ENGINEERING
McMaster-Mohawk
Bachelor of Technology
Partnership

McMaster
University

# Course Outline

## 1. COURSE INFORMATION

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| **Session Offered** | Fall 2021 |
| **Course Name** | Financial Systems for Technological Organizations |
| **Course Code** | GEN TECH 3FS3 |
| **Date(s) and Time(s) of lectures** | C01: Thursdays 6:30 pm to 9:30 pm, online |
| **Program Name** | Technology Leadership Certificate Program |
| **Calendar Description** | Introduction to the use of accounting data in the management of technical units and projects. |
| **Instructor(s)** | Karim Karim, P. Eng., M.B.A., B.A.Sc    E-Mail: karimk7@mcmaster.ca <br> Office: ETB/209 <br> Office Hours: By Appointment |

## 2. COURSE SPECIFICS

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| **Course Description** | GenTech 3FS3 will prepare you to apply accounting concepts to project supervision and management. Divided into two sections, this course first differentiates between business transactions and accounting transactions and their effect on the company's financial success, financial health, and liquidity. The second part of the course focuses on cost concepts (differentiating cost based on behavior, function, and type) to aid in the calculation of the cost of production or project, prediction of future costs, relationship between cost and profitability when volume is altered, and non-routine decision making. In addition, the second part will also apply cost concepts in preparation of static/master and flexible budgets followed by calculation and analysis of variances. |

| **Instruction Type** | Code | Type | Hours per term |
|---|---|---|---|
| | C | Classroom instruction | 39 |
| | L | Laboratory, workshop or fieldwork | |
| | T | Tutorial | |
| | DE | Distance education | |
| | | **Total Hours** | 39 |

| **Resources** | **ISBN** | **Textbook Title & Edition** | **Author & Publisher** |
|---|---|---|---|
| | The link for purchasing the custom eText directly from Pearson will be posted in Avenue. There are no printed copies at the bookstore. | Financial Systems for Technological Organizations [Custom Edition for McMaster University Bachelor of Technology Program] | Pearson Education Inc. [Custom Edition Text] |
| | **Other Supplies** | PowerPoint slides and supporting material will be provided via electronic files on the course Avenue to Learn website. | |

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| **Prerequisite(s)** | Registration in Automotive and Vehicle Engineering Technology / Biotechnology /Automation Engineering Technology |
| **Corequisite(s)** | None |
| **Antirequisite(s)** | GEN TECH 1FS3, GEN TECH 1FT3, GEN TECH 3FF3 |

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| **Course Specific Policies** | • <u>Self MSAF is not permissible for weights on evaluations that are greater than or equal to 25% (i.e. midterm, final exam).</u> **Any attempt to submit a falsified MSAF for this course for a missed midterm exam constitutes academic dishonesty and charges may be filed with the Office of Academic Integrity.**<br>• Please note that there <u>are no deferred midterm examinations</u> in this course. If, for any reason a student misses a mid-term examination, the student must apply a Notice of Absence through the Faculty office. If the Faculty approves the application and issues an MSAF, the value of that examination will be applied to the cumulative final examination **(i.e. a missed midterm exam with approved MSAF will result in the cumulative final examination being weighted at 80% of the final grade).** If the Faculty does not approve the application, the student would receive a mark of zero for the missed midterm exam.<br>• Other than laptops for course related content, no mobile or other devices may be used during class<br>• It is your responsibility to check Avenue daily – everything you will need is there and any important announcements will be posted there. Set your home page to the news feed for the course. See the Course Website for any updates<br>• It is your responsibility to understand what constitutes academic dishonesty<br>We only respond to emails from students' McMaster email accounts. Ensure that your Mac account is activated and has space to receive emails. We reply to emails only once, and if it returns to us as "undeliverable mail" we do not attempt any further replies. Do not use the email provided by Avenue. **We do not check Avenue for emails. We do not respond to emails asking questions to which the answer is readily available in the course outline or Avenue.** |
| **Departmental Policies** | Students must maintain a GPA of 3.5/12 to continue in the program.<br><br>In order to achieve the required learning objectives, on average, B.Tech. students can expect to do at least 3 hours of "out-of-class" work for every scheduled hour in class. "Out-of-class" work includes reading, research, assignments and preparation for tests and examinations.<br><br>Where group work is indicated in the course outline, such collaborative work is mandatory.<br><br>The use of cell phones, iPods, laptops and other personal electronic devices are prohibited from the classroom during the class time, unless the instructor makes an explicit exception.<br><br>Announcements made in class or placed on Avenue are considered to have been communicated to all students including those individuals that are not in class.<br><br>Instructor has the right to submit work to software to identify plagiarism. |

| 3. SUB TOPIC(S) | | |
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| Week 1:<br>Sept 9th | **The Financial Statements**<br>• Explain the language of business<br>• Explain the conceptual framework<br>• Describe the purpose of the financial statements<br>• Illustrate the relationships among the financial statements<br>• Classify the elements of financial statements | Chapter 1 |
| Week 2:<br>Sept 16th | **Recording Business Transactions**<br>• Reading and understanding the Financial Statements.<br>• Understand what type of activities impact financial statements.<br>• Record the impact of activities in financial statements.<br>• Review the cycle of transactions leading to financial statements. | Chapter 2 |
| Week 3:<br>Sept 23rd | **Accrual Accounting and the Financial Statements**<br>• Explain difference between statements prepared under cash basis and accrual basis.<br>• Apply revenue and expense recognition principles.<br>• Record adjusting entries and understand their impact on financial statements.<br>• Prepare the financial statements.<br>  Horizontal and vertical ratio analyses. | Chapter 3<br><br>**QUIZ 1 (5%)**<br>**Chapters 1 & 2**<br>OPEN: Sep 24, 9 am<br>CLOSE:Sep 26, 11:59 pm<br>40 questions, 5 hour time limit. |
| Week 4:<br>Sept 30th | **The Statement of Cash Flows**<br>• Interpreting the cash flow statement.<br>• Explain the uses of the statement of cash flows.<br>  Prepare the statement of cash flows using the indirect method. | Chapter 4 |
| Week 5:<br>Oct 7th | **An introduction to cost terms and purposes**<br>• Identify and distinguish between two manufacturing cost classification systems: direct and indirect, prime and conversion.<br>• Differentiate fixed from variable cost behaviour and explain the relationship of cost behaviour to direct and indirect classifications.<br>• Interpret unitized fixed costs appropriately when making cost management decisions.<br>• Apply cost information to produce a GAAP compliant income statement showing proper cost of goods sold and a balance sheet showing proper inventory valuation.<br>• Explain cost identification classification, and management systems and their use within the decision framework. | Chapter 5<br><br>**QUIZ 2 (5%)**<br>**Chapters 3 & 4**<br>OPEN: Oct 8, 9 am<br>CLOSE: Oct 10, 11:59pm<br>40 questions, 5 hour time limit. |

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| Week 6<br>Oct 21st | **Midterm Exam 6:30 pm – Online.  Proctored.** | **MIDTERM EXAM (25%)**<br>**Chapters 1 – 4**<br>Date: Thu, Oct 21st<br>Time: 6:30 pm, 2 hours |
|---|---|---|
| Week 7:<br>Oct 28th | **Quantitative Analyses of Cost Functions**<br>• Use standard mathematical notation to specify a cost function that can be graphed as a straight line.<br>• Understand the various methods of cost estimation and use historical data to predict future costs.<br>• Apply OLS linear regression to analyze goodness of fit and the values of A and B to predict the MOH cost pool.<br>• Explain ways to clean up dirty data.<br>• Use statistics reported from a simple linear regression to reliably and confidently predict the range within which total value of the cost pool will fall.<br>• Use multiple linear regression to determine how more than one cost driver (X) improves the prediction of the MOH cost pool value (y). | Chapter 6 |
| Week 8:<br>Nov 4th | **Job Costing and Activity Based Costing**<br>• Identify and explain the elements of an effective job-costing system<br>• Distinguish among three methods, actual, budgeted, and normal, to calculate job cost allocation rates and assign indirect costs to a distinct job<br>• Analyze the flow of costs from direct and indirect cost pools to inventory accounts, including adjustments for over- and under-allocated costs<br>• Identify the basic elements of activity-based costing systems as distinguished from traditional systems, and explain how preventable undercosting and overcosting of products and services affects profitability<br>• Assign costs using activity-based costing (ABC) | Chapter 7 and 8<br><br>**QUIZ 3 (5%)**<br>**Chapters 5 & 6**<br>OPEN: Nov 5, 9 am<br>CLOSE: Nov 7, 11:59pm<br>40 questions, 5-hour time limit. |
| Week 9:<br>Nov 11th | **Cost – Volume – Profit Analysis**<br>• Identify the essential elements of cost-volume-profit analysis and calculate the breakeven point (BEP)<br>• Apply the CVP model to calculate a target operating profit before interest and tax<br>• Distinguish among contribution, gross, operating, and net income margins, and apply the CVP model to calculate target net income<br>• Apply the CVP model in decision making and explain how sensitivity analyses can help managers both identify and manage risk<br>(Not responsible for multi-product analyses) | Chapter 9 |

| Week 10:<br>Nov 18th | **Decision Making and Relevant Information**<br>• Contrast relevant and irrelevant costs and revenues as well as quantitative and qualitative information influencing decisions<br>• Identify the differences among relevant costs for short-term and long-term production output decisions<br>• Explain why opportunity cost is relevant and book value is irrelevant in decision making<br>• Identify key concepts and apply them to product and customer mix decisions<br>• Explain how to reduce the negative effects and conflicts arising in relevant-cost analyses | Chapter 10<br><br>**QUIZ 4 (5%)**<br>**Chapters 7, 8, & 9**<br>OPEN: Nov 19, 9 am<br>CLOSE: Nov 21,11:59pm<br>40 questions, 5-hour time limit. |
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| Week 11:<br>Nov 25th | **Master Budget and Responsibility Accounting**<br>• Distinguish the long-term from the short-term benefits of budgets (pro forma financial statements)<br>• Prepare a master operating budget and all supporting budget and supporting budgets or schedules<br>• Prepare a cash budget<br>• Contrast responsibility against controllability<br><br>**Flexible Budgets, Variances, & Management Control**<br>• Static vs. flexible budgets<br>Material, labour and overhead variances | Chapter 11<br>**CASE REPORT (10%)**<br>**Nov 24th @ 11:59 pm**<br><br><br>Chapter 12 |
| Week 12:<br>Dec 2nd | **Catch-up as Required** | **QUIZ 5 (5%)**<br>**Chapters 10 & 11**<br>OPEN: Dec 3, 9 am<br>CLOSE: Dec 5, 11:59pm<br>40 questions, 5-hour time limit. |
| Midterm Recess: Monday, October 11 to Sunday, October 17<br>Classes end: Wednesday, December 8<br>Final examination period: Thursday, December 9 to Wednesday, December 22<br>All examinations MUST be written during the scheduled examination period. | | |
| Note that this structure represents a plan and is subject to adjustment term by term.<br>The instructor and the University reserve the right to modify elements of the course during the term. The University may change the dates and deadlines for any or all courses in extreme circumstances.  If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. | | |

| 4. ASSESSMENT OF LEARNING *including dates* | Weight |
|---|---|
| **Online Quizzes** *Five at 5% each* | 25% |
| **Midterm Exam** | 25% |
| **Group Case Report** | 10% |
| **Final Exam** | 40% |
| **TOTAL** | **100%*** |

Percentage grades will be converted to letter grades and grade points per the University calendar.

**\* An additional bonus mark of up to 3%** will be based on class participation using the Top Hat platform for live synchronous responses during the lectures. There will be no cost to the student for utilizing the Top Hat platform. Since this is only a bonus component to encourage participation, MSAF's will not be accepted for missed classes and there will be no makeup opportunity.

## 5. LEARNING OUTCOMES

1. Demonstrate the use of financial statements to interpret the financial success, financial health, and liquidity of a firm.
2. Calculate and analyse financial ratios in order to comment on the profitability, solvency, and liquidity of a firm using benchmarks and comparative data between previous years, and other competitors in the industry.
3. Calculate the cost of producing a product and completing a job or process.
4. Demonstrate application of cost predictions using statistical and algebraic methods of cost behaviour analysis.
5. Identify cost behaviour and relevant costing to non-routine decision making in a short-term and long-term dimension.
6. Demonstrate application of cost-volume-profit analysis in calculating production goals to achieve break even or target profits.
7. Assess the financial implementation of short and long term business plans of an organizational unit or project.
8. Create production budgets and compare actual vs projected deviations through variance analysis.

## 6. COURSE OUTLINE – APPROVED ADVISORY STATEMENTS

### ANTI-DISCRIMINATION

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.

http://www.mcmaster.ca/policy/General/HR/Discrimination_Harassment_Sexual_Harassment-Prevention&Response.pdf

### ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. It is your responsibility to understand what constitutes academic dishonesty.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/

The following illustrates only three forms of academic dishonesty: The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.

- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

## AUTHENTICITY / PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work.  For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due.  No penalty will be assigned to a student who does not submit work to the plagiarism detection software.  All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.).  For more details about McMaster's use of Turnitin.com  please go to www.mcmaster.ca/academicintegrity.

## COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.).  Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used.  Continuation in a course that uses on-line elements will be deemed consent to this disclosure.  If you have any questions or concerns about such disclosure please discuss this with the course instructor.

## ONLINE PROCTORING

This course may use online proctoring software for tests and exams.  This software will require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams.  This software may be required to be installed before the test/exam begins.

## COMMUNICATIONS

It is the student's responsibility to:
- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the University provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels.  Official University
  communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.
- Check the McMaster/Avenue email and course websites on a regular basis during the term.

## CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the Code of Student Rights & Responsibilities (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, whether in person or online.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

## ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's Academic Accommodation of Students with Disabilities policy.

## REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

## ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests. http://www.mcmaster.ca/policy/Students-AcademicStudies/Studentcode.pdf

## COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, including lectures by University instructors

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

## EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.