Bachelor of Technology Partnership

Course Outline

1. COURSE INFORMATION

Session Offered	WINTER 2016	
Course Name	Mathematic V	
Course Code	ENG TECH 3MA3	
Program Name	Civil Engineering and Infrastructure Technology Software Engineering Technology Energy Engineering Technologies Manufacturing Engineering Technology	
Calendar Description	Ordinary and partial differential equations; Laplace transforms; vector calculus; integral theorems, Matrix, with engineering applications.	
Instructor	S. Tanu Halim	Phone: TBA E-Mail : tanuhasm@mcmaster.ca

2. COURSE SPECIFICS

Course Description	Calculus: First and second order linear ordinary differential equations, Laplace transforms. Application of partial derivatives, line and surface integrals. Applications involving matrix algebra determinants, eigenvalues.		
Instruction Type	**Code**	**Type**	**Total Hours**
	C	Classroom Instruction	**39**
	L	Laboratory, workshop or fieldwork	
	T	Tutorial	
	DE	Distance Education	
		TOTAL HOURS	**39**
Resources	**ISBN**	**Textbook Title & Edition**	**Author & Publisher**
	ISBN-13: 978-1-269-98416-4 ISBN-10: 1-269-98416-0	Calculus: Custom Edition for McMaster University ENG TECH 3MA3	William Briggs, Lyle Cochran, Bernard Gillet, Eric Schulz, R. Nagle, Edward Saff, Arthur Snider; Pearson
	ISBN-13: 978-1-269-98187-3 ISBN-10: 1-269-98187-0	Student's Solutions Manual for Calculus: Custom Edition for McMaster University ENG TECH 3MA3	William Briggs, Lyle Cochran, Bernard Gillet, Eric Schulz, R. Nagle, Edward Saff, Arthur Snider, Allyn Washington, Michelle Boue; Pearson
	Other Supplies		
Prerequisite(s)	Registration in Civil Engineering Infrastructure Technology, Energy Engineering Technology or Manufacturing Engineering Technology		
Corequisite(s)			
Antirequisite(s)	ENG TECH 1MA3		
Course Specific Policies	○ The instructor reserves the right to choose the format of any deferred midterms or deferred final exams.		

	○ Announcements concerning any type of graded material may be in any format (e.g., announcements may be made only in class). Students are responsible for completing the graded material regardless of whether they received the announcement or not. ○ Weekly quizzes are closed book, without cheat sheet. ○ You can miss TWO quizzes without penalty. If you do not miss any quizzes, your TWO lowest marks will be dropped. ○ Weekly homework will be marked only based on submission and attempting ALL the homework questions. The mark will be either complete or incomplete. ○ **Late homework and missed quiz submissions will not be marked**. ○ Weekly homework will not be returned. ○ Term tests and final exam are closed book. ○ **Only McMaster University's official approved calculator is allowed. Casio fx-991.** ○ **Must obtain at least 50% on BOTH final exam AND the overall grade to pass this course.**	
Departmental Policies	Students must maintain a 3.5/12 GPA to continue in the program. 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. Where group work is indicated in the course outline, such collaborative work is mandatory. 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. 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. Instructor has the right to submit work to software to identify plagiarism.	
3. SUB TOPIC(S)		
Week 1 January 5, 2016	- Derivatives ○ Derivatives of polynomial functions, ○ Product and quotient rules, ○ Derivatives of trigonometric functions, ○ Chain rule, power rule ○ Derivative of logarithmic functions,	1.3 – 1.5
Week 2 January 12, 2016	○ Implicit differentiation ○ Higher derivatives - Curve Sketching ○ Curve sketching, ○ Maximum and minimum values,	1.7 – 1.9, 1.11, 1.12
Week 3 January 19, 2016	- Partial Derivatives ○ Partial derivatives, ○ Higher Partial derivatives, ○ Chain Rule, ○ Implicit partial differential.	2.1 – 2.2

Week 4 January 26, 2016	- **Term Test 1** - Integrals o Definite integrals, indefinite integrals and anti derivatives,	3.3
Week 5 February 2, 2016	- Integrals o Integration of trigonometric functions, o Integration by parts, o Integration by substitution,	3.5, 4.1 – 4.3, 4.5
Week 6 February 9, 2016	o Integration of rational functions by partial fractions, o Integration of rational functions by long division.	
Week 7 February 16, 2016	READING WEEK BREAK	
Week 8 February 23, 2016	- First Order Differential Equations o Separable variables, o Linear equations.	5.1, 5.2, 5.4
Week 9 March 1, 2016	**Term Test 2** - Higher Order Linear, Homogeneous Differential Equations o Homogeneous linear equations, o Homogeneous linear equations with constant coefficients,	6.1,6.2
Week 10&11 March 8, March 15	- Higher Order Linear, Non-Homogeneous Differential Equations o Non-homogeneous linear differential equations, o Undetermined coefficients	6.3
Week 12&13 March 22,March 29	- Laplace Transform o Definition of Laplace transform, o The inverse of Laplace transform, o Laplace transform of derivative, o S-shifting, o Inverse S-shifting, o T-shifting, o Inverse T-shifting.	7.1 – 7.6
Week 14 April 14, 2016	- Matrix o Column and row configuration, o Diagonal matrix, o Matrix addition, subtraction and multiplying, o Partitioning of a matrix, o Determinant, transpose and inverse of a matrix,	Notes
April 12 – April 29	Exam Period	
Note: this structure represents a plan and is subject to adjustment term by term. 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	Weight
Assignments	**8%**
Quizzes	**12%**
Term Test 1 26th January, 2016	**15%**
Term Test 2 1st March, 2016	**15%**
Final Exam	**50%**
TOTAL	**100%**
Percentage grades will be converted to letter grades and grade points per the University calendar.	

5. LEARNING OUTCOMES

1. Classify and categorize first and second order differential equations solutions together with general and unique format and identify limiting boundaries.
2. Based on the initial boundary conditions, decide to solve the equation with either Laplace transformation or second order differential equations.
3. Hypothesize the trend of the solutions by identification of the parent functions and limits.

6. POLICIES

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/Anti-Discrimination%20policy.pdf

Academic Integrity

Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office. Any student who infringes one of these resolutions will be treated according to the published policy.

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and 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.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at: http://www.mcmaster.ca/univsec/policy/AcademicIntegrity.pdf

Requests for Relief for Missed Academic Term Work (Assignments, Mid-Terms, etc.)

The McMaster Student Absence Form is a self reporting tool for **Undergraduate Students** to report absences that last up to 5 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any final examination period.
You may submit a maximum of 1 Academic Work Missed requests per term. It is YOUR responsibility to follow up with your Instructor immediately regarding the nature of the accommodation.
If you are absent more than 5 days or exceed 1 request per term you MUST visit your Associate Dean's Office (Faculty Office). You may be required to provide supporting documentation.
This form should be filled out immediately when you are about to return to class after your absence.
http://www.mcmaster.ca/msaf/

E-Learning Policy

Consistent with the Bachelor of Technology's policy to utilize e-learning as a complement to traditional classroom instruction, students are expected to obtain appropriate passwords and accounts to access Avenue To Learn for this course. Materials will be posted by class for student download. It is expected that students will avail themselves of these materials prior to class. Avenue can be accessed via http://avenue.mcmaster.ca

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.
- To check their McMaster/Avenue email and course websites on a regular basis during the term.

Turnitin (Optional)

This course will be using a web-based service (Turnitin.com) to reveal plagiarism. Students will be expected to submit their work electronically to Turnitin.com and in hard copy so that it can be checked for academic dishonesty. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, etc.). To see the Turnitin.com Policy, please go to www.mcmaster.ca/academicintegrity

Protection of Privacy Act (FIPPA)

The Freedom of Information and Protection of Privacy Act (FIPPA) applies to universities. Instructors should take care to protect student names, student numbers, grades and all other personal information at all times. For example, the submission and return of assignments and posting of grades must be done in a manner that ensures confidentiality.
http://www.mcmaster.ca/univsec/fippa/fippa.cfm

Academic Accommodation of Students with Disabilities Policy

Student Accessibility Services (SAS) is committed to the continuous improvement of accessibility for students with disabilities. Students are encouraged to contact SAS as early as possible before each term starts to become familiar with the services offered and to confirm their accommodations.

Students must forward a copy of the SAS accommodation to the instructor of each course and to the Program Administrator of the B.Tech. Program immediately upon receipt. If a student with a disability chooses NOT to take advantage of a SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. http://sas.mcmaster.ca

Student Code of Conduct

The Student Code of Conduct (SCC) exists to promote the safety and security of all the students in the McMaster community and to encourage respect for others, their property and the laws of the land. McMaster University is a community which values mutual respect for the rights, responsibilities, dignity and well-being of others. The purpose of the Student Code of Conduct is to outline accepted standards of behavior that are harmonious with the goals and the well-being of the University community, and to define the procedures to be followed when students fail to meet the accepted standards of behavior. All students have the responsibility to familiarize themselves with the University regulations and the conduct expected of them while studying at McMaster University.

http://www.mcmaster.ca/univsec/policy/StudentCode.pdf