Fleming College

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Course Outline

Course Title:	Applied Mathematics for Technology I		
Course Number:	MATH18	**Approval Date:**	2018/9/6
Course Hours:	60 hours	**Academic Year:**	2018
Academic School:	School of General Arts & Sciences		
Faculty:	Soobia Siddiqui - soobia.siddiqui@flemingcollege.ca Julia Godawa - julia.godawa@flemingcollege.ca		
Program Co-ordinator or Equivalent:	Victoria Maystruk - victoria.maystruk@flemingcollege.ca		
Dean (or Chair):	Sandra Dupret - sandra.dupret@flemingcollege.ca		
Academic Planning and Operations Department:	Cristina Sad - Cristina.Sad@flemingcollege.ca		

Course Description

This course is designed to enable students to acquire foundational mathematical skills important for their success in various Technology programs. These programs are Computer Engineering Technician and Technology, Electrical Engineering Technician, Electrical Techniques, and Instrumentation and Control Engineering Technician. The course is designed to complement and reinforce learning within other first semester and subsequent courses in their program of study. Microsoft Excel computer spreadsheets will be utilized as a problem-solving tool for various applications throughout the course.

Prerequisites: None.

Corequisites: None.

Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Recognize and solve technical calculations and problems requiring the concepts of BEDMAS, basic algebraic operations, fractions, exponents and ratio & proportion.
2. Solve and use linear equations to accurately complete technical problems.
3. Make accurate calculations of applied problems involving approximate numbers using engineering rules of accuracy and precision using a calculator.

4. Make accurate measurement calculations using unit conversion factors.
5. Use basic trigonometric principles to solve problems.
6. Solve systems of equations for two variable equations.
7. Identify and factor a variety of polynomial expressions.
8. Recognize and solve technical problems involving quadratic equations.
9. Resolve a vector into its components and add vectors using vector components.
10. Apply basic vector principles to solve application problems involving vectors.
11. Complete accurate calculations and graphing of applied problems using Microsoft Excel.

Learning Resources

1. TEXTBOOK: Technical Mathematics with Calculus, Third Cdn Ed by Calter; Wiley Publishers. This text is recomended as it is required for homework completion and may be required for seminar work.

2. SCIENTIFIC CALCULATOR: A hand held scientific calculator and the corresponding instruction manual are ESSENTIAL for this course.

It is recommended that you choose a calculator that you are able to competently maneuver.

Cellphone, laptop, graphing or other alternative calculators are NOT permitted during assessments.

Assessment Summary

Assessment Task	Percentage
Quizzes	15%
Tests	85%

Student Success: Policies and Procedures

Mutually, faculty and learners will support and adhere to college Academic Regulations, and Student Rights and Responsibilities. The following policies and guidelines have been developed to support the learning process.

Please click on the link for information about:

- Academic Integrity (2-201A) (https://department.flemingcollege.ca/hr/attachment/7750/download)
- Accessibility for Persons with Disabilities (3-341) (https://department.flemingcollege.ca/hr/attachment/5619/download)
- Grading and Academic Standing (2-201C) (https://department.flemingcollege.ca/hr/attachment/7752/download)
- Guidelines for Professional Practice: Students and Faculty (https://flemingcollege.ca/PDF/guidelines-for-professional-practice-students-faculty.pdf)

- Student Rights and Responsibilities (5-506) (https://department.flemingcollege.ca/hr/attachment/269/download)

Alternate accessible formats of learning resources and materials will be provided, on request.

Program Standards

The Ministry of Training, Colleges and Universities oversees the development and the review of standards for programs of instruction. Each college is required to ensure that its programs and program delivery are consistent with these standards, and must assist students to achieve these essential outcomes.

This course contributes to Program Standards as defined by the Ministry of Training, Colleges and Universities (MTCU). Program standards apply to all similar programs of instruction offered by colleges across the province. Each program standard for a postsecondary program includes the following elements:

- **Vocational standards** (the vocationally specific learning outcomes which apply to the program of instruction in question);
- **Essential employability skills** (the essential employability skills learning outcomes which apply to all programs of instruction); and
- **General education requirement** (the requirement for general education in postsecondary programs of instruction that contribute to the development of citizens who are conscious of the diversity, complexity and richness of the human experience; and, the society in which they live and work).

Collectively, these elements outline the essential skills and knowledge that a student must reliably demonstrate in order to graduate from the program. For further information on the standards for your program, follow the MTCU link (www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/)

Detail Plan

Term:	2018 Fall	**Session Code:**	DC

Faculty:	Rebecca Christensen - Rebecca.Christensen@flemingcollege.ca Tamar Richards-Thomas - Tamar.Richards-Thomas@flemingcollege.ca
Program Co-ordinator or Equivalent:	Victoria Maystruk - victoria.maystruk@flemingcollege.ca
Dean (or Chair):	Sandra Dupret - sandra.dupret@flemingcollege.ca
Academic Planning and Operations Department:	Cristina Sad - Cristina.Sad@flemingcollege.ca

Learning Plan

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
1	THEORY: Numerical Computation Review (Numerical Operations, Scientific and Engineering Notation) COMPUTER LAB 1: Lab Introduction and Excel Math Operators	1	
2	THEORY: Algebra Review and Applicable Applications (Substitution into Formula, Algebraic Expressions, Operations on Algebraic Expressions, Exponents) COMPUTER LAB 2: Computations using Excel	1, 11	Quiz #1 (on Week 1)
3	THEORY: Solving First-Degree Equations, Literal Equations, Fractions and Applicable Word Problems COMPUTER LAB 3: Insert EQUATION	2, 11	Quiz #2 (on Week 2)
4	THEORY: Measured Values (Approximate Numbers, Systems of Units, Conversion Factors) Computer Lab 4: Table of Values	1 - 4, 11	Quiz #3 (on Week 3) D2L Pretest for Test #1 (multiple attempts; covers weeks 1-3)
5	TEST #1 (15%, covers Weeks 1 - 3) THEORY: Measured Values (Metric Prefixes, Converting between Metric/Imperial Units) Computer Lab 5: Applications	1 - 4, 11	TEST #1 (15%, covers Weeks 1 - 3) Quiz #4 (on Week 4)
6	THEORY: Right Triangles (The Trigonometric Functions, Inverse Trig Functions) COMPUTER LAB 6: Applications and Excel Pretest	1 - 5, 11	Quiz #5 (on Wk 5)

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
7	THEORY: Solution and Applications of Right Angle Triangles COMPUTER LAB: Excel Test #1 (5% -open book)	5, 11	Excel Test #1 (5% - open book) Quiz #6 (on Week 6)
8	Independent Study Week		1.) Quiz #7 (covers Week 7) 2.) D2L Pretest for Test #2 available (multiple attempts; covers weeks 4, 5, 6, 7) 3.) Computer Lab 7: Angles and Their Measures
9	TEST #2 (20% - covers Week 4, 5, 6, 7) THEORY: Introduction to Vectors (Representation of Vector, Polar and Rectangular Forms, Components of a Vector, Applications) Computer Lab 8: Graphing Functions (linear)	, 10	TEST #2 (20% - covers Weeks 4, 5, 6,7)
10	THEORY: Vector Applications (Vector Addition) COMPUTER LAB 9: Graphing Functions (non linear)	, 10	Quiz #8 (covers Week 9)
11	THEORY: Systems of Linear Equations COMPUTER LAB 10: Function Graphing Applications	6	Quiz #9 (covers Week 10)
12	THEORY: Factors and Factoring (Common Factoring, Difference of Squares, Factoring Quadratic Trinomials, The General Quadratic Trinomial, The Perfect Square Trinomial, Sum or Difference of Two Cubes) COMPUTER LAB 11: Graphing Systems of Equations and Excel Pretest	1 - 7	Quiz #10 (covers Weeks 11 and 12) D2L Pretest for Test #3 available (covers weeks 9, 10, 11, 12)

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
13	TEST #3 (20% - covers Weeks 9, 10, 11, 12) THEORY: Quadratic Equations (Solve by Factoring, Solve by Formula) COMPUTER LAB: Theory Class or Excel Pretest	1 - 8	TEST #3 (20% - covers Weeks 9, 10, 11, 12)
14	THEORY: Quadratic Equations (Word Problems involving Quadratic Equations) COMPUTER LAB: Excel TEST #2 (5% - covers all labs)	1 - 8, 11	EXCEL TEST #2 (covers all labs) Quiz #11 (on Week 13) Past D2L Pretests open for preparation for Final Exam (multiple attempts)
15	THEORY AND COMPUTER LAB Classes: Used for theory: Quiz, Pretest and Review for Final Exam FINAL EXAM (20%, covers entire course content)	1 - 11	Quiz #12 (on Week 14) FINAL EXAM (20%, covers entire course content)

Assessment Requirements

Assessment Task	Date/Weeks	Course Learning Outcome	Percentage
Test 1 (covers Weeks 1,2, 3)	Week 5	1	15%
Test 2 (covers Weeks 4, 5, 6, 7)	Week 9	1-6	20%
Test 3 (covers weeks 9,10,11, 12)	Week 13	1-9	20%
Final Exam (covers entire course content from theory and computer lab classes)	Week 15	all	20%

Assessment Task	Date/Weeks	Course Learning Outcome	Percentage
Excel Test #1 (covers Labs 1 to 5) Weekly computer labs are self assessed in class and submitted for completion to the course dropbox. Lab expectations and requirements will be discussed in class.	Week 6	12	5%
Excel Test #2 (covers all Labs)	Week 14	12	5%
QUIZZES (best 10 at 1.5% each)	Weekly	all	15%
Weekly BONUS MARK Activity held in seminar each week - completion of required number of activities can earn up to 2 bonus mark overall.	Weekly Seminar Activity	all	2%

* All MISSED TESTS will receive a mark of "0" (zero) unless prior notification and approval by instructor.

* To receive credit for the course an overall mark of 50% must be obtained during the 15 weeks of the course as there are no credit recovery options after the completion of the course.

* The principle of academic honesty requires that all work submitted for evaluation and course credit be the original, unassisted work of the student. Cheating including including sharing resources or information about quizzes/tests, borrowing, copying, purchasing or collaborating on work, except for group projects arranged and approved by the faculty member, or otherwise submitting work that is not the student's own violates this principle and will not be tolerated.

Exemption Contact

Information about the Transfer Credit process can be accessed through your myCampus Portal under the Registrar's Office and Resources Tabs or by contacting the Transfer Credit Coordinator, (transfercredit@flemingcollege.ca) in the Registrar's Office.

Prior Learning and Assessment and Recognition (PLAR)

PLAR uses tools to help learners reflect on, identify, articulate, and demonstrate past learning which has been acquired through study, work and other life experiences and which is not recognized through formal transfer of credit mechanisms. PLAR options include authentic assessment activities designed by faculty that may include challenge exams, portfolio presentations, interviews, and written assignments. Learners may also be encouraged and supported to design an individual documentation package that would meet the learning requirements of the course. Any student who wishes to have any prior learning acquired through life and work experience assessed, so as to translate it into a

college credit, may initiate the process by applying through the Registrar's office. For more information please click on the following link: http://flemingcollege.ca/admissions/prior-learning-assessment-and-recognition

Course Specific Policies and Procedures

It is the responsibility of the student to retain this course outline for future reference. Course outlines may be required to support applications for advanced standing and credit transfer to other educational institutions, portfolio development, PLAR and accreditation with professional associations.

1. LATE POLICIES DUE DATES: Refer to the Class Absence Operating Policy (2-205). Unapproved missed tests, quizzes, assignments or other assessments will be given a grade of ZERO. Students are required to follow course norms for submission requirements; alternate forms of submission will not be accepted.

2. STUDENT LATENESS: Students who are late for class/lecture/lab are a disruption to their classmates and have a negative impact on the learning environment. Your instructor will share his/her late policies early in the semester. For reasons relating to classroom management and/or laboratory safety, late students may be refused entry. Lateness in general is unacceptable and will be dealt with on an individual basis.

3. ATTENDANCE Students are solely responsible for catching up on course work when absent. This includes collecting course materials (handouts, assignments, etc.) and catching up on missed classroom work. Individual instructors will provide more specific expectations for attendance early in the semester.

4. FINAL GRADES Final grades in this course are assigned based on the level of academic achievement which corresponds to the assessment components as cited in this course outline. Faculty members will not offer additional assessments or credit recovery to individual students beyond those cited in this course outline.

5. OTHER The use of laptops is NOT permitted in the classroom unless it relates to the class activity and it is not disruptive. In the computer lab internet access is restricted to sites related and approved for the class activity. The use of social networking sites and web surfing is NOT permitted during class time and will result in the deduction of a lab mark. Laptop, cellphone and other smart device usage (including texting) is NOT permitted in the classroom.

6. Academic Integrity:

Each student has the responsibility to support academic integrity. Breaches of academic integrity (such as cheating or plagiarism) will be dealt with according to the college academic integrity policy (Operating Procedure #2-201A). The Academic Integrity Violation Form must be completed when a student has violated the Academic Integrity Policy. Copies of Academic Integrity Violation Form will be shared with the Program Coordinator and the respective Dean’s Office and retained in the student’s file in the Office of the Registrar. Access to these records will be restricted to appropriate College staff as

per the Freedom of Information and Protection of Privacy Act. Sanctions vary depending on the type of violation being reported from mandatory completion of an Academic Integrity Education Module to suspension from the college. Full details of the policy can be found at: http://department.flemingcollege.ca/hr/attachment/7761/download.

Other: The teaching staff reserves the right to modify the course sequence to better meet the needs of the student group and to facilitate student learning. Students have a responsibility to support academic honesty and integrity. Breaches of academic integrity will normally result in a grade of zero for the assessment component involved. All breaches of academic integrity will be reported to the registrar.