

# Math 106

**Instructor:** Scott Fallstrom

**Office:** Deady 108C

**Phone:** (541) 346-4728

**Class Location:** FEN 110

**Course:** Math 106 – University Math II (4 credits)

**Lecture Hours:** 8:30-9:50 (TR)

**Email:** [fallstro@uoregon.edu](mailto:fallstro@uoregon.edu)

**Website:** The Blackboard site will be the main source of information for the course.

## **Required Materials:**

- **TEXT:** *Mathematics: A Practical Odyssey, 6<sup>th</sup> Edition*. Johnson and Mowry. This book may be in paperback form with the title: *University Math I and II, Math 105/106, 2<sup>nd</sup> ed.* Either text will work fine (they are the same!). This course covers the Chapters 5, 7, 8, and 10. Some students take Math 105 later; the textbook is the same for both courses, so you don't want to sell it back if you are planning on taking Math 105 in the **near** future.
- **CALCULATOR:** A calculator is required and will be allowed on tests. A scientific calculator or graphing calculator is highly recommended. There is no advantage to having the graphing calculator for the exams, so you won't need to buy a new one. The simple scientific TI-30 X II S (around \$10-15) would work perfectly for this course. If you are concerned about your calculator, please bring it to class and I can tell you if it will work.

**Office Hours:** Mon. 11-12, 2-3; Tu. 10-11, 12-1; Th. 11-12; Fri. 11-12; or by appointment.

**Prerequisites:** As outlined in the college catalog, the prerequisite for this course is successful completion of Math 095 or an acceptable score on the placement exam. Do not be offended if I ask for proof to ensure that these prerequisites are satisfied. Students not meeting the prerequisite often have difficulty with the algebraic portions of the course and can struggle on exams.

**Goals:** This course satisfies the Bachelor of Science degree requirements at the University of Oregon and I strive to ensure students passing the course have “proficiency in mathematics.” The course is mostly a survey of many different topics that use mathematics or apply to mathematics. As such, there will be questions about the idea or concept as well as procedural questions. Much less emphasis will be placed on memorization of formulas and much more will be placed on understanding the ideas and concepts we cover in class. I will typically spend one to two hours of lecture for each section of the text. The main goal of the course is to increase your understanding of and ability to work with mathematical concepts, formulas, and reasoning. This type of course is often called a survey course and will cover many different concepts and ideas in mathematics; some will apply to your life and others may not. Hopefully you will also gain an appreciation of the applicability of mathematics and perhaps lose some math anxiety along the way.

**Special Accommodations:** If you need adaptations or accommodations because of a disability, if you have medical information you need to share with me, or if you have special arrangements in case the building must be evacuated, please make an appointment to discuss your accommodation needs with me as soon as possible.

**Student Conduct:** Violations of the student conduct code will be treated quickly and harshly. A student found in violation may receive a failing grade, and will have this infraction reported to the university. I do not tolerate academic dishonesty in any form. You are a college student and an incident of cheating could result in your expulsion from a degree program. The University of Oregon requires reporting of ALL instances of cheating, no matter how small. These include:

- looking at another person's exam during a testing situation
- copying another student's homework and submitting it as your own
- bringing in and using notes or supplemental materials when none are allowed
- submitting work or information from an internet source as your own material (without noting it as a reference/resource)

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- allowing another student to copy your work and submit it – you will be punished exactly the same as the person who did the copying. To avoid this, don't give your work to someone else. Working together means sharing ideas and discussing concepts, and is acceptable; each student must independently write their own solutions and responses.
- all other instances of cheating described in the Student Conduct Code

**Student Responsibilities:** Students are responsible for the materials necessary for the successful completion of this course. A student enrolling in this course is responsible for all material covered in previous class days; no exceptions will be allowed.

- 1) It is your responsibility to turn off cell phones, pagers, and other electronic devices that can be distracting. You could just put it in “vibrate” mode as long as it is not a disturbance.
- 2) If you choose to drop the course or change to Pass/No Credit, you must complete any necessary paperwork at the correct time. If you do not complete this, you will receive the grade you earned.
- 3) I expect you to take the time needed for this course. Many students will need 10-15 hours per week for this course outside of class in order to succeed and understand the concepts.
- 4) Seek help if you need it. There are many ways to get help:
  - a. See me. I am available and willing to help students who choose to seek me out. If my hours are not convenient for you, come and talk to me after class so that we can work out a way for you to get the help you need.
  - b. Form study groups. Meet with others to work on homework, worksheets, or study for tests. Often your fellow classmates are a good resource.
  - c. Meet with your TA during their office hours if you need additional help.
  - d. Stop by the TLC (teaching and learning center) in PLC 68. Drop in tutoring is available there but be aware that it may be rather busy at times.

**ATTENDANCE:** This is college and I expect you to attend class regularly. You are responsible for all concepts and material covered in class... whether it is in the textbook or not. Every time I teach these courses, there are students who blow off class and don't show up. Historically, these students don't realize the error of their ways until it is too late – and they end up taking a “W” or a failing grade. Mathematical proficiency does not come from just sitting in class, but being in class can help you see connections between the topics covered and real-world situations. While there is no portion of your grade that directly relates to attendance, students who attend have significantly higher scores on exams and overall course grades. Just as one can not become proficient at playing a musical instrument by merely watching and listening, one can not become proficient with mathematics without proper practice and time. Class time can connect concepts and help you make sense of some of the topics where the book is less than clear.

**HOMEWORK:** Homework will have two components: (1) work done on your own and graded by you; and (2) written homework turned into the TA during discussion. Some homework may be added during the term for you to work online – but it is still being tested and will not count for part of your grade. Late homework will NOT be accepted by the TAs, and will result in a score of 0 for the assignment. Homework will be turned in during your discussion section **before** the worksheet/quiz... so don't be late! If you show up after the homework is due, your homework will not be accepted. Answers for odd problems appear in the back of the book so students are encouraged to try many of the recommended problems and check their answers. When papers are graded, illegible work will receive no credit. This means that you may need to re-write your homework before you turn it in. If you have questions, please ask. The five lowest scores from the homework/quiz/worksheet category will be dropped.

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**QUIZZES AND WORKSHEETS – DISCUSSION SECTIONS:** Quizzes or worksheets will begin after TAs answer *some* questions – quizzes will allow no less than 20 minutes for students to finish. No late/make-up worksheets or quizzes are allowed because the key will be provided on Blackboard when all worksheets and quizzes have been completed. Worksheets allow students to work together but quizzes do not. **DO NOT EXPECT THAT ALL HOMEWORK QUESTIONS WILL BE ANSWERED DURING DISCUSSION TIME** – you will have to go to office hours to have additional questions answered. The TAs and instructor both make time each week for this.

**READINESS QUIZ:** The readiness quiz will be a review of the material from previous courses. You should know all of the topics on the following list before entering this course; basically, I expect you to be fluent in the basic math skills covered in Math 095 and before. No calculator will be allowed for the readiness quiz, and the quiz will assess your procedural competence in:

- The binary operations of addition, subtraction, multiplication, and division and their use with whole numbers, integers, fractions, percents, and decimals.
- Basic skills with algebraic properties. Examples: commutative property, associative property, distributive property of multiplication over addition, identity properties of addition and multiplication, inverse properties (when they exist), etc.
- Solving algebraic equations in one variable.
- Basic geometric concepts like area, perimeter, and length.
- Solving word problems that may require algebraic equations.
- Proportional reasoning and the ability to use ratios to solve problems.
- Graphing lines, idea of slope, equations of lines, solving systems of equations in 2 variables.

**EXAMS:** Each midterm test will have the full class time to complete (80 minutes) – do not be late to a test as you will not get extra time. Scantron-answer forms will be provided for you if needed. Exams include multiple choice as well as write-in answers and written explanations to be done on the test. You will need to bring a number 2 pencil to the test, but I suggest bringing more than one as there is no pencil sharpener in the room. If you miss an exam you must contact me immediately (like you would if you missed work in the “real world”). By calling ahead, we may be able to make up the exam on a different day. No exam grades are dropped, but midterm exams may have corrections. All academic dishonesty rules apply to all aspects of the course including exams and possible corrections. It may be the case that some copies of old exams from previous terms are put on Blackboard for your review – answers may or may not be included. The goal of this would be to allow you to see the way I tend to ask questions on an exam and to practice on an actual test.

**Grading:** The following are the breakdowns.

Homework, Worksheets, Quizzes .....	10%
Project.....	20%
Readiness Quiz.....	3%
Mid-Term Exam 1 .....	17%
Mid-Term Exam 2 .....	17%
Final Exam .....	33%

*You will need a 70% or better to have the course count for the Bachelor of Science requirement, but only a 60% or better to have it count for the “Science Group” requirement if you opt for a letter grade.*

Final Course Percentage	Grade	X	Final Course Percentage	Grade	X	Final Course Percentage	Grade
97% or above	A+	X	83% to 86.9%	B	X	70% to 72.9%	C–
93% to 96.9%	A	X	80% to 82.9%	B–	X	63% to 69.9%	D
90% to 92.9%	A–	X	77% to 79.9%	C+	X	60% to 62.9%	D–
87% to 89.9%	B+	X	73% to 76.9%	C	X	Lower than 60%	F

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**GRADING SYSTEM:** Information about a weighted of grading system will be discussed in class on the first day. Blackboard can work perfectly with this type of grading system so the percentage shown as the “Weighted” total is fairly accurate. Incompletes (I) are issued in extremely rare circumstances to students *already passing the course*. To withdraw and receive a grade of “W”, you must fill out proper paperwork by the proper deadline or risk getting a failing grade. Grades are posted to Blackboard regularly so you may check your grade as often as you like.

**PROJECT:** There will be a project on finance that is due on November 30. This project will be given out early in the term, with preliminary deadlines (to check your progress and to give feedback) near the end of the 3<sup>rd</sup> week and again near the end of the 7<sup>th</sup> week. It is rather time consuming but extremely informative. Any student who took Math 105 during winter 2006 or Math 106 during fall 2006 or fall 2008 and already completed this project will need to talk to me. I can assign a separate/different project for those students.

## **INFORMATION ABOUT THE FINAL EXAM:**

The final exam can not be given early; failure to take the final exam will result in a failing grade for the course. If you have a scheduling conflict with this final, you may discuss it with me at the beginning of the term. The final exam is **not comprehensive** – it covers only chapters 5, 10, and the section on Taxes. The final will have two full hours but will not be much longer than a midterm.

## **EXTRA CREDIT:**

For those interested, I’ll give extra credit for any errors discovered in the textbook – the first two students to contact me *through email* with the error will receive extra credit. Some additional extra credit may be available on exams or distributed through in-class activities. The total for all extra credit will not exceed 5% of the overall course grade.

**CURVING GRADES:** I do not curve exams based on a high or low average and I do not change course grades at the end of the term. Your grade at the end of the term should reflect your level of understanding of the material covered in the course. It will not be a reflection of the other students. In a true “curve” situation, I would lower grades about as often as I raise them.

**IMPORTANT NOTE:** When you come to see me with questions, I will ask you questions to determine what you know and/or don’t know. Some students are offended by this questioning technique and only want me to do the problem. Hopefully by clarifying my expectations ahead of time, the frustration will be reduced. The best way to help yourself learn is to get better at asking yourself questions like:

- What do I not understand? Is there another way of looking at this problem?
- What concepts are involved? Do I understand those concepts?
- If I can’t even get started on a problem, why?
- Am I leaving myself enough time to succeed? What makes it hard for me to concentrate?
- Did I read the textbook, and if so, do I understand what has been said?
- What terminology is giving me problems? (remember, mathematics is a language and new words are essential to understanding different new concepts)

**BLACKBOARD:** Blackboard will be the main source of communication. You can post your questions to the Discussion Board. The instructor, a TA, or another student can respond to your post. NOTE: Neither the TAs nor your instructor live on-line. Give us at least one day to respond to questions - posting late at night, especially the day before class may not be answered before class. While going to office hours in person is the best option, Blackboard is a decent alternative.

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## HOW TO STUDY AND UNDERSTAND MATHEMATICS:

- **Attend Class.** Sometimes life will present challenges that are clearly more important than Math 106. Do your best to attend each class session even though attendance is not a direct part of your grade. It may be difficult to learn the material on your own so seek help from group mates, one of your two TAs, or the instructor when a class is missed. While this may seem strange, historically attendance rates are between 50% and 70% -- which contributes to the perceived difficulty of the course and higher rates of non-success (W, N, F, D, Y, etc). Students who miss many classes have significantly lower grades.
- **Read the text.** Before you come to class read over the textbook sections that will be discussed that day. Reading a mathematics book (or other science textbooks) is not like reading a history book, a sociology textbook, or even a work of fiction. Many of you are successful in those courses by reading a chapter, then thinking about what was discussed. Mathematics requires active processing of the information after each paragraph or two. Ask yourself questions about what you have read. **DO NOT USE THE TEXTBOOK AS MERELY A LIST OF HOMEWORK PROBLEMS.** The textbook is a tool that can enhance your learning; even if you don't like the way it is written you can still learn many things.
- **Do the homework.** Before doing the homework try to read the book again (at least skim the section) to pick up major concepts which are covered. Review the notes and examples from class. It is best to attempt the homework as soon as possible after class. Study a little each day rather than "cramming". Do not immediately give up if you reach a problem that you can not solve quickly. Try to find a related example or review the concepts involved.
- **Prepare for the tests.** Study concepts rather than specific problems. Remember, you will not see the exact problem from the homework on a test, but the same concepts will be tested.
- **Seek conceptual understanding.** If you don't understand a concept, ask questions until it becomes more clear. I will do my best to explain things in different ways until the concept is grasped. If you don't seem to be "getting it", ask me to explain it a different way or to do another example. If you don't ask, then I won't know that you're struggling – if no one has further questions, then I believe you understand (right or wrong), and we will move on. It is important that you do not put yourself in a position of trying to catch up. I am here to help you learn, so do your part and if you have questions, **ask!** There are review questions at the end of each chapter so do as many of those as you can, as well as additional problems from any section you are struggling with.

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**Schedule of Topics:** This is tentative so realize that it may change. However, it should give you an approximate idea of what sections are covered on a particular day.

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	Sept 28 <i>No Class</i>	Sept 29 7.1/7.2	Sept 30 <i>No Class</i>	Oct 1 7.2/7.3 – Readiness Quiz	Oct 2 <i>No Class</i>
2	Oct 5 ① <i>No Class</i>	Oct 6 8.1/8.2	Oct 7 ② <i>No Class</i>	Oct 8 8.2/8.3	Oct 9 <i>No Class</i>
3	Oct 12 <i>No Class</i>	Oct 13 8.3/8.4	Oct 14 <i>No Class</i>	Oct 15 8.5/8.6	Oct 16 ③ <i>No Class</i>
4	Oct 19 <i>No Class</i>	Oct 20 8.6/Review	Oct 21 <i>No Class</i>	Oct 22 Test #1	Oct 23 <i>No Class</i>
5	Oct 26 <i>No Class</i>	Oct 27 5.1/5.2	Oct 28 <i>No Class</i>	Oct 29 5.2/5.3	Oct 30 <i>No Class</i>
6	Nov 2 <i>No Class</i>	Nov 3 5.4	Nov 4 <i>No Class</i>	Nov 5 5.4/5.5	Nov 6 <i>No Class</i>
7	Nov 9 <i>No Class</i>	Nov 10 5.6/Review	Nov 11 <i>No Class</i>	Nov 12 Test #2	Nov 13 ④ <i>No Class</i>
8	Nov 16 <i>No Class</i>	Nov 17 10.0A and B	Nov 18 <i>No Class</i>	Nov 19 10.1	Nov 20 <i>No Class</i>
9	Nov 23 <i>No Class</i>	Nov 24 10.2	Nov 25 <i>No Class</i>	Nov 26 - No Class <i>THANKS-GIVING</i>	Nov 27 - No Class <i>VACATION!</i>
10	Nov 30 <i>No Class</i>	Dec 1 10.3	Dec 2 <i>No Class</i>	Dec 3 Applications & Financial Planning	Dec 4 <i>No Class</i>
11	<u>FINAL</u> Dec 7 Final Exam 8-10:15	<u>EXAM</u> Dec 8	<u>WEEK</u> Dec 9	Dec 10	Dec 11

\*Section may be covered in less detail or dropped depending on time constraints.

Last day to...

① Drop course, 75% refund, no W recorded.

② Add this course

③ Withdraw from this course, 50% refund, W recorded.

④ Withdraw from the course, 0% refund, W recorded; change grade option for the course.

**HOMEWORK EXERCISES:** The homework has been separated into two lists, required and recommended. The required activities will be turned in to your Thursday discussion section and the recommended activities are assigned to further enhance your understanding of the concepts involved. I also suggest working through chapter review problems at the end of each chapter while preparing for exams. If you can't seem to get a question correct and miss it more than once, post a question to Blackboard or attend office hours so you can get help from the TA or instructor.

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## Homework List – Math 106

Section	Required	Recommended
7.1	22, 30, 52, 58, 64, 82, 84	All Odds
7.2	18, 20, 24, 28, 38, 46, 48, 52, 56, 58	All Odds
7.3	10, 26, 32, 40, 42, 44	All Odds
Chapter 7 Review	None	1-92, 106-109
8.1	4, 8, 18, 24, 28, 34, 36, 42	All Odds
8.2	6, 8, 12, 14, 16, 18, 22, 30, 34	All Odds
8.3	2, 4, 17, 20	All Odds
8.4	4, 6, 8, 12, 14, 16, 18, 20	All Odds
8.5	6, 10, 12, 16, 20, 28, 34, 36, 38, 44	All Odds
8.6	2, 8, 14, 16, 18, 26, 28, 30, 36	All Odds
8.7	2, 6, 8, 10, 14, 18	All Odds
Chapter 8 Review	None	1-44
5.1	2, 8, 12, 16, 18, 22, 34, 38, 42	All Odds
5.2	4, 8, 14, 20, 26, 30, 36, 42, 50	All Odds
5.3	4, 8, 12, 14, 22, 24, 26*, 28, 30	All Odds
5.4	6, 8, 13, 14, 18, 34, 38, 50	All Odds
5.5	10, 12, 14	9-15
5.6	4, 10, 14, 18*	All Odds
Chapter 5 Review	None	1-48
10.0A	10, 14, 26, 28, 34, 36, 42, 48, 58	All Odds
10.0B	2, 10, 20, 28, 32, 38, 44, 50, 54, 55-58, 68, 72, 74	All Odds
10.1	4, 6, 10, 20, 24, 30, 36,	All Odds
10.2	4, 6, 10, 14, 20, 24, 28, 30,	All Odds
10.3	4, 8, 16, 20, 24, 26, 28, 20, 32	All Odds
Ch 10 Review	None	1-29

You are required to complete each assignment on separate pages; start a new assignment on a fresh page. Again, as the syllabus states, you must make sure that the homework is legible.

### **Homework Guidelines:**

- Use pencil so that you may erase any mistakes. If you choose to use pen, do not make mistakes. If you make mistakes in pen, do not scribble them out – start over on a clean page.
- Do not use paper clips or fold the edges; instead, staple multiple pages together in the upper left hand corner. Do not staple multiple *sections* together. Homework should look like you care.
- I would prefer writing on one side of the page. If you write on two sides, make sure that the back page has no writing on the back. It should be blank except for the requirements listed next.
- Fold all stapled homework pages lengthwise (left to right). With the crease on your left, write your name, class number (Math 106), TA name, discussion section time, textbook section for the homework, and the date. This will allow only you to see your score when it is returned.
- If there are any ripped edges from notebooks, trim them before you turn the assignment in.
- Neatness counts; if the homework is not legible, no credit will be given.
- *Failing to follow the homework guidelines will result in lower points on your assignment.*