Math 281 — Foundations of Mathematics  
Spring 2017  
Sandy Ganzell

Office: Schaefer Hall 172, x4371  
Office Hours: Tuesday 2–3, Wednesday 1:30–2:30, Thursday 9–10 and any time by appointment  
Email: sganzell@smcm.edu  
Website: faculty.smcm.edu/sganzell/fom/  
TA: Trevor O’Connor: tcoconnor@smcm.edu

Course Content: In this course, we will explore the following topics: Mathematical certainty: and what proofs have to do with it. Set theory: the foundation of mathematics. Logic: the language of mathematics. Methods of proof and exploration: how to get started, and how to get unstuck. Relations, functions and cardinality.

Homework: posted on the webpage, assigned weekly, collected at the beginning of class on Monday. You are strongly encouraged to work together on homework problems, but the final preparation and write-up of your work must be your own. You may get help from any source (Cite your work!), but you should attempt the problems yourselves before seeking outside assistance. Your classmates are your best resource. Your T.A. will also prove to be invaluable. Your professor is OK too.

Classwork: includes attendance, class participation, and active involvement in group activities.

Quizzes: There will be a short surprise quiz some Fridays. These will be taken directly from the homework for the current week (so don’t wait until Sunday to do your homework). There will also be several medium-length midterm exams, and a longer, cumulative final exam.

Grades: Grades will be computed as follows:  

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework and Surprise Quizzes</td>
<td>25%</td>
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<tr>
<td>Classwork</td>
<td>10%</td>
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<tr>
<td>Midterm Exams</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
<td>35%</td>
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<td>Karma</td>
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Any student with a disability requiring accommodations in this class is encouraged to contact me after class or during office hours. Students with a disability may also wish to contact the Office of Academic Services, Glendening Hall, suite 230, x4388.
Assessment info: At the completion of MATH 281, students will be able to

- implement the rules of mathematical logic as demonstrated by incorporating logic into valid mathematical proofs.

- use the principles of set theory as demonstrated by computing the results of set operations and proving properties of sets and set operations.

- solve novel problems in mathematics as demonstrated by successfully completing problems and proofs that involve unfamiliar mathematical definitions.

- construct clear and rigorous mathematical arguments as demonstrated by writing proofs that are readable and mathematically correct.

- judge the validity of a mathematical argument as demonstrated by analyzing attempts at mathematical proofs and assessing whether or not these attempts constitute actual proofs.