

Mathematics 3C Syllabus (May 2021)

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Math 3C Lecture schedule based *Precalculus* by OpenStax:
<https://openstax.org/details/books/precalculus>

Section	Lectures	Topic
1.1	0.5	Functions and Function Notation
1.2	0.5	Domain and Range
1.3	0.5	Rates of Change and Behavior of Graphs
1.4	0.5	Composition of Functions
1.6	1	Absolute Value Functions
1.7	1	Inverse Functions
3.2	1	Quadratic Functions
3.3	1	Power Functions and Polynomial Functions
3.4	1	Graphs of Polynomial Functions
3.7	2	Rational Functions
4.1	1	Exponential Functions
4.2	1	Graphs of Exponential Functions
4.3	0.5	Logarithmic Functions
4.4	1	Graphs of Logarithmic Functions
4.5	0.5	Logarithmic Properties
4.6	1	Exponential and Logarithmic Equations
4.7	1	Exponential and Logarithmic Models
5.1	1	Angles
5.2	1	Unit Circle: Sine and Cosine Functions
5.3	1	The Other Trigonometric Functions
5.4	1	Right Triangle Trigonometry
6.1	1.5	Graphs of the Sine and Cosine Functions
6.2	0.5	Graphs of the Other Trigonometric Functions
6.3	1	Inverse Trigonometric Functions
7.1	1	Solving Trigonometric Equations with Identities
7.2	1	Sum and Difference Identities
7.3	1	Double-Angle, Half-Angle, and Reduction Formulas
7.5	1	Solving Trigonometric Equations

Notes

1. The standard number of days a class meets in a quarter is 28 (for Winter) or 29 (for Fall and Spring). Allowing for two midterm exams, this leaves 26 or 27 meeting times. The suggested lecture schedule given above contains 26 lecture periods.
2. Sections 3.1 (Complex Numbers) should be combined with Section 3.2 (Quadratic Functions). The discussion of complex numbers should be limited to how they relate to the quadratic equation (due to the severe time constraints in this course). While students in the 20 sequence will see complex numbers, they are not included in the Math 10 sequence.
3. It is recommended to spend two lectures discussing topics related to Section 3.7 (Rational Functions). However, it is recommended that the first lecture be devoted to the basic properties of rational expressions and how to simplify them, as well as add, multiply, or divide one rational expression to/from another. These are topics that many students struggle with.

4. Section 6.1 (Graphs of the Sine and Cosine Functions) should be covered in detail, including the transformations of sine and cosine functions. Section 6.2 (Graphs of the Other Trigonometric Functions), on the other hand, does not need to be given such careful consideration. It is important that students see the graphs of tangent, secant, cosecant, and cotangent, but they do not need to spend a lot of time on transformations of these functions.
5. If time is short, Sections 6.1 and 6.2 could be combined into one lecture, with Section 6.2 limited to a discussion of the tangent function. (It is recommended that the discussion be facilitated by the use of technology, to make the graphing quicker.) Another possibility is to combine Sections 7.1 and 7.2, or 7.3 and 7.5, into one lecture.
6. A notable absence in the schedule is Section 1.5 (Transformation of Functions). This is largely due to time constraints. It is recommended that this topic be studied through worksheets or projects, possibly incorporating technology, and possibly during Discussion Sections. This topic will also be addressed in the other sections about graphing functions (Sections 3.4, 4.2, 4.4, and 6.1) and so the topic can be revisited throughout the course.
7. *Recommendation:* Exams across all lectures should be scheduled at a common time outside of regular lecture time, so that time can be used for either review or more detailed discussion of topics in the course. (This will also enable coordinated exams to be given.)