Teacher   Dr Neil Course   email: `neil.course@okan.edu.tr`   office: C333

Book

The best book for this course is:

- George B. Thomas Jr., Maurice D. Weir and Joel Hass, *Thomas' Calculus*, Pearson.

Note: This is *not* a required purchase. The 11th, 12th and 13th editions are suitable. You can find this book in the university library – visit `kutuphane.okan.edu.tr` and search for "`thomas calculus`" to find it. Moreover, lots of engineering students have been required to buy this book – maybe one of them will sell a second hand copy cheaply to you.

Website

You will find course information, handouts, lecture notes, homework questions, exam dates, etc. on my website:

- `www.neilcourse.co.uk/math115.html`

Differences between studying at school and at university

Unlike at high school, you are now expected to self-direct your studies. At university, in addition to the formal teaching that you receive, you are also expected to study independently. To succeed, you will be expected to complete your own reading and research around topics, to fill in the detail and develop your thinking further. Your lecturers will *not* check that you are studying the correct amount. *You* must decide how much you need to study, how often you should go to the library, how many problems you need to solve, etc. As a general guide, you should expect that for every hour of lectures you receive, you should be spending an additional 1-2 hours studying outside of class.

"The only way to learn mathematics is to do mathematics." – Paul Halmos (1916–2006)

Contents

Homework 25%, Final exam 50%, Midterm exam 25%
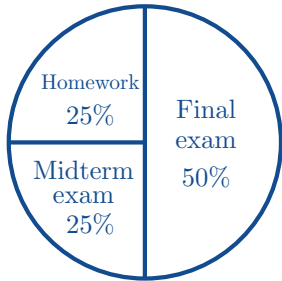
This course will be examined with 1 final exam, 1 midterm exam and 8 pieces of homework.

The midterm exam will be held in week 8 or week 9. If you miss the midterm exam due to illness, bereavement, or another valid reason, then you may write a letter to your department to request a makeup (mazaret) midterm exam. The head of the Architecture Department will decide who is allowed to enter a makeup exam. The makeup midterm exam (if there is one) will likely be held in week 13. Students who entered the midterm exam are not allowed to also enter the makeup midterm exam.

The final exam will be held after the end of term. And then finally there will be a retake (bütünleme) final exam for those students who wish to improve their grades. You should talk with your advisor if you wish to enter the retake final exam.

About the Homework

During the course, there will be homework problems for you to study. Please remember that your answers to the homework problems must be your own work. Plagiarism is not acceptable in higher education: **If you copy another student's homework, or if you allow someone to copy your homework, then you will both receive a mark of zero.**

The purpose of the homework problems is to help you understand the course material. Obviously I can't help you in the exams, but I am always very happy to give hints to you if you are struggling with a particular homework problem. If the weighted average of your exam scores is less than 20% then your homework hasn't helped you and your homework scores will be set to zero.

Office Hour

If you have any questions, you can find me in my office (C333) each

- Tuesday, from 14:00 to 15:00.

Alternatively, you can email your questions to me at `neil.course@okan.edu.tr` . If you do send an email to me, please remember to write either "MATH115" or "Basic Maths" somewhere in your email so that I know which course you are asking about.

Week	Topics Covered	Independent Study Expected
1	**Numbers and Functions** 1. Numbers 2. Cartesian Coordinates	
2	3. Functions **Calculus** 4. Limits	Read your lecture notes and read the textbook. Solve the problems in the lecture notes.
3	5. Continuity 6. Limits Involving Infinity 7. Differentiation	Read your lecture notes and read the textbook. Solve the problems in the lecture notes. Complete homework 1.
4	8. Differentiation Rules 9. Derivatives of Trigonometric Functions 10. The Chain Rule	Read your lecture notes and read the textbook. Solve the problems in the lecture notes. Complete homework 2.
5	11. e^x and ln 12. Extreme Values of Functions 13. Concavity and Curve Sketching 14. Applied Optimisation	Read your lecture notes and read the textbook. Solve the problems in the lecture notes.
6	15. Antiderivatives 16. Integration	Read your lecture notes and read the textbook. Solve the problems in the lecture notes. Complete homework 3.
7	17. The Definite Integral 18. The Fundamental Theorem of Calculus 19. The Substitution Method	Read your lecture notes and read the textbook. Solve the problems in the lecture notes. Complete homework 4.
8	**Midterm Exam** (maybe week 8, maybe week 9.)	
9	20. Area Between Curves 21. Volumes Using Cross Sections	Read your lecture notes and read the textbook. Solve the problems in the lecture notes.
10	**The Geometry of Space** 22. Polar Coordinates 23. Graphing in Polar Coordinates 24. Conic Sections	Read your lecture notes and read the textbook. Solve the problems in the lecture notes. Complete homework 5.
11	25. Three Dimensional Cartesian Coordinates 26. Vectors	Read your lecture notes and read the textbook. Solve the problems in the lecture notes. Complete homework 6.
12	27. The Dot Product 28. The Cross Product	Read your lecture notes and read the textbook. Solve the problems in the lecture notes. Complete homework 7.
13	29. Lines 30. Planes 31. Projections	Read your lecture notes and read the textbook. Solve the problems in the lecture notes. Complete homework 8.
14	32. Quadric Surfaces 33. Cylindrical and Spherical Polar Coordinates	Read your lecture notes and read the textbook. Solve the problems in the lecture notes.