

# Syllabus

Fall 2018

Modern Analysis (MAA 4200) 3 credits

Instructor:	Dr. Yuandan Lin	CRN:	10829
Office:	SE 220	Office Hours:	MW 2:00–3:50pm or by appointment
Email Address:	<a href="mailto:lin@fau.edu">lin@fau.edu</a>	Phone Number:	(561) 297–3343
Lecture Time:	MWF 12:00–12:50pm	Lecture Room:	PS 109

**Prerequisite:** Calculus 3 (MAC 2313) and Discrete Mathematics (MAD 2104) and Introduction to Advanced Mathematics (MHF 3202) with a minimum grade of C.

**Textbook:** John M. Howie, Real Analysis, Springer, 2001.

We will cover materials from Chapters 1 to 5.

Modern Analysis is one of the very few undergraduate mathematical courses with a high level of abstraction. Proofs are at the heart of the course. You will be asked to provide coherent and accurate mathematical proofs of various statements in both the homework and exams. Success will not come easily, despite your successes in previous math courses.

**Website:** <http://math.fau.edu/lin>

**Attendance Policy:** Regular attendance is expected, including active involvement in all class sessions, and professional conduct in class. Students are responsible for arranging to make up work missed because of legitimate class absences, such as illness, family emergencies, military obligations, court-imposed legal obligations, or participation in university-approved activities, such as participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the students' responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting.

**Course Grade:** Homework will be assigned and collected on a weekly basis. Your two lowest homework scores will be dropped. Two midterm exams are tentatively scheduled on Fridays, September 28 and November 2. A comprehensive final exam will be given in the end of the semester.

Discussions and working in groups are encouraged. However, submitted solutions must be your own. Submitting solutions copied from other students' work is an academic misconduct and can result in grade penalty.

Course grade will be calculated using the following table.

Homework	20%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	40%
Total	100%

## Exams:

Midterm Exam 1	Friday, September 28, 2018	PS 109
Midterm Exam 2	Friday, November 2, 2018	PS 109
Final Exam	Friday, December 7, 2018, 10:30am–1:00pm	PS 109

## Course Grading Scale:

A: 90–100%	A-: 87–90%	B+: 84–87%
B: 80–84%	B-: 77–80%	C+: 74–77%
C: 70–74%	C-: 67–70%	D+: 64–67%
D: 60–64%	D-: 57–60%	F: 0–57%

The Grade of I (incomplete) can only be given under the conditions specified in the “Incomplete Grades” section of the FAU Catalog, and supporting documentation will be required.

## Tentative Course Outline:

- **Week 1:** Sections 1.4, 1.5, and 1.6, Real Numbers, induction, inequalities
- **Week 2:** Sections 2.1, 2.2, and 2.3, Sequences, sum, products, quotients, monotonic sequence
- **Week 3:** Sections 2.4, and 2.5, Cauchy sequences, series
- **Week 4:** Sections 2.6 and 2.7, Comparison test, series of positive and negative terms
- **Week 5:** Sections 3.1, 3.2, and 3.3, Functions, compositions, rational functions, circular functions
- **Week 6:** Section 3.4 and Exam 1, Limits
- **Week 7:** Sections 3.5, 3.6, and 3.7, Continuity, uniform continuity, inverse functions
- **Week 8:** Sections 4.1, 4.2, and 4.3, Derivative, mean-value theorem, inverse functions
- **Week 9:** Sections 4.4, and 4.5, Higher derivatives, Taylor's theorem
- **Week 10:** Sections 5.1, and 5.2, Riemann intergral. integrable functions
- **Week 11:** Review and Exam 2
- **Week 12:** Sections 5.3, and 5.4, Properties of integrals, fundamental theorem
- **Week 13:** Sections 5.5, and 6.1, Techniques of integration, function defined by an integral
- **Week 14:** Sections 6.2, and 6.3, The inverse function, exponential and logarithmic functions
- **Week 15:** Review for Final Exam

**Classroom Etiquette Policy:** University policy on the use of electronic devices states: “In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as *cellular telephones* and pagers, *are to be disabled in class sessions.*” Please refer to the FAU Student Code of Conduct available at the link:

<http://www.fau.edu/artsandletters/new-pdfs/4.007.Student%20Code%20of%20Conduct.pdf>

**Disability Policy Statement:** In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodation due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all ASA procedures. SAS has

offices across three of FAU's campuses — Boca Raton, Davie, and Jupiter — however, disability services are available for students on all campuses. For more information, please visit the SAS website at <http://www.fau.edu/sas/>

**Code of Academic Integrity Policy Statement:** Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at the link:

<https://www.fau.edu/ctl/AcademicIntegrity.php>

**Counseling and Psychological Services (CAPS) Center:** Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services — individual counseling, support meetings, and psychiatric services, to name a few — offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

**Free Mathematics Tutoring for FAU Students:** The MLC provides the following FREE academic support services for FAU students.

1. Drop-in tutoring in the MLC (GS 211) during all hours of operation:  
Monday – Thursday: 9am – 6pm, Friday: 9am – 4pm, and Sunday: 1pm – 5pm.
2. Small group tutoring by appointment:  
Appointments can be made in TutorTrac. Go to <https://tutoring.fau.edu> and log in with FAU ID and password, then click on “Search for Availabilities”. For Center, choose “Math Learning Center”. Choose Section (Class) and click “Search”. Choose time and then click “Save”. If there are no appointments listed for Modern Analysis, please email [mlc@fau.edu](mailto:mlc@fau.edu) and request an appointment.

**This syllabus is subject to reasonable changes at the discretion of the instructor.**