UNIVERSITY OF
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SCARBOROUGH

FOR APPROVAL **PUBLIC** **OPEN SESSION**

TO: UTSC Academic Affairs Committee

SPONSOR: Prof. William Gough, Vice-Principal Academic and Dean
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PRESENTER: Prof. Mark Schmuckler, Vice-Dean Undergraduate
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DATE: February 3, 2020 for Monday, February 10, 2020

AGENDA ITEM: 6

ITEM IDENTIFICATION:

Minor Curricular Modifications, Undergraduate for (for approval)*

JURISDICTIONAL INFORMATION:

University of Toronto Scarborough Academic Affairs Committee (AAC) "is concerned with matters affecting the teaching, learning and research functions of the Campus" (*AAC Terms of Reference, Section 4*). Under section 5.6 of its terms of reference, the Committee is responsible for approval of "Major and minor modifications to existing degree programs." The AAC has responsibility for the approval of Major and Minor modifications to existing programs as defined by the University of Toronto Quality Assurance Process (*UTQAP, Section 3.1*).

GOVERNANCE PATH:

1. **UTSC Academic Affairs Committee [For Approval] (February 10, 2020)**

PREVIOUS ACTION TAKEN:

No previous action in governance has been taken on this item.

HIGHLIGHTS:

This package includes minor modifications to undergraduate curriculum, submitted by the Department of Management, which require governance approval. Minor modifications to curriculum are understood as those that do not have a significant impact on program or course learning outcomes. They require governance approval when they modestly change the nature of a program or course.

- The Department of Management (Report: Management)
  - 2 new courses
    - MGFD25H3
    - MGOD40H3
  - 1 course change
    - MGOC20H3– topics covered

FINANCIAL IMPLICATIONS:

There are no net implications to the campus operating budget.

RECOMMENDATION:

Be It Resolved,

THAT the minor modifications to undergraduate programs, submitted by UTSC undergraduate Department of Management, as described in Undergraduate Minor Curriculum Modifications for Approval, Report: Management, dated February 10, 2020, and recommended by the Vice-Principal Academic and Dean, Professor William Gough, be approved to be effective as of Fall 2020 for the academic year 2020-21.

DOCUMENTATION PROVIDED:

1. 2020-21 Curriculum Cycle: Undergraduate Minor Curriculum Modifications for Approval Report: Management, dated February 10, 2020

2020-21 Curriculum Cycle
Undergraduate Minor Curriculum Modifications for Approval
Report: Management
February 10, 2020

Management (UTSC), Department of

2 New Courses:

MGFD25H3: Financial Technologies and Applications (FinTech)

Description:

Financial Technologies (FinTech) are changing our everyday lives and challenging many financial institutions to evolve and adapt. The course explores disruptive financial technologies and innovations such as mobile banking, cryptocurrencies, Robo-advisory and the financial applications of artificial intelligence (AI) etc. The course covers the various areas within the financial industry that are most disrupted, thus leading to discussions on the challenges and opportunities for both the financial institutions and the regulators. Classes are conducted in the experiential learning lab where students explore academic, research and practical components of FinTech.

Prerequisites: MGFC10H3

Corequisites: MGFD10H3

Exclusions: RSM316H1, MGT415H5

Recommended Preparation: CSCA20H3

Enrolment Limits: 40

Learning Outcomes:

Depth and Breadth of Knowledge: The course helps students gain an in-depth knowledge of the primary functions of financial services, as well as the frameworks required to predict and leverage future trends in FinTech. Students will learn to evaluate the impact of different business units and analyze the potentials and limitations of emerging technologies. Some contents of the course are built upon introductory courses in finance and computer science, transcending the traditional boundary of the two disciplines.

Knowledge of Methodologies: Data analytics methodologies are covered with specific discussions and applications on data acquisition and management, predictive modelling and data visualization. The course also covers methodologies in software development using Python as the primary programming language.

Application of Knowledge: In the practical component of the course, assignments are designed to mimic real-life problems. Students will gain hands-on experience with common industrials tools such as Python, Panadas, Tableau and AWS Cloud etc.

Awareness of limits of Knowledge: While this course provides a comprehensive overview of the different financial technologies, some topics are covered in an introductory basis to avoid diving too much into the technical details of the technology. For example, students will be able to describe machine learning and its applications, and will not be required to understand the associated mathematical and statistical theories to the fullest extent.

Communication Skills: Communication skills will be a core component of the course through in-class case discussions and the group project presentation. Students will learn to develop the skill to address industry challenges and propose solutions in an effective manner.

Autonomy and Professional Capacity: The concepts taught in this course will be highly relevant for students pursuing careers in the financial industry. The topics covered in class will prepare students with the mental tools to grasp future trends in the FinTech landscape. The technological fluency gained from the practical component of the course will serve as a differentiator for the students during recruiting and while on the job.

Topics Covered:
This course primarily focuses on the 4 pillars of the financial industry:
1. Banks
2. Trusts
3. Securities
4. Insurance
 Students will develop a fond understanding of each of the above business models. Introductions and discussions will be focused on the applications of the following technologies to the financial industry.
- Mobile technology
- (AI) and BIG Data
- Cryptocurrency and Blockchain
- eCommerce and online payments
- Crowdfunding and Social media
- Robo-advisory and Exchange Traded Funds (EFTs)
- Internet of things and wearables
 The course also emphasizes the impact that compliance and regulations may have on shaping the future of the financial industry.

Methods of Assessment:
- 20% Mid-term exam: To test the students' knowledge of the primary functions of financial services, and some of the emerging technologies that are disrupting existing practices.
- 20% Individual assignments: Two individual assignments based on computer programing along with the use of cloud computing services. Through a strong focus on case-based learning and problem solving, the students will practice their critical thinking, negotiation and research skills while expanding on their ability to use various coding tools.
- 25% Group Project: The group project involves a comprehensive evaluation of potential technology implementation. Students will be asked to compile a research report together with an in-class presentation. This exercise gives the students an opportunity to apply the theoretical teachings of the course in a practical fashion.
- 35% Final exam: To test the students' grasp of key theoretical components of FinTech including AI and cryptocurrency applications, and their potentials, limitations and regulation challenges.

Mode of Delivery: In Class

Breadth Requirements: Quantitative Reasoning

Rationale:
This course serves as an upper-year elective for the Double Degree in Management & Finance (BBA) and Statistics—Quantitative Finance Stream (BSc), and the Specialist Program in Management & Finance. This course offers UTSC Management students the opportunity to learn about FinTech. FinTech is changing and challenging many financial institutions to evolve and adapt. Financial institutions are increasingly seeking to hire graduating business students with technology fluency. Also, MGFD25H3 satisfies the demand for opportunities to put both financial and technological skills into practice. Fundamental concepts in financial services and Python programming are covered elsewhere in the curriculum, and this course builds upon those foundations to introduce new concepts and create integrated knowledge applications. In-class discussions and assignments are designed to challenges students in applying technological solutions to financial problems, and to encourage critical thinking and creativity. Work-Integrated Learning is a key component of MGFD25H3, the course includes a field trip to (or visiting guest lecturers from) industry partners. Students will have the opportunity to learn about the different technologies and their real-life applications, reinforcing theoretical classroom knowledge.

Consultation:
DCC Approval: September 18, 2019.
RO Approval: August 6, 2019

Resources: A sessional lecturer and additional TA support will be covered by the department's existing budget. No additional resources are required.

MGOD40H3: Simulation and Analysis of Business Processes

Description:
Students will learn how to construct and implement simulation models for business processes using a discrete-event approach. They will gain skills in the statistical analysis of input data, validation and verification of the models. Using these models, they can evaluate the alternative design and make system improvements. Students will also learn how to perform a Monte Carlo simulation. Spreadsheet and simulation software are integral components to this course and will enhance proficiency in Excel.

Prerequisites: MGOC10H3

Corequisites: MGOC20H3

Exclusions: MIE360H1

Enrolment Limits: 35

Learning Outcomes:
After taking the course, the students will:
•   Understand the difference between a Discrete Event Simulation and a Monte-Carlo Simulation. This will help students to choose the right simulation tool to solve their business problems.
•   Understand how to construct and implement a discrete event simulation for a production process or a service process. This will provide students with a general understanding of using a discrete-event simulation approach to help improve processes in their workplace.
•   Know how to use simulation software such as ARENA to construct and run discrete event simulations. This will provide students with a specific simulation tool to solve larger and more complex problems
   that may arise in their work.
•   Know how to use EXCEL spreadsheet to conduct Monte Carlo simulations. This will prepare students to use spreadsheets for simulation, and increase their proficiency with EXCEL.
•   Have applied simulation to study a number of specific business problems in various areas, such as human resources, sales & marketing, etc. Here is a sample of such problems published in INFORMS
 Journal of Applied Analytics:
Simulation of Career Development in EC: https://pubsonline.informs.org/doi/10.1287/inte.1100.0489
Simulation Helps Manager Shorten Its Sales Cycle: https://pubsonline.informs.org/doi/10.1287/inte.1030.0065
This will give the students some practical experience in using simulation.

Topics Covered:
1. Introduction to Simulation (1 class)
•   Concepts & Terminology, Performance Measures, eg. throughput, utilization,
•   Example of a Coin Flipping Game
2. Random Event Generation (1 class)
•   Generating Random Events From Continuous Distributions: Empirical, Exponential, Normal
•   Generating Random Events From Discrete Distributions: General, Poisson
•   Acceptance-Rejection Technique, Inverse Transformation Method
3. Simulation of Business Processes With Single Server (0.5 class)
•   Performing a simulation of a process that has one Server/Machine/Worker/Dept
4. Simulation Using ARENA Software (3.5 classes)
•   Data Modules, Process Module, Simulation Reports
•   Sets, Flow Chart Module, Adding Animation
•   Arrival & Resource Schedule, Modeling Down Time
•   Importing EXCEL Into ARENA
5. Input Modelling (1.5 class)
•   Exponential Fitting, Normal Distribution Fitting, Q-Q Plot
6. Verification & Validation of Model (0.5 class)
7. Monte-Carlo Simulation (1 class)
•   Simulation of Bread Baking Shop
•   Simulation of Ordering & Inventory for a Small Store
•   Using EXCEL to perform Monte-Carlo Simulation
8. Application of Simulation in Human Resources, Healthcare, Marketing (2 classes)

Methods of Assessment:
- Students will complete some exercises in the computer lab using the ARENA simulation software. This will allow students to become familiar with ARENA and be confident in constructing and implementing simulation models using the software.

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- Students will complete some exercises in the computer lab using the ARENA simulation software. This will allow students to become familiar with ARENA and be confident in constructing and implementing simulation models using the software.
- Students will be given assignments to help them understand the theory and concepts covered in the course. They will be required to complete a simulation case study. This will train the students to make necessary assumptions and to be able to construct a larger or several models to analyze the problem. There will also be a midterm test and final exam.
 Lab exercises 10%, Assignments 10%, Simulation Case 15%, Midterm 25%, Exam 40%

Mode of Delivery: In Class

Breadth Requirements: Quantitative Reasoning

Rationale:
Currently, there is only one elective course (MGOD30H3) for Management students that wish to further develop their skills in Operations Management. As such, this proposed course will help to fill this gap. This course will cover simulation, this area of study is one of the major methodological topics in Operations Management as it is a versatile tool that can be applied in different industries. Learning how to model and simulate production systems or service operations allows students to conduct a detailed analysis of these systems. A distinctive element in this course is that students will learn how to use the ARENA software to conduct simulations. ARENA is used by many companies and practitioners to conduct simulations. Another distinctive element of this course is that students will apply simulation to solve business problems rather than problems in science & engineering.

Consultation:
DCC Approval: September 18, 2019.
RO Approval: August 19, 2019.

Resources:
The course will be taught by Vinh Quan, an existing faculty member. This course will require additional TA support that will be covered by the department's existing budget. No other additional resources are required.

1 Course Modification:

MGOC20H3: Operations Management: A Mathematical Approach

Title: Operations Management ~~: A Mathematical Approach~~

Description:
 An introduction to a broad scope of major strategic and tactical issues in Operations Management. Topics include ~~:~~ project management, inventory management, supply chain management, forecasting, revenue management ~~aggregate planning~~ , quality management , lean and just-in-time operations ~~material requirements planning~~ , and production scheduling.

Prerequisites: MGOC10H3 ~~/ (MGTC74H3)~~

Exclusions: ~~(MGTC75H3)~~ , MGT374H, RSM370H

Topics Covered:
Topics revenue management, quality management, lean and just-in-time operations have been included instead of aggregate planning and materials requirement planning to provide a more balanced coverage of the subject.

Rationale:
1. The course title and description have been revised to better reflect the content covered in the course.
2. The course prerequisites have has editorial changes to remove old course code
3. The course exclusions have been updated to include all courses from other campuses that have a content overlap with this course.
4. The course topics have been revised to provide more balanced coverage of the subject and to help meet the learning outcomes efficiently.

Consultation: DCC Approval: September 18, 2019.

Resources: None.