Instructor: Jeffrey Manning  
Email: jmanning@math.ucla.edu  
Class: 10:00-10:50am MWF in MS 5118  
Office: MS 6164  
Office hours: TBA  
Class Website: https://ccle.ucla.edu/course/view/20W-MATH11N-1  

TA: Ethan Alwaise  
TA email: ealwais@math.ucla.edu  
Discussion Section: 10:00-10:50am Tuesday in MS 5118  
TA Office hours: TBA

Textbook: There is no official textbook for this course, because we will be creating our own as we go. The instructor will provide notes with the definitions of new concepts, a few motivating examples, and the statements of theorems. The students will provide the proofs, which will be added to the notes as we go through the course.

Course description: This course is intended as an introduction to proof based mathematics, using number theory (the study of the integers) as a unifying theme. Topics covered will include propositional logic and quantifiers, proof techniques (such as direct proofs, proof by contradiction and proof by induction), as well as number theoretic concepts such as prime factorization, modular arithmetic, the Chinese remainder theorem, and, time permitting, additional topics such as the primitive root theorem and RSA encryption.

Students who have already taken upper division, proof based math classes (such as 115, 110 or 131) are strongly discouraged from taking this course.

Course structure: This course will be structured somewhat differently from traditional math courses. Instead, we will use the IBL (Inquiry Based Learning) format. With the exception of the first lecture on January 6th (and possibly a few other times throughout the quarter), the instructor will not be lecturing. Instead, class meetings will consist of students presenting proofs of theorems and/or solutions to exercises from the notes, and then the class as a whole discussing the solutions.

Grading policy:
Your final grade will be based on the following scheme:

- Homework: 20%  
- In class presentations: 25%  
- Quizzes: 20%  
- Final: 35%
Homework: Homework sets will be assigned (almost) every week on Wednesday, and will be due at the start of class the following Wednesday. If you will be unable to turn in a homework set in person, you should contact me before the due date to arrange an alternate way to turn in your homework by the deadline. Late homeworks will not be accepted, however the lowest homework score will be dropped. Note: Even if you do not turn in a problem set, you are strongly encouraged to work through the problems on your own time and/or discuss them with other students or with me. Solving the homework problems is an important part of learning this material, and skipping homework sets may put you at a disadvantage during the exams.

Problem sets should be stapled and written legibly (or typed). In addition, solutions should be clear and well-organized. The grader may impose a 10% penalty for solutions, which are otherwise correct, but are lacking in clarity. Students are encouraged to work in groups when solving the problems, but solutions must be written up independently. A good rule of thumb is that you should be able to explain every step of each solution that you hand in.

In-class presentations: At the end of each lecture, or shortly thereafter, one or more unproved statements will be assigned for the next lecture. It will be your job to prove as many of them as you can, and be prepared to present your proofs in the next lecture. I will keep track of how many times each student presents a proof, so that everyone ends up presenting roughly the same number of times. 80% of this part of your grade will simply be based on the number of times you present proofs (with everyone who passes a minimum threshold for number of proof presented getting full credit in this section).

Quizzes: In place of one or more midterms, you will take a quiz in your discussion section every other week (that is, during weeks 2,4,6,8 and 10). These quizzes will usually require around 25 minutes. Since the homework and the in-class presentations will (hopefully) provide assessment and feedback (that is, they should let me and you know how you are doing in the class), the primary purpose of the quizzes is to give you practice for the final exam. That is, they will give you some practice in solving problems and writing short proofs under a time constraint. There will be no make-ups for missed quizzes, but your lowest quiz score will be dropped. This way, you can miss one quiz without it hurting your grade. On some of the quizzes, you will be allowed to use a calculator. A basic four-function calculator will suffice, although you may use a scientific calculator if you wish. However, it may not be a programmable or graphing calculator, nor any kind of device that can communicate with other devices (such as a cell phone or smart watch).

Grade disputes: If you feel that a mistake was made in grading your homework or quizzes or that your scores have been incorrectly inputted, bring it to my attention within 7 days from the date the homework quiz or exam is returned. Any complaints received later will not be considered.

Final Exam: There will be a (cumulative) three-hour final exam taking place at the end of the term. The precise date and time of the exam is set by the university, and is beyond my control. The final exam for this term will take place on Tuesday, March 17th from 3pm-6pm. Any student who misses the final exam will receive a final grade of ‘F’.