McMaster University | SCIENCE Department of Mathematics & Statistics

We recognize and acknowledge that McMaster University meets and learns on the traditional territories of the Mississauga and Haudenosaunee nations, and within the lands protected by the "Dish With One Spoon" wampum, an agreement amongst all allied Nations to peaceably share and care for the resources around the Great Lakes.

MATH 2ZZ3 – Engineering Mathematics IV
2022 Winter Term

Section	C0 1	C0 2
Instructor	Jean-Pierre Gabardo	Sergio Da Silva
Contact Info	gabardo@mcmaster.ca	dasils19@mcmaster.ca
Office Hours	TBA	TBA
Lectures	• Tuesday, Wednesday & Friday: 12:30–13:20 in CNH-104	• Monday, Wednesday & Thursday: 17:30–18:20 in BSB-147
Location	CNH-104	BSB-147

Labs: **TBA**

Tutorials: **TA:** Subhajit Mishra (mishrs10@mcmaster.ca)

T01: Thursday 14:30 - 15:20 in JHE 376

T02: Tuesday 17:30 – 18:20 in BSB 147

Course Website

Consult the course webpage, Avenue to Learn, for all announcements. Please check it regularly.

Course Description

The course provides an overview of vector calculus, line and surface integrals together with integral theorems and Fourier series. A number of applications to actual problems will be discussed. Students will also further develop their programming skills in MATLAB and will use them to solve a range of problems introduced during lectures.

Prerequisite(s): MATH 1ZB3; and MATH 1ZC3 or MATH 1ZZ5

Antirequisite(s): ENGINEER 2ZZ3, MATH 2A03, 2MM3, 2Q04

Course and Learning Objectives

By the end of the course students should be familiar with the basic theory concerning Fourier series, vector calculus, line and surface integrals, and should be able to apply this theory to solve problems arising in applications. They should also be able to develop MATLAB programs for the solution and visualization of such problems.

Materials & Fees

Primary Reference:

- D. G. Zill "Advanced Engineering Mathematics", Jones and Bartlett, 7th edition (2022) [ISBN: 9789781284206241] (the 6th edition will also be acceptable, however, practice problems will be assigned from the 7th edition).

Software:

- Five labs will have to be completed using MATLAB. Students will need to own or purchase "The Student Edition of MATLAB" to be able to work with MATLAB at home.

Virtual Course Delivery (in case the course is not given in person)

To follow and participate in virtual classes it is expected that you have reliable access to the following:

- A computer that meets performance requirements found here.
- An internet connection that is fast enough to stream video.
- Computer accessories that enable class participation, such as a microphone, speakers and webcam when needed.

If you think that you will not be able to meet these requirements, please contact uts@mcmaster.ca as soon as you can. Please visit the Technology Resources for Students page for detailed requirements. If you use assistive technology or believe that our platforms might be a barrier to participating, please contact Student Accessibility Services, sas@mcmaster.ca, for support.

Course Overview and Assessment

Tutorials

An important element of the course are the tutorials during which the Teaching Assistants will review the material introduced at the lectures and discuss problems raised by students. Students are expected to attend one of the tutorial sessions each week.

Computer Labs

Computer Labs will provide help concerning MATLAB assignments and other issues related to the use of MATLAB. They will be scheduled only during the weeks when MATLAB labs are due.

Practice Problems

A number of practice problems from the textbook will be listed on the course website on a weekly basis. Answers to selected problems can be found at the back of the textbook. Optionally, a "Student Solutions Manual" may be purchased.

Evaluation

The final mark will be computed using the following scheme:

Grade Component	Weight
Two Midterm Tests	40% (20% each)
Final Examination	45%
5 best Assignments	7.5%
5 MATLAB Labs	7.5%

The instructor reserves the right to use alternate schemes for the final mark computation. In such situation, however, the final grade can only be increased.

Mid-Term Tests:

There will be two mid-term tests scheduled tentatively on February 16 and March 16 in the evening. The tests will focus on analytical issues, although may also address elements of MATLAB programming. More information, including the actual times and topics covered, will be announced before the tests. Not that no calculator or other electronic devices will be allowed during the tests. Students who have conflicts with the test dates will be requested to report it on-line about two weeks in advance of the tests.

Final Exam:

The course will be completed by a 2.5 hour final examination. The date and time of the final exam will be announced by the Registrar's office in mid-term. The exam will cover all course material.

Assignments:

- There will be five MATLAB-based labs to be completed during the term; they will involve the use of MATLAB to solve problems related to the course material; the assignments will be posted on-line together with suitable tutorials and will be due on the dates indicated in the table below; the course website on Avenue will also state instructions for submission of the assignments which must be done on-line using the internal assignment submission system; late submissions will not be accepted under any circumstances; the solutions will be posted on the course website after the due date.
- There will also be 6 assignments to be completed during the term and the grade will be calculated based on the 5 best assignments; the assignments will have to be completed online using the internal assignment system which can be accessed through the course website on Avenue; the due dates are indicated in the table below and no late submissions will be accepted.

#	Post Date	Due Date
Assignment #1	January 14	January 23
MATLAB Lab #1	January 21	January 30
Assignment #2	January 28	February 6
MATLAB Lab #2	February 4	February 20
Assignment #3	February 11	February 27
MATLAB Lab #3	February 18	March 6
Assignment #4	March 4	March 13
MATLAB Lab #4	March 11	March 20
Assignment #5	March 18	March 27
MATLAB Lab #5	March 25	April 3
Assignment #6	April 1	April 10

Policies and Procedures

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 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.

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.

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

Some courses may use online proctoring software for tests and exams. This software may 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.

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:

- 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 the McMaster Office of Academic Integrity's webpage.

Conduct Expectations

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all 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.

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.

Research Ethics - NA

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.