management areas and build on the scholarly research literature and applied practitioner literature in the fields of project management, industrial marketing, competitive strategy, organizational behaviour, leadership and managerial economics. Our perspective on these topics throughout the course is that of a product development manager.

### **Rationale**

The course is integrated around the work that product development managers do, and the context within which they act. In organizing the course, we rejected the traditional organization around functional areas such as human resources, research and development (R&D), marketing, finance, etc. for two reasons. First, engineers and computer scientists responsible for engineering processes in the real world make integrative management decisions across management functions. Rarely can product development decisions be broken down into the traditional functional areas. Second, delivering a course partitioned by traditional management functions frequently turns into a series of disjointed lectures with no evident interdependences. Both reasons are supported by management theory and evidence.

From our research and our experience in industry, and from the research of others, the TIM faculty has concluded that (i) the product development project is the main mechanism for learning and profit generation in successful technology-based companies, and (ii) the manager of the product development project can make or break the project.

### **Learning objectives**

Students in TIMG 5001 will benefit in the following ways:

- Knowing how to access and apply the scholarly and practitioner literature on technology innovation management, product and service development, technology entrepreneurship, and commercialization.
- Acquiring tools and concepts that can be applied to improve existing product development organizations or establish new ones in the current VUCA environment.
- Developing personal skills in ideation, critical thinking and making, assessing and communicating recommendations on improving development and commercialization organizations.
- Developing the skills required to make, assess and communicate recommendations in technical and early market environments where there is not an abundance of information
- Using lessons learned in other settings to solve problems related to product and service development and to technology entrepreneurship and commercialization.

### **Brand**

The brand of the TIM program is a valuable asset. All students in TIMG 5001 are expected to work hard to

protect and enhance the value of the TIM brand.

### **Synchronous and Asynchronous Learning**

Class sessions will be conducted in a **HyFlex mode** as combinations of lectures, in-class group activities and interactive discussions, workshops on the course assignments, student presentations, and feedback from the instructor and peers on student presentations. Class sessions are the *synchronous* portion of the coursework when all of us, from the Carleton campus or anywhere in the world, come together at the same time for learning. Most sessions are also recorded for later review.

The *asynchronous* portion of the coursework, completed outside of classes, is Carleton University's **Brightspace Learning Management System (LMS)**: <https://brightspace.carleton.ca/> You can learn about Brightspace here: <https://carleton.ca/brightspace/students/>

Brightspace is the repository for course material and recordings of class sessions, the means of submitting coursework and assignments, and the location of discussion forums and other collaboration tools. The instructor will post the documents for most class sessions before class.

Each week there will be assigned readings and tasks to be completed before class. Students should attend every class session, arrive prepared to discuss the assigned reading and tasks for that session, and participate actively in discussions, activities, and workshops during the class session. Between class sessions, students should actively use the discussion forums and other tools for asynchronous collaboration. Success as a manager depends on verbal communication skills. This course allows students to develop their ability to make, assess and communicate recommendations to their peers.

During the student group presentation sessions, groups will make short presentations on their assignments. Each group decides who presents what and the order. Before 6 p.m. on the day before the presentation will be delivered, each group will distribute to all members of the class the slides to be presented the next day. No exceptions. Presentations will be followed by clarification questions and discussions that involve the entire class. An excellent group presentation is clear, concise, and insightful and completed within the allotted time.

### **Student evaluation**

Students are required to work in groups to complete two assignments, work individually to write a final examination, make presentations during class sessions, and actively participate in class discussions and other class activities. To determine the course grade, these components will be weighted as follows:

Assignment 1: Idea pitch (group):	25%
Assignment 2: Corporate innovation hackathon presentation (group):	25%
Final Examination – innovation portfolio and research paper (individual)	50%

Assignments submitted late and presentations not made will receive a grade of zero. All students in a group receive the same grade. Final grade reports will follow Carleton University guidelines.

### Assignment 1: Idea pitch

In weeks 4-6 of the course, we will be working on brainstorming a product or service that you will develop up to the point of a Minimum viable product. You will pitch this solution in week 7 to a panel of investors (your class and instructors – we may bring in some investor guests as well). This assignment is intended to simulate the real-world environment, where ideation and developing ideas into business opportunities have become key for innovative companies.

The following template will be used to grade your presentation. We use the GPA system ranging from an A+ (4.3) to F (0.0). Grades in the A range indicate that your work exceeds expectations, those in the B range indicate that your work meets expectations, those in the C range indicate that the quality of your work is somewhat below expectations, those in the D range indicate that the quality of your work is much below expectations, and sections not completed will receive an F.

Area:	Weight
<b>Content of presentation:</b> We are asking whether you address the content of the ten slides detailed <a href="#">here</a> . We are also looking for whether you do so in a way that prevents you from telling the common “entrepreneur lies” as detailed in Kawasaki’s talk ( <i>listen here</i> )	60%
<b>Style of presentation:</b> The direction of the presentation is laid out in the introduction; the structure is unified and coherent; the conclusion is precise and relevant. The presentation is creative, grabs the audience’s attention and is appropriate for the product/service being pitched. If multiple team members are presenting, the flow is smooth and professional.	20%
<b>Q&amp;A:</b> We are looking for the ability to answer and respond appropriately to questions (e.g. admit when you don’t know; ability to take criticism without getting defensive) and to work as a team (e.g. don’t contradict one another in your responses, share questions).	20%
<b>Total</b>	<b>100%</b>

### Assignment 2: Corporate innovation hackathon presentation

The purpose of this group assignment is to understand how corporate innovation occurs in practice. You will take a deep dive into a specific and real instance of a corporate innovation project. In week 11, a company partner will present an innovation challenge, and you will have two weeks to execute that challenge rapidly, with quick decisions, fast iterations and agility. Corporate innovation challenges are often fast-paced and demanding, so there is no space for formalities, processes and by-the-book practices. It is about making the impossible happen in time, and you need to manage your team with this in mind. You will present the solution to the challenge in week 13 in class. In week 12, you will have the opportunity to ask the client company questions so you can refine your process and outcomes.

The following template will be used to grade your presentation. We use the GPA system ranging from an A+ (4.3) to F (0.0). Grades in the A range indicate that your work exceeds expectations, those in the B range indicate that your work meets expectations, those in the C range indicate that the quality of your work is somewhat below expectations, those in the D range indicate that the quality of your work is much below expectations, and sections not completed will receive an F.

Area:	Weight
<b>Structure and cohesion:</b> The primary and secondary issues are clearly identified and defined. The critical issues are presented and supported with data from client's presentation and brief.	20%
<b>Argument and resolution:</b> The presentation shows a strong understanding of the industry, customer and organization. There is evidence of qualitative and/or quantitative analysis used and supported effectively. The implications and risks are identified and effectively discussed.	40%
<b>Originality and professionalism:</b> Recommendations follow a logical sequence and address all issues identified. Supporting evidence is used effectively, and the outcomes are feasible, realistic and tailored to the organization. Alternatives are identified and discussed, and the selection process is explained. Unique, persuasive and creative recommendations.	20%
<b>Quality of execution proposal:</b> Comprehensive timeline and actionable plans to execute recommendations are presented. Possible risks and mitigations are discussed effectively. Possible costs of the solution are identified and justified persuasively. The overall implementation strategy is clear.	20%
<b>Total</b>	<b>100%</b>

### Assignment 3: Final examination

Your take-home exam will include the development of your own innovation portfolio. You will create a personal innovation portfolio demonstrating your understanding and application of the principles of technology innovation management learned throughout the course. Your portfolio should include the following sections:

1. Introduction: Briefly introduce yourself and your professional background.
2. Innovation Philosophy: Describe your personal philosophy on innovation and how it has evolved during the course.
3. Key Learnings: Highlight the key concepts and skills you have acquired in the course, including ideation, problem-solving, critical thinking, AI applications, business strategy, and ethical considerations.
4. Case Studies: Include at least two case studies of companies or projects successfully implementing technology innovation. Analyze their strategies and outcomes.

5. **Personal Projects:** Describe any personal or professional projects you have worked on that relate to technology innovation. Include details on the challenges faced, solutions implemented, and results achieved.
6. **Future Goals:** Outline your goals in technology innovation management and how you plan to apply the knowledge and skills gained from the course.
7. **References:** Include at least 10 relevant recent peer-reviewed references (not older than 5 years) to support your portfolio.

Format: The portfolio should be a written document, approximately 3000-4000 words in length. Use a professional format with clear headings and subheadings for each section. Include any relevant visuals, such as charts, graphs, or images, to enhance your portfolio.

You are encouraged to use AI tools for research, data analysis, or generating ideas. However, ensure that your work is original and properly cite any AI tools or resources you use. Plagiarism or over-reliance on AI-generated content will not be tolerated. Maintain academic integrity by properly citing all sources, including AI tools and resources. Any form of academic dishonesty will result in penalties.

Area:	Weight
<b>Introduction:</b> Clear and concise introduction of the student and their professional background. Relevance of the background to technology innovation management.	10%
<b>Innovation philosophy:</b> Clear description of personal innovation philosophy. Explanation of how the philosophy has evolved during the course. Reflection on personal growth and learning.	15%
<b>Key learnings:</b> Comprehensive summary of key concepts and skills acquired in the course. Inclusion of ideation, problem-solving, critical thinking, AI applications, business strategy, and ethical considerations.	20%
<b>Case studies:</b> Inclusion of at least two case studies of companies or projects successfully implementing technology innovation. Detailed analysis of strategies and outcomes. Relevance to course concepts and personal learning.	15%
<b>Personal Projects:</b> Description of personal or professional projects related to technology innovation. Detailed account of challenges faced, solutions implemented, and results achieved. Relevance to course concepts and personal learning.	15%
<b>Future goals:</b> Clear outline of future goals in technology innovation management. Explanation of how the knowledge and skills gained from the course will be applied. Reflection on personal and professional aspirations.	10%
<b>References:</b> Inclusion of at least 10 relevant recent peer-reviewed references (not older than 5 years). Proper citation of all sources, including AI tools and resources. Adherence to academic integrity and avoidance of plagiarism.	10%
<b>Format and presentation:</b> Professional format with clear headings and subheadings for each section. Inclusion of relevant visuals, such as charts, graphs, or images. Adherence to word count (3000-4000 words).	5%
<b>Total</b>	<b>100%</b>

**Group work and free loaders**

There is zero tolerance for free loaders in the TIM program.

Group work is an important component of this course. You should work in the same group to prepare both assignments. The instructor can assign you to a group, or you can form your own groups. Group conflicts are to be dealt with by the group in a way that is fair, respectful and fast, without personal attacks. The instructor does not settle group disputes. The instructor may dissolve a group that is late submitting an assignment. A group of three is expected to deliver better work than a group of two.

Free loaders are not welcome anywhere. This course is no exception. The best way to deal with free loaders is to not include their names in the first page of the group assignments. If a student's name does not appear in an assignment submitted by his or her group, the student must submit his or her own assignment. If a student fails to submit an assignment with their name on the first page, the student will receive zero for the assignment.

**Plagiarism**

Plagiarism, including copying and handing in for credit someone else's work, is a serious instructional offence that will not be tolerated. Please refer to the section on instructional offenses in the Carleton Graduate Calendar for additional information. Plagiarism is against the TIM culture. A case of plagiarism will be referred to the Dean of the Faculty of Graduate and Postdoctoral Affairs (FGPA). The instructor will not deal with the matter directly. Carleton University has clear processes to deal with allegations of plagiarism.

**TIMG 5001 Class Schedule** (tentative; may be revised throughout the course)

#	Date	Topic	Reading
1	9/4/2024	Introduction to TIM	Bennett, N., & Lemoine, G. J. (2014). <a href="#">What VUCA really means for you</a> . In <i>Harvard Business Review</i> (Vol. 92, Number 1,2, pp. 27-). Harvard Business Review.
2	9/11/2024	Principles of Innovation Management	Christensen, C. M. (2016). <a href="#">The innovator's dilemma: when new technologies cause great firms to fail</a> . Harvard Business Review Press. – read chapters 1 and 11.
3	9/18/2024	Benefits of AI in Technology Innovation Management	Gama, F., & Magistretti, S. (2023). <a href="#">Artificial intelligence in innovation management: A review of innovation capabilities and a taxonomy of AI applications</a> . The Journal of Product Innovation Management.  Eapen, T. T., Finkenstadt, D. J., Folk, J., & Venkataswamy, L. (2023). <a href="#">How Generative AI Can Augment Human Creativity</a> . In <i>Harvard business review</i> (Vol. 101, Number 4, pp. 56–64). Harvard Business Review.  Enholt, I.M., Papagiannidis, E., Mikalef, P. et al. <a href="#">Artificial Intelligence and Business Value: a Literature Review</a> . <i>Inf Syst Front</i> 24, 1709–1734 (2022).
4	9/25/2024	Ideation techniques and tools	<a href="#">How to Build Your Creative Confidence</a> by David Kelley  Lebeck, P., Lee, T., & O'Mahony, L. (2023). <a href="#">Prompts for Creativity</a> . In <i>Creativity and Innovation</i> (pp. 85–115). Palgrave Macmillan.  Serrat, O. (2017). <a href="#">The SCAMPER Technique</a> . In <i>Knowledge Solutions</i> . Springer Singapore Pte. Limited.
5	10/2/2024	Market research and analysis	Fossitt, J. (2024). <a href="#">Introduction to Market</a>



			<p><a href="#">Research</a>. – read Part I</p> <p>Huang, M.-H., &amp; Rust, R. T. (2021). <a href="#">A strategic framework for artificial intelligence in marketing</a>. <i>Journal of the Academy of Marketing Science</i>, 49(1), 30–50.</p>
6	10/9/2024	MVP development and prototyping	<p><a href="#">How to build an MVP</a> by Michael Seibel</p> <p>Olsen, D., &amp; Wallace, C. (2015). <a href="#">The lean product playbook: how to innovate with minimum viable products and rapid customer feedback</a> (1st edition). Wiley.</p>
7	10/16/2024	Pitch presentations	
8	10/23/2024	<b>Reading week – no classes</b>	
9	10/30/2024	Innovation strategy and planning	<p>Pisano, G. P. (2015). <a href="#">YOU NEED AN INNOVATION STRATEGY</a>. In <i>Harvard business review</i> (Vol. 93, Number 6, pp. 44-). Harvard Business Review.</p> <p>Müller, J. M., Buliga, O., &amp; Voigt, K.-I. (2021). <a href="#">The role of absorptive capacity and innovation strategy in the design of industry 4.0 business Models - A comparison between SMEs and large enterprises</a>. <i>European Management Journal</i>, 39(3), 333–343.</p>
10	11/6/2024	Managing innovation projects	Cooper, R. G. (2024). <a href="#">The AI transformation of product innovation</a> . <i>Industrial Marketing Management</i> , 119, 62–74.
11	11/13/2024	Governance and intellectual property	Gassmann, O., Bader, M. A., & Thompson, M. J. (2021). <a href="#">Fundamentals of Intellectual Property Rights</a> . In <i>Patent Management</i> (pp. 1–25). Springer International Publishing.
12	11/20/2024	Corporate innovation challenge - hackathon launch	<p>Rys, M. (2023). <a href="#">Invention Development. The Hackathon Method</a>. <i>Knowledge Management Research &amp; Practice</i>, 21(3), 499–511.</p> <p><a href="https://doi.org/10.1080/14778238.2021.1911607">https://doi.org/10.1080/14778238.2021.1911607</a></p>

13	11/27/2024	Q&A with client and project work	
14	12/4/2024	Hackathon presentations	

### Required reading

Please prepare the assigned reading for each class session before class. The assigned reading will be available through the public internet of Brightspace under each relevant week.

Learning to access research literature to read journal articles and conference papers is an important component of the TIMG 5001 coursework. Reading for each week will be provided a week before the next class on the course Brightspace page.

### Accessing journal articles through the Carleton Library

In early 2020, the Carleton Library launched *Omni*, a new library search tool, and retired the old library catalogue and search tools:

<https://library.carleton.ca/library-news/omni-new-discovery-and-search-tool-library>

The instructions below may change if Carleton modifies the *Omni* user interface. If so, revised information will be provided in class.

To access the assigned journal articles electronically, go to the Carleton University Library website (<https://library.carleton.ca>) and click the “Journals” link directly below the search bar. This is the “Journal Search” page. Enter the title of the journal (not the title of the article) in the “Title or ISSN” field and click the magnifying glass icon. Select the record for the correct journal (likely the top item on the list of results). Select one of the databases on the list below the “Online availability” heading. Enter your *CarletonOne* credentials (username and password) if prompted for authentication. From the journal table of contents, navigate to the volume number and issue number of the assigned article (first selecting the year of publication), then select the article from the list (by authors, title, and/or page numbers). Select “PDF Full Text” to open or download a PDF of the article.

### Information on Academic Accommodations

#### Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

#### Pregnancy obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website:

[carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

**Religious obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website:

[carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

**Academic Accommodations for Students with Disabilities**

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made.

[carleton.ca/pmc](https://carleton.ca/pmc)

**Survivors of Sexual Violence**

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and its survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexual-violence-support](https://carleton.ca/sexual-violence-support)

**Accommodation for Student Activities**

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: [students.carleton.ca/course-outline](https://students.carleton.ca/course-outline)