University of Alberta
Department of Mathematical & Statistical Sciences

MATH 300 (A1) – Advanced Boundary Value Problems I – Fall 2021

Instructor: Dr. Arno BERGER
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Office Hours: MWF 3:00 – 5:00 pm, or by appointment
Lecture Room & Time: ETLC E1-017, MWF 1:00 – 1:50 pm

Course Web Page:

www.math.ualberta.ca/~aberger/courses/math300_21f/math300_21f.html

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Course Description:
Derivation of the classical partial differential equations of applied mathematics, solutions using separation of variables. Fourier expansions and their applications to boundary value problems. Introduction to Fourier Transforms. Emphasis on building an appropriate mathematical model from a physical problem, solving the mathematical problem, and carefully interpreting the mathematical results in the context of the original physical problem.

Course Pre-/Corequisites:
MATH 201 and 209.
Notes: (1) Open only to students in Engineering, Specialization Physics, and Specialization Geophysics. (2) Credit can be obtained in at most one of MATH 300 and 337.

Recommended textbook:
Partial Differential Equations – Theory and Completely Solved Problems by T. Hillen, I.E. Leonard, and H. van Roessel, 2nd Edition, FriesenPress, 2019.

Syllabus:
This course offers an introduction to partial differential equations and boundary value problems, covering selected topics from chapters 1– 6,8, and 9 of the textbook.

Grade Evaluation:
The course mark is to be calculated as follows:

Course Component	Weight of Total Mark	Date
Assignments	20%	due **Wednesday** at **6 pm**, see below
Midterm I	21%	**20 October 2021**, in class
Midterm II	21%	**24 November 2021**, in class
Final Exam	38%	**14 December 2021**, **2 pm**, venue TBA

Note: The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this document. Students must verify this date on BearTracks when the Final Exam Schedule is posted.

The final letter grade is determined from the course mark as follows: An overall mark of 50% or more guarantees a passing grade of at least D; an overall course mark of 90% or more guarantees a grade of at least A–. Grades are unofficial until approved by the Department and/or Faculty offering the course.

Assignments:
There will be a total of **five** assignments during the term, each of equal weight. Problems and submission details will be posted on eClass, and announced in class, as appropriate. Assignments are due on **Wednesday**, at **6 pm**, on **22 September**, **6** and **27 October**, **17 November**, and **8 December**. Please submit your work to Assign2 via eClass. **Late submissions will not be accepted!** Your final mark will be determined by your **best four** assignments, i.e., you can miss one assignment without affecting your mark. Beyond that, no excused absence for missed assignments will be considered.

Exam Format:
Both midterms will be 50-minute tests during regular class time that may have multiple-choice components. The final exam will be a 2-hour exam that may have a multiple-choice component. All further details regarding midterm and final exams will be posted on eClass, and announced in class, as and when appropriate.

Representative Evaluative Material:
You are encouraged to have a look at old MATH 300 tests and exams (available from various engineering undergraduate societies). Sample exams may also be made available prior to examinations.

Missed Midterm Exams:
There will be no deferred midterm exams. If you cannot write a midterm due to incapacitating illness, severe domestic affliction or other compelling reasons you can apply for an excused absence. In order to do so, you must present supporting documentation pertaining to the absence to the instructor within two working days following the scheduled date of the missed midterm, or as soon as you are able, having regard to the circumstances underlying the absence. In all cases, the instructor may request adequate documentation to substantiate the reason for the absence at their discretion. If the reason for your absence is deemed valid, the weight of a missed Midterm I will be transferred in equal parts to Midterm II and the Final Exam, whereas the weight of a missed Midterm II will be transferred to the Final Exam.

Note: An excused absence is a privilege and not a right; there is no guarantee that an absence will be excused. Misrepresentation of Facts to gain an excused absence is a serious breach of the *Code of Student Behaviour*.

Excused Absence Where the Cause is Religious Belief:
For an excused absence where the cause is religious belief, the student must contact the instructor within **two weeks** of the start of Fall classes to request accommodation for the term (including the final exam). Instructors may request adequate documentation to substantiate the student request.

Missed Final Examination:
A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferred final examination. Such an application must be made to the student's Faculty office within two working days of the missed examination and must be supported by a Statutory Declaration or other appropriate documentation (see the Academic Regulations/Attendance section of the University Calendar). Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. Students who failed at the start of term to request exam accommodations for religious beliefs are expected to follow the normal deferred final examination process. Misrepresentation of Facts to gain a deferred examination is a serious breach of the *Code of Student Behaviour*. Any deferred final examinations are scheduled for **8 January 2022** at **9 am**.

Re-examination:
There will be no re-examinations for this course.

STUDENT RESPONSIBILITIES

Academic Integrity:
The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the *Code of Student Behaviour* (online at `www.governance.ualberta.ca`) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All forms of academic dishonesty are unacceptable at the University. Any suspected offence will be reported to the Faculty of Engineering. Anyone who is found in violation of the *Code of Student Behaviour* may receive a sanction. Typical sanctions include conduct probation, a mark reduction or a mark of zero on an assessment, a grade reduction or a grade of F in a course, a remark on the transcript, and a recommendation for suspension or expulsion. Students are expected to familiarize themselves with the Academic Integrity resources (covering the topics of cheating, collaboration, plagiarism, and substantial assistance) on the website of the Office of the Dean of Students.

Exams:
Your student photo I.D. is required at exams to verify your identity. During in-person exams, students will not be allowed to begin an examination after it has been in progress for 30 minutes; also, students must remain in the exam room until at least 30 minutes have elapsed.

Recording and/or Distribution of Course Materials:
Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Students eligible for accessibility-related accommodations (students registered with Accessibility Resources):
Eligible students have both rights and responsibilities with regard to accessibility-related accommodations. Consequently, scheduling exam accommodations in accordance with Accessibility Resources deadlines and procedures is essential. Please note that adherence to procedures and deadlines is required for U of A to provide accommodations. Please contact Accessibility Resources (www.ssds.ualberta.ca) for further information.

Academic Success Centre:
Students who want to improve their learning and academic capacity (such as better time management, study skills or examination skills) are encouraged to contact the Academic Success Centre (1-80 SUB).

Decima Robinson Support Centre for Mathematical & Statistical Sciences:
Students who require additional help with assignments or have questions about the course material in general are encouraged to visit the Decima Robinson Support Centre (CAB 528). Graduate students will be available to provide one-on-one help. In order to get maximum help during each visit, students are asked to be specific about the problem with which they are seeking help. The centre is open Monday to Friday, 9:00 am – 3:00 pm.

Disclaimer:

Any typographical errors in this Course Outline are subject to change; corrections will be announced in class.

Policy about course outlines can be found in the Course requirements, Evaluation Procedures and Grading section of the University Calendar.
