Course Organization

- Instructor: Xinwei Yu
  - Office: CAB 527; (780)492-5731
  - Email: xinwei2@ualberta.ca
  - Webpage: http://www.math.ualberta.ca/~xinweiyu/
- Course webpage:
  - www.math.ualberta.ca/~xinweiyu/348.A1.16f/
  - We will **not** use eClass. Please check course webpage frequently.
- Textbook:
  - Andrew Pressley, Elementary Differential Geometry, 2nd Ed., Springer, 2010;
- Other helpful books/notes:
  - Manfredo do Carmo, Differential Geometry of Curves and Surfaces;
  - Christian Bar, Elementary Differential Geometry;
  - Theodore Shifrin, Differential Geometry: A First Course in Curves and Surfaces, http://alpha.math.uga.edu/~shifrin/ShifrinDiffGeo.pdf.
  - Xi Chen, lecture notes for Math 348 Fall 2015. http://www.math.ualberta.ca/~xichen/math34815f/math348_notes.pdf.
- Lecture Time/Location:
  - TR 11:00 - 12:20 @ SAB 336.
- Evaluation:
  - Homeworks 20%: Nine homework sets, the worst mark will be dropped.
  - Midterms 30%: Two midterms. Each 15%.
  - Final Exam 50%.
- Grading:
  - An overall course mark of 50% or more guarantees at least D.
  - An overall course mark of 90% or more guarantees at least A.
- Homework:
  - Temporary due dates: The following **Fridays**.
    HW1: Sept. 16; HW2: Sept. 25; HW3: Sept. 30; HW4: Oct. 14; HW5: Oct. 21; HW6: Oct. 28; HW7: Nov. 4; HW8: Nov. 25; HW9: Dec. 2.
  - At 12:00 (noon) in the assignment box for Math348 (3rd floor CAB);
  - No late homework will be accepted.
  - Posted roughly one week before the due dates.
- Midterms:
  - Midterms are one hour each, in class.
  - Temporary dates: Sept. 29, Nov. 3.
  - No early/make-up midterms.
- Final Exam (Tentative): 12-Dec-2016 (Monday) @ 9:00 a.m.; 2 hours.

Course Material Overview

- **Course description (copied from calendar)**
  Frenet-Seret theory of curves in the plane and in 3-space, examples; local theory of surfaces in 3-space: first and second fundamental forms, Gauss map and Gauss curvature, geodesics and parallel transport, theorema egregium, mean curvature and minimal surfaces.
- **Course prerequisites**
  One of MATH 102, 125 or 127 and one of MATH 209, 215 or 217.
- **Course objectives**
  - Understand basic properties of curves and surfaces in R^3;
  - Be well-prepared for the study of abstract manifolds;
- **Course plan (temporary)**

Week	Dates	Topic	Textbook
1	9/1	Organization; Math 348 in historical, mathematical, scientific, and technological context; overview of course.	
2, 3	9/6, 8, 13, 15	Curves & surfaces in multivariable calculus	Chapters 1, 4, 5.
4	9/20, 22	Local properties of curves	Chapter 2
5	9/27	Review for Midterm 1	
	9/29	Midterm 1 (1h)	
6	10/4, 6	The first fundamental form	Chapter 6
7	10/11, 13	The second fundamental form	Chapter 7
8, 9	10/18, 20, 25, 27	Curvatures of surfaces	Chapters 7, 8
10	11/1	Review for Midterm 2	
	11/3	Midterm 2 (1h)	
Fall Reading Week			
11--13	11/15, 17, 22, 24, 29, 12/1	Topics	Chapters 3, 9--13.
14	12/6	Review for Final	

- **Some remarks.**
  - Parts of the textbook will be "required" reading, while the remaining "optional" reading.
  - This division of required/optional reading will be made clear on the course webpage.
  - About 90% of the points in exams cover "required" material (including exercises). The remaining (roughly 10%) will be about "optional" sections (including exercises).

Where to Get Help

- From the instructor:
  - ■ Office Hours: @ CAB 527.
    Tuesday: 12:30 - 14:30; Thursday 12:30 - 13:30.
  - ■ By appointments. Please do not hesitate to make appointments.
  - ■ Email: xinwei2@ualberta.ca. I will reply asap.
- From fellow 348 students:
  - ■ It is a good idea (and important, unless you find the material rather easy) to form study groups and discuss regularly.
- From yourself:
  - ■ Think harder (figure things out all by yourself).
    The best way to master mathematics is to try to figure things out all by yourself. Reading a Math book is different from reading other kinds of books. A general rule of thumb is that you should spend at least one hour per page if the material is totally new. See http://youtu.be/i5oc-70Fby4 for the right attitude.
  - ■ Work harder (more problems, more books, etc.).
    Less demanding than "Think harder" but also less effective in gaining understanding.
    - Work on more problems. Our textbook is perfect for this approach as it has solutions to all exercises.
    - Read other introductory books. Different authors explain things differently and some may fit your way of understanding better. However be warned that "understanding" "gained" through reading (without much thinking) is the easiest to forget.

Rules, Policies, Student Responsibilities

- **Students Eligible for Accessibility-Related Accommodations** (students registered with Specialized Support & Disability - SSDS):

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

- **Grades**:
  - Grades are unofficial until approved by the Department and/or Faculty offering the course.
- **Exams**:
  - 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.
  - No electronic devices are allowed in exams unless explicitly stated otherwise by the instructor.
  - The exams are closed book. No student-prepared data sheet is allowed.
  - Your student photo I.D. is required at exams to verify your identity. Students will not be allowed to begin an examination after it has been in progress for 30 minutes. Students must remain in the exam room until at least 30 minutes has elapsed.
- **Past Evaluative Material**:
  - Exams of Math 348 Fall 2015 can be found here: http://www.math.ualberta.ca/~xichen/math34815f/.
- **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. 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. 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 (Calendar section 23.5.6). Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. Misrepresentation of Facts to gain a deferred examination is a serious breach of the Code of Student Behaviour.
  - Deferred Exam: `Sat. Jan. 14, 2017 @ CAB 563. You need to register at 8:30am.`
- **Re-examination**:

   A student who writes the final examination and fails the course may apply for a

re-examination. Re-examinations are rarely granted in the Faculty of Science. These exams are governed by University (Calendar section 23.5.5) and Faculty of Science Regulations (Calendar section 192.5.3). Misrepresentation of Facts to gain a re-examination is a serious breach of the Code of Student Behaviour.

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

- **Missed Term Work**:
  - A student who cannot write a midterm due to incapacitating illness, severe deomestic affliction or other compelling reasons can apply for an excused absence.
    - ◆ To apply for an excused absence where the cause is incapacitating mental and/or physical illness and most other cases including severe domestic affliction, a student must inform the instructor within two working days following the scheduled date of the midterm, or as soon as the student is able, having regard to the circumstances underlying the absence.
    - ◆ For an excused absence where the cause is religious belief, a student must contact the instructor within two weeks of the start of classes.
    - ◆ All other accommodation requests covered by the Duty to Accomodate Procedure should be discussed with the instructor as soon as the student is able, having regard to the underlying circumstance.
    - ◆ Once an absence is granted, the weight will be moved to the final exam.

    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 Behavior.

- **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 dishonesty are unacceptable at the University. Any offense will be reported to the Associate Dean of Science who will determine the disciplinary action to be taken. Cheating, plagiarism and misrepresentation of facts are serious offenses. Anyone who engages in these practices will receive at minimum a grade of zero for the exam or paper in question and no opportunity will be given to replace the grade or redistribute the weights. As well, in the Faculty of Science the sanction for cheating on any examination will include a disciplinary failing grade (NO EXCEPTIONS) and senior students should expect a period of suspension or expulsion from

the University of Alberta.

- **Collaboration on Assignments**:
  - It is OK to collaborate on homework problems. However you should write up your solution by yourself without any help from others. Here are some tips:
    - Do not write down something that you cannot explain to your TA or instructor.
    - When you are helping other students, avoid showing them your work directly. Instead, explain your solution verbally. Students whose work is copied also receive academic sanctions.
    - If you find yourself reading another student's solution, do not write anything down. Once you understand how to solve the problem, remove the other person's work from your sight and then write up the solution to the question yourself. Looking back and forth between someone else's paper and your own paper is almost certainly copying and will result in academic sanctions for both you and your fellow student.
    - If the instructor or TA writes down part of a solution in order to help explain it to you or the class, you cannot copy it and hand it in for credit. Treat it the same way you would treat another student's work with respect to copying, that is, remove the explanation from your sight and then write up the solution yourself.
    - There is often more than one way to solve a problem. Choose the method that makes the most sense to you rather than the method that other students happen to use. If none of the ideas in your solution are your own, there is a good chance it will be flagged as copying.
    - Please check out: the Appropriate Collaboration link on the Office of Student Judicial Affairs website (http://www.osja.ualberta.ca/Students/AppropriateCollaboration.aspx).

- **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).

- **Student Success Centre**:
  Students who require additional help in developing strategies for better time management, study skills, or examination skills should contact the Student Success Centre (2-300 Students' Union Building).

- Policy about course outlines can be found in section 23.4(2) of the University Calendar.

- **Disclaimer**:
  Any typographical errors in this Course Outline are subject to change and will be announced in class.