**This syllabus is currently being used for MAT 1931. This is the model for MAC 2262 below.**

***Florida Atlantic University***

***Mathematical Sciences Department***

***MAC 2262***

***--*Introduction to Calculus with Applications--**

**4 credits**

**SPRING 2018**

**Instructor:** Roger M. Goldwyn

**Office Location:** Math Learning Center and SE 270.

**Contact Phone Number**: 561-297-3000 (best to email first)

**Email:** [rgoldwyn@fau.edu](mailto:rgoldwyn@fau.edu) (Students must use your FAU email. Make sure to state your course and section.)

**Office Hours:**

* TR from 11:00 to 2:00 in the CUBE in EE.
* Please confirm your planned attendance.

**Course Prerequisites:** MAC 1105 (College Algebra) with a grade of C or better; or a grade of 50 or better on ALEKS PPL

**Course Attributes:**

Gordon Rule, IFP - Math Quantitative Reason, Undergrad Level Course

**Course Objectives:**

The course has two main objectives: (i) increase student retention, motivation, and success in engineering through an application-oriented, hands-on introduction to engineering mathematics; (ii) replace traditional mathematics prerequisites taken before MAC 2311. Shift from math prerequisite requirements to an emphasis on engineering motivation for math as well as ensuring preparation for success in MAC 2311.

**Course Content:**

This course will provide an overview of the salient math topics most heavily used in the core sophomore-level engineering courses. These include algebraic manipulation of engineering equations, trigonometry, vectors and complex numbers, sinusoids and harmonic signals, systems of equations and matrices, differentiation, integration and differential equations. All math topics will be presented within the context of an engineering application, and reinforced through extensive examples of their use in the core engineering courses. Preparation for MAC 2311 will be ensured by requiring learning modules of ALEKS PPL and achieving a score of >75 on ALEKS PPL by end of term. If you need additional PPL attempts, follow the procedure outlined. It takes some time so don’t expect this to be completed in 1 day. <http://www.fau.edu/ugstudies/aleks-ppl/preparation.php>

**Course Delivery Mode:**

Lectures are recorded and required before attendance at lab. (Inverted class.) Classes are lab structure with hands-on applications using paper and pencil and Matlab. Supported by engineering teaching assistants (Learning Assistances==LAs) who will work with instructor on problem selection and how to interact with students. The LAs are your advocates. Lab will meet 2x per week—each session about 2 hours. Attendance required. Students are expected to work on the ALEKS PPL learning modules on their own and their progress will be monitored and will count in their grade. Questions on material in the ALEKS learning modules will be handled in the lab or by attendance at the Math Learning Center. The LAs will post on Announcements when they are scheduling study and/or review sessions.

**Text and Materials**

* Rattan and Klingbeil, Introductory Mathematics for Engineering Applications, John Wiley & Sons, 2015. (Required)
* Gilat, A., Matlab: An Introduction with Applications, 5th ed., John Wiley & Sons, 2015. (Not required but useful)
* Download GeoGebra from GeoGebra.org site. Free. Get the desktop version. (Useful)

**IFP General Education Outcomes:**

* 1. Knowledge in several different disciplines;
* 2. The ability to think critically;
* 3. The ability to communicate effectively;
* 4. An appreciation for how knowledge is discovered, challenged, and transformed as it advances;
* 5. An understanding of ethics and ethical behavior.

Information available at http://www.fau.edu/deanugstudies/NewGeneralEdCurriculum.php

**CANVAS:**

Stay current via CANVAS for announcements. Check daily.

**Course Assessments, Assignments, Grading Policy, and Course Policies**

**Grading: Assignment problems and work in the class and progress and results in PPL count in the grade. There is no extra credit. Do the assignments when given and complete as assigned. If there are any questions on due dates, ask in the first week of class for clarification. No changes**

**Exams: There are no makeups or extensions for any exam or any assignment for any reason.**

**Lectures:** Lectures for this course are recorded and posted in CANVAS. You must stay current and review the material as well as the book before coming to the class (the lab). A complete Chapter video is long but you can skip within the video and review the appropriate sections. An advantage of all recordings is that you can stop, try to do it on your own, listen to the recording and then listen again. **There are a number of modules in CANVAS that will be helpful—Especially the Syllabus and references there.** A Introduction will be given at the start of a Chapter.

**Homework (HW):** See assignments as listed. You will also need to work on the PPL Learning Module.

*HW Grading—*

1. You should complete the assigned problems before the first-class period for a chapter.
2. You will be able to discuss and complete any problems giving you difficulty by working with your group or an LA.
3. You should review the Chapter Discussion Topics (see them below) with your group.
4. Your grade for a HW assignment is a combination of how you completed the HW problems and how you respond to the Chapter Discussion Topics. The maximum grade for HW is 10. This will be awarded on the last class period for a Chapter.
5. If you don’t have a 10, you may meet with an LA and show that you now understand the material and you score can be increased to a 10. This must be done before the next class period.
6. BONUS to HW---A short 10-minute max., 1 question quiz, closed book and notes, will be given during the last class period of a Chapter. You need to bring a blank piece of paper. It will be graded immediately and if FULLY CORRECT can add 2 points to your 10 point HW grade. The BONUS cannot be increased by meeting with an LA. So, if you get the bonus, you can get 12/10 for a HW assignment.

**\*\*Announcements: Check at least once a day\*\* You are responsible for all the material assigned in homework and in the text – even if this material is not covered in the lecture videos.** I assume students will *read* and *study* the text and the *examples* in the text, *complete* all homework assignments as soon as possible, *ask* for help when needed, and *study* for exams. *Reading and understanding* the material before viewing the lecture videos indeed helps as you will be more familiar with the terminology being used and have some idea of what is coming and locate the hard spots.

**Homework:** Homework assignments have a due date and time, so students should pay close attention to both date and time. Schedule changes will be announced. It is the student’s responsibility to be aware of any schedule changes announced by the instructor.

**Course Grade:**

|  |  |
| --- | --- |
| HW and Class work 10 at 3% each | 30% |
| Exam 1 | 10% |
| Exam 2 | 10% |
| PPL 1 | 10% |
| PPL 2 | 10% |
| PPL F | 10% |
| Final Exam | 20% |
| **Final Score** | **100%** |

PPL 1 Grade 0 if < 60, grade 10 if >= 60

PPL 2 Grade 0 if < 75, grade 10 if >= 75

PPL F Grade ((PPL F Score)/85)\*10

**Note:**

* If you do not take the final or attain >75 on your final PPL assessment, you will receive an F in the course.
* No homework, exam, or quiz grades will be dropped. There is no extra credit. Grades will be maintained in CANVAS. Please check your grades regularly and notify me immediately should there be a discrepancy. Grades are weighted as shown:

**Grading Scale:** Numerical grades will translate to the following letter grades:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Percent Score | 90-100 | 87-89 | 83-86 | 80-82 | 77-79 | 73-76 | 67-72 | 60-66 | 0-59 |
| Grade | A | A- | B+ | B | B- | C+ | C | D | F |

**Attendance Policy:** Attendance is required. It is understood that you have chosen this section because the classes and exams and final exam do not interfere with your other activities. All lectures and assignments and HW and the dates of all exams and final are posted at the start of this term. **There will be no makeups or extensions**.

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student’s 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. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student’s final course grade as a direct result of such absence.

**Make-up Exams/Quizzes:** There will be NO make-up exams or quizzes. Exams cannot be taken either earlier or later than the scheduled dates. Any missed exam or quiz will be graded as a zero. See the Attendance section of the FAU Catalog. Written proof must be provided for an absence. Excerpt from FAU Catalog: “Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities.”

**Late Assignments:** No extensions for any reason. No makeups.

**Communication Policy**

**Expectations for Students**

* Announcements
  + You are responsible for reading all announcements posted by the instructor. Check the course announcements each time you log in.
* Email
* You are responsible for reading all of your course email and responding in a timely manner.

**Instructor’s Plan for Classroom Response Time & Feedback**

* Email Policy
  + Except for Saturdays, Sundays, and holidays, instructor typically, will respond to messages within 48 hours. Such messages should only be used to communicate personal or confidential matters; otherwise.
* Assignment Feedback Policy
  + Feedback will be provided on submitted assignments within one week of the submission date. Some assignments may require a longer review period, which will be communicated to students by the instructor.
* Course-Related Questions
  + Except Saturdays, Sundays, and holidays, questions will, generally, be answered by instructors within 48 hours.

**Support Services and Online Resources**

|  |  |
| --- | --- |
| Office of Information Technology Online Help Desk: | [Link to FAU Help Desk](http://helpdesk.fau.edu/) |
| Math Learning Center:  Some material there is for all courses. For specific information for this course, see Modules mentioned above. | <http://www.math.fau.edu/mlc/> |
| Student Accessibility Services: | [Link to FAU Student Accessibility Services](http://www.fau.edu/sas) |
| eLearning Success Coordinator | [Link to FAU Center for Learning And Student](http://www.fau.edu/class/general/contact.php) |

**Disability Policy Statement**

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS 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.

**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.

**Faculty Rights and Responsibilities**

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions which do not impede their exercise. To ensure these rights, faculty members have the prerogative:

* To establish and implement academic standards.
* To establish and enforce reasonable behavior standards in each class.
* To refer disciplinary action to those students whose behavior may be judged to be disruptive under the *Student Code of Conduct*.
* Instructor reserves the right to adjust this syllabus as necessary.

**NOTES ON GEOGEBRA**

The attached are introductions to GeoGebra.   We are not going to work to make you proficient using this tool but you might find it interesting and want to use to build "physical models" in future engineering classes.   The attached will give you a good idea of what can be done.

You can Google GeoGebra basic and advanced videos. For basic intro, the attached YouTube is basic and good.

<https://www.youtube.com/watch?v=1cBXWi66-tY>

See CANVAS MODULE called GeoGebra Examples. You will need the full GeoGebra app to see them. You can view them at school or download for free the GeoGebra app.

They really make solving trig problems easy.

**Overview of Assignments**

|  |  |  |  |
| --- | --- | --- | --- |
| **Module #** | **Dates** | **Read / Listen / View** | **To Do** |
| 0  Introduction | * **Introduction** | * Review material on CANVAS. Start PPL. Read/View Chapter 1. | * Start PPL Learning module * See Due Dates Table |
| 1  Straight Lines in Engineering | * **Chapter 1** | * Read/View Chapter 1 * Review Lecture and unit material (CANVAS) | * Chapter 1 Homework Assignment * See Due Dates Table |
| 2  Quadratic Equations in Engineering | * **Chapters 2** | * Read/View Chapter 2 * Review Lecture and unit material (CANVAS) | * Chapter 2 Homework Assignment * See Due Dates Table |
| 3 Trigonometry in Engineering | * **Chapters 3** | * Read/View Chapter 3 * Review Lecture and unit material (CANVAS) | * Chapter 3 Homework Assignment * Do lab example using GeoGebra * Review Learning Module Progress * See Due Dates Table |
| 4  Two-Dimensional Vectors in Engineering | * **Chapter 4** | * Read/View Chapter 4 * Review Lecture and unit material (CANVAS) | * Chapter 4 Homework Assignment * See Due Dates Table * Take PPL 1 (>=60) |
| 5  Complex Numbers in Engineering | * **Chapter 5** | * Read/View Chapter 5 * Review Lecture and unit material (CANVAS) | * Chapter 5 Homework Assignment * See Due Dates Table * Exam 1 |
| 6  Sinusoids in Engineering | * **Chapter 6** | * Read/View Chapter 6 * Review Lecture and unit material (CANVAS) | * Chapter 6 Homework Assignment * See Due Dates Table |
| 7  Systems of Equations in Engineering | * **Chapter 7** | * Read/View Chapter 7 * Review Lecture and unit material (CANVAS) | * Chapter 7 Homework Assignment * Do lab example using Matlab * See Due Dates Table |
| 8  Derivatives in Engineering | * **Chapter 8** | * Read/View Chapter 8 * Review Lecture and unit material (CANVAS) | * Chapter 8 Homework Assignment * Review Learning Module Progress * See Due Dates Table |
| 9  Integrals in Engineering | * **Chapter 9** | * Read/View Chapter 9 * Review Lecture and unit material (CANVAS) | * Chapter 9 Homework Assignment * Take PPL 2 (>=75) * See Due Dates Table |
| 10  Differential Equations in Engineering | * **Chapter 10** | * Read/View Chapter 10 * Review Lecture and unit material (CANVAS) | * Chapter 10 Homework Assignment * Exam 2 * See Due Dates Table |
| 11  Final Exam and Final Assessment in PPL |  | * Study & Prepare for Final Note: Comprehensive– All covered chapters and all Assignments | * Take PPL F * Final Exam * See Due Dates Table |

**DUE DATES**

**ASSIGNMENTS ARE SUBJECT TO CHANGE. FOLLOW REGULARLY.**

**Note: Assignments due before ending of last class/lab of the date shown.**

|  |  |
| --- | --- |
| **Due Date—w/o** | **Assignment** |
| Jan 11 | Begin work on PPL Learning Module |
| Jan 18 | Chapter 1  3,9,11,15,19,21,25,30,32,43 |
| Jan 25 | Chapter 2  9,15,17,19,29,31,33,35 |
| Feb 8 | Chapter 3  5,7,13,17,21,25,29,31,36,41,42  Understand degree and radians.  Review on line GeoGebra examples on YouTube  Do in lab 3-18 (d) with GeoGebra  Review Learning Module Progress in lab |
| Feb 15 | Chapter 4  5,11,13,15,23(parts a and b), 31,33,41  Take PPL 1. Need >=60 |
| Mar 1 | Chapter 5  1,7,15,17,21,23,31,33,35  Exam 1—THROUGH CHAPTER 4 |
| Mar 15 | Chapter 6  3,7,11,15,19,37,39 |
| Mar 22 | Chapter 7  1,11,21,29,35,39 (don’t do all methods on all problems but do at least one example of each method)  Do 7-21 using Matrix Algebra method (by hand) and in lab using Matlab |
| Apr 5 | Chapter 8  1,7,9,15,17,27,29,33  Review Learning Module Progress in lab |
| Apr 12 | Chapter 9  5,7,15,17,23,31,33,35,37,39  Take PPL 2. Need >=75 |
| Apr 19 | Chapter 10—through section 10.4  1,3,9  Exam 2—THROUGH CHAPTER 9 |
| Apr 24 | Take PPL F. Want >=85 |
| TBD | Final Exam—COMPREHENSIVE |

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

**It is up to you to follow the ANNOUNCEMENTS. If the arrangements for this course are not suitable for your schedule, please select another course that might meet your needs.**

**CHAPTER VIDEOS**

TO BE POSTED ON-LINE

**Notes on ALEKS PPL Assessment**

**Can I retake the ALEKS PPL Assessment?**Yes, you may take up to five Placement Assessments for a period of six months from date of payment. To make each attempt worthwhile, however, it is important that you spend time working in your ALEKS Prep and Learning Module between Placement Assessments so that you can improve your skills. ***FAU strongly recommends a minimum of ten hours in the Prep and Learning Module before the next Assessment attempt***.

**Can I retake the ALEKS Placement Assessment immediately?**You must wait 48 hours between Placement Assessments. There is generally no benefit to retaking the Placement Assessment immediately after completing a prior attempt. You cannot improve your results by simply retaking the Placement Assessment without spending time in the Prep and Learning Module to refresh material that you may have forgotten.  Retakes under most conditions can be taken on-line (at a location of your choosing with HonorLock) or in the Testing Center.

**Which Learning Module should I take?** If you are not in the Prep for Calculus Preparation and Learning Module, contact me immediately.

**How does the % score in the Prep for Calculus relate to my PPL score?** It could be 10-15 points higher. So work in the learning module to achieve this higher score before taking a PPL Assessment that will count in your course grade.

FREE MATH TUTORING for FAU students: The MLC provides the following FREE academic support services for FAU students:

1. Drop-in tutoring in the SAM LAB (Succeed At Methods) in GS207 during all hours of operation

a. ALL METHODS TUTORING is done in the SAM Lab except on Sundays. On Sundays, please visit the MLC as the SAM Lab is closed.

b. Monday – Thursday: 9am – 5pm and Friday: 9am – 4pm

2. Drop-in tutoring in the MLC GS211 during all hours of operation

a. Monday – Thursday: 9am – 5pm, Friday: 9am – 4pm, and Sunday: 1pm – 5pm

3. Small group tutoring by appointment a. Appointments can be made in TutorTrac. Go to www.fau.edu/tutoring and click on ‘Find a Tutor,’ then ‘Click Here to Make an Appointment.’ Login with your FAU ID and password and click on ‘Search for Availabilities.’ For Center, choose SAM Lab for Methods of Calculus and Math Learning Center for everything else. Choose your Section (Class) and click ‘Search.’ Choose your time and then click ‘Save.’ If there are no appointments listed for your course, please email bferoz@fau.edu and request an appointment.

**DISCUSSION TOPICS**

TO BE POSTED ON-LINE