

Calculus with Analytic Geometry II

MAC 2312 Lecture

4 Credit Hours

Spring 2024

Instructor/Coordinator: Scott Keeran
Office: LIT 309
E-mail: keeran@ufl.edu
Office Hours: T 5th, 6th; R 4th
Lecture: MWF Period 4th, 5th in LIT 237

| <u>Teaching Assistants</u> | <u>Office</u> | <u>Office Hours</u> | <u>Email</u> |
|----------------------------|---------------|---------------------|--------------------|
| Kyle Adams | LIT 405 | TBA | adams.k@ufl.edu |
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| Abhiram Hegade | LIT 481 | TBA | a.hegade@ufl.edu |

| Discussion Section | Time | Location | TA |
|---------------------------|----------------------------------|-----------------|-----------|
| 162A | T Period 3 (9:35 AM - 10:25 AM) | LIT 219 | Adams |
| 1851 | T Period 4 (10:40 AM - 11:30 AM) | LIT 217 | Mkrtchyan |
| 7310 | T Period 6 (12:50 PM - 1:40 PM) | LIT 219 | Hegade |
| 7322 | T Period 7 (1:55 PM - 2:45 PM) | LIT 217 | Hegade |

Prerequisites MAC 2311 with a minimum grade of C or AP/IB/AICE credit for MAC 2311.

Course Description MAC 2312 is the second semester in the three-semester sequence MAC 2311, MAC 2312, MAC 2313 covering basic calculus. The course begins where MAC2311 left off at integration techniques, followed by some applications of integration. The next part of the course covers infinite sequences and series, culminating with Taylor Series and applications. MAC 2312 concludes with a study of parametric equations and polar coordinates.

General Education Objectives and Learning Outcomes This course is a mathematics (M) course in the UF General Education Program. Completing this course with a minimum grade of C will satisfy the student's State Core Mathematics requirement of the UF General Education Program. Courses in mathematics provide instruction in computational strategies in fundamental mathematics including at least one of the following: solving equations and inequalities, logic, statistics, algebra, trigonometry, inductive and deductive reasoning. These courses include reasoning in abstract mathematical systems, formulating mathematical models and arguments, using mathematical models to solve problems and applying mathematical concepts effectively to real-world situations.

After successful completion of this course students will have demonstrated competency in the following Student Learning Outcomes (SLOs):

- **Content:** *Students demonstrate competence in the terminology, concepts, theories, and methodologies used within the discipline.* After completing this course students will gain a knowledge of integration, infinite series, and parametric equations. This will be assessed through Xronos homework assignments, discussion quizzes, and exams.

• **Communication:** *Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline.* Throughout this course students will communicate mathematical ideas verbally in their discussion sessions and as well as through writing on discussion quizzes and exams.

• **Critical Thinking:** *Students analyze information carefully and logically from multiple perspectives, using discipline-specific methods, and develop reasoned solutions to problems.* Students will apply their knowledge to solve problems concerning topics that include, but are not limited to, techniques of integration, calculation of volumes of revolution, calculation of work, determining the convergence or divergence of infinite series, using power series representations to evaluate functions and integrals, using the calculus of parametric equations to calculate arc length, and graphing and calculating the areas of polar curves. This will be assessed through Xronos homework assignments, discussion quizzes, and exams.

Required Materials

There are no required textbooks for this course. We will make use of a free online textbook available at [Openstx Calculus Volume 2](#) as well as the online [Guided Learning Calculus 2](#). Also, in this course we will use the online platform Xronos which has been developed at UF and is supported by the Office of the Provost and the College of Liberal Arts and Sciences. Xronos is accessible through the Canvas site. More details will be given in class.

E-Learning Canvas:

E-learning Canvas, a UF course management system, is located at elearning.ufl.edu. Use your Gatorlink username and password to login. All course information including the course homepage, syllabus, lecture outlines, office hours, test locations, mail tool, discussion forum, free help information, etc. can be accessed from this site.

You are responsible for verifying that your grades are accurate. **You have one week after a score has been posted to contact your TA if you believe there has been a recording error. There is no grade dispute at the end of the semester.**

Please note: Important course information is clearly communicated in this course guide, the MAC 2312 homepage and links in Canvas, and announcements in lecture and discussion. Due to the volume of email received by the instructor and TAs, we cannot reply to each request for this well publicized information. If you cannot find your answer in the resources above, there is also a **Discussion Forum** available in Canvas. Please use this to post questions and to supply answers to your fellow classmates.

E-mail

All communication between student and instructor and between students should be respectful and professional. All official class communications will be sent only to the ufl.edu addresses. Students are responsible for acquiring, checking their email accounts regularly, and any class information sent to their ufl.edu account. Please be sure to sign your name to your e-mails.

Lectures

This class will take a different form than you may be used to. I will not lecture for the whole period, if at all. You will be responsible for watching pre-recorded lectures online at the course site in Canvas **BEFORE** coming to class. We will spend most of our class time working on problems and exploring the concepts of calculus in small groups. Come to class ready to participate. Once again, you **NEED** to watch the videos before you come to class. If you do so, then you will ask better questions and you will perform better in the course.

Discussion Sections

Discussion sections meet once a week on either Tuesday or Thursday depending on which section you are enrolled in. These meetings give you a valuable opportunity for open discussion of the lecture material and assigned problems in a smaller class setting. **Attendance in discussion is required as it is where assessment of your skills will take place.** However, one period per week is generally not adequate to answer all questions. Be sure to take advantage of the opportunities outside of class for additional help.

Your main resource is your discussion leader. He or she will be available during office hours (or by appointment) to answer your questions about the course material. Your TA is responsible for grading and recording all quiz scores. You must retain all returned papers in case of any discrepancy with your course grade. As mentioned above, **you should check Canvas regularly and consult with your TA if you have any questions about recorded grades. All grade concerns must be taken care of within one week of receiving the score.**

If you have concerns about your discussion class which cannot be handled by your TA please contact the course coordinator.

Exams

Midterm exam dates are as follows:

Exam 1: Thursday, February 15

Exam 2: Tuesday, March 19

Exam 3: Monday, April 8

Makeup for Exam 1, Exam 2, and Exam 3: Tuesday, April 23, 6:15 PM - 7:55 PM (tentative)

Final Exam: Saturday, April 27, 7:30 AM - 9:30 AM

Make up for Final Exam: Friday, May 3, 3:00 PM - 5:00 PM

There will be three (paper and pencil) midterms throughout the semester. The midterms will consist of two parts. Part 1 will be multiple choice questions. Part 2 of the midterm exams will consist of free response problems.

These midterm exams will take place in the evening, from 8:30 PM to 10:10 PM.

The FINAL EXAM will take place on Saturday, April 27 from 7:30 AM to 9:30 AM. Make a note of this now and please inform any interested parties (e.g. your parents) who may be making plans for you around that time (such as purchasing plane tickets to fly home, etc.).

The midterm exams are worth 50% of your final grade while the final exam is worth 25% of your final grade. No exam grades will be dropped. There are no exam retakes.

Online Homework

In this course we will be using the online platform Xronos which is free of charge and will be explained during class. Online homework assignments will be assigned daily and must be completed by the specified due date. **No assignments can be submitted after the due date.** Online homework assignments are worth a total of 7.5% of your final grade. There will be a total of three dropped homework grades at the end of the semester.

All assignments will have posted due dates and these due dates will not be extended.

Personal computer issues, will NOT be a reason to offer any type of extension. It is strongly recommended that you begin the homework well before the due date to account for any unforeseen difficulties. If you have any issues accessing the online homework, please contact the course coordinator.

Participation During the last 5 minutes of every lecture, students will take a short In Class Quiz through Canvas. The quiz opens and closes automatically with the close time corresponding to the end of the lecture period. The quiz focuses on topics covered in the daily lectures. There will be no makeups for missed quizzes however we will drop 5 quiz grades at the end of the semester. These quizzes will be 5% of your grade.

Attendance Attendance will be taken at the beginning of each lecture class. Students who are late will not be given credit for that day. Attendance can not be "made up" but instead we will drop 5 attendance points at the end of the semester. Attendance will be 5% of your grade.

Discussion Quizzes There will be weekly quizzes during your discussion similar to homework questions and examples from class. Quizzes make up a total of 7.5% of your grade. The quizzes will be administered by your TA and any questions about the grades should be directed to him or her. If your TA is unable to address your questions, please contact the course coordinator. Your two lowest discussion quizzes will be dropped at the end of the semester.

Make-up Policy All make-up work must be arranged with the course coordinator.

• **Exam Conflicts - UF during Term Assembly Exam Policy** (catalog.ufl.edu/ugrad/current/regulations/info/exams.aspx): "During-term examinations are held during regular class times or during assembly exam periods, which are Monday-Friday from 8:20 - 10:10 p.m. (periods E2-E3) for the fall and spring terms and Monday-Friday from 7:00 - 9:45 p.m. (periods E1-E2) for the summer terms. If other classes are scheduled during an exam time, instructors must provide make-up class work for students who miss class because of an assembly exam. When two exams conflict, assembly exams (multiple sections and enrollment over 300) take precedence over non-assembly exams (single sections and/or enrollment under 300). If two assembly exams conflict, the course with the higher number will take priority. Likewise, if two non-assembly exams conflict, the higher number will again take priority. Instructors giving make-up exams will make the necessary adjustments. Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence. A reasonable amount of time to make up a during-term exam is before the end of the semester in which the student is enrolled in the class."

If MAC 2312 is the lower course number, students must inform the course coordinator at least ONE WEEK in advance of the exam date so that appropriate accommodations can be made. Otherwise it may not be possible to reschedule.

- **Make-up Exams** If you are participating in a UF sponsored event or religious observance, you may make up an exam only if you make arrangements with the course coordinator at least ONE WEEK PRIOR to the event. You must present documentation of a UF sponsored event.

If illness or other extenuating circumstances cause you to miss an exam, contact the course coordinator (no later than 24 hours after the exam) by email. Then, as soon as possible after you return to campus, provide the appropriate documentation to the course coordinator. You will be allowed to sign up to take a makeup exam at the end of the semester. **The make up for Exam 1, Exam 2, and Exam 3 is tentatively scheduled for Tuesday, April 23, 6:15 PM - 7:55 PM. The make up for the final exam is scheduled during the University’s designated make up period on Friday, May 3, 3:00 PM - 5:00 PM.**

- **Make-up Xronos HW:** There are no make-ups.
- **Make-up class participation points:** There are no make-ups.
- **Make-up attendance points:** There are no make-ups.
- **Make-up discussion quizzes:** Missed discussion quizzes can be made up if appropriate documentation is provided to Dr. Keeran. If you miss a discussion quiz, then you should contact your TA as soon as possible to arrange a make-up quiz. **Arrangements must be made within one week of the scheduled quiz otherwise the quiz grade becomes a 0.**

Incomplete

Students who are currently passing a course but are unable to complete the course because of illness or emergency may be granted an incomplete grade of I which will allow the student to complete the course within the first two weeks of the following semester. See the policy on <http://www.math.ufl.edu/fac/incompletes.html>. If you meet the criteria, you must contact the course coordinator before finals week to be considered for an I. An I only allows you to make up your incomplete work, not redo your work.

Grading

- Xronos Homework: 7.5%
- Discussion Quizzes: 7.5%
- Participation: 5%
- Attendance: 5%
- Midterm Exam Average (3 mid-term exams): 50 %
- Final Exam: 25%

Your final grade will be calculated and a letter grade will be given using the following grading scale:

Grading Scale

| | | | |
|---------------|----------------|---------------|----------------|
| 100-90.00 A | 89.99-87.00 B+ | 86.99-80.00 B | 79.99-77.00 C+ |
| 76.99-70.00 C | 69.99-67.00 D+ | 66.99-60.00 D | 59.99 - 0 E |

For those take the S-U option: 67.00-100 S 0.00-66.99 U

Approval of the S-U option must be obtained from the course coordinator. The deadline for filing an application with the Registrar and further restrictions on the S-U option are given in the Undergraduate Catalog.

For a complete explanation of current policies for assigning grade points, refer to the UF undergraduate catalog:

catalog.ufl.edu/ugrad/regulations/info/grades.aspx

NOTE: We will not review disputed points at the end of the semester. All grade concerns must be settled within one week of the return of the paper.

Extra Credit

Each midterm exam has 105 points on it but is taken out of 100 points. The final exam has 110 points on it but is taken out of 100 points. These are your only opportunities to earn extra credit this semester. No other extra credit will be offered.

Free Help

In addition to attending your discussion section regularly and visiting your discussion leader, lecture, or the course coordinator, during their office hours, the following aids are available.

- The Math Help Center in Little 215 is open for drop-in assistance with homework Monday through Friday from 9:30 to 4:00. It is staffed by mathematics graduate students and undergraduate assistants. Please note that this space is not designed for intense one-on-one tutoring, but rather as a resource for quick questions and explanations. You should not expect the staff to help you if you have not at least begun your homework and have specific questions. Moreover, they absolutely will not assist you with quizzes or any other such work.
- The Teaching Center Math Lab, located in SE Broward Hall, is a tutorial service staffed by trained math and science students to provide help with your calculus questions and homework. Tutors will be glad to provide guidance on specific problems after you have attempted them on your own. You may want to attend different hours to find tutors with whom you feel most comfortable. You can also request free one-on-one tutoring.

The math lab also offers a more structured tutoring program for MAC 2312, called **supplemental instruction**. A tutor, assigned specifically to MAC 2312, provides weekly help sessions. More details will be provided in lecture.

In addition, the Broward teaching center tutors hold reviews on the evenings before each exam. They also provide videos of review and sample test problems. Check the webpage, teachingcenter.ufl.edu, for a map of the location, tutoring hours, and test review dates and locations. **All students are encouraged to use the teaching center.**

- Office of Academic Support offers free one-on-one and small group tutoring sessions to an UF students. See <http://oas.aa.ufl.edu/tutoring.aspx> for details.
- Textbooks and solutions manuals are located at reserve desks at Marston Science Library.
- Private Tutors: If after availing yourself of these aids, you feel you need more help, you may obtain a list of qualified tutors for hire at www.math.ufl.edu. Search "tutors".
- The Counseling Center has some informative information on developing math confidence. Go to <http://www.counseling.ufl.edu/cwc/DevelopingMath-Confidence.aspx> for information on math confidence and information on joining the Academic Confidence Group.

Calculators

Calculators are **NOT** permitted on exams and discussion assignments. Please avoid using a calculator on homework as it will not help you prepare for the exams.

Cell Phones

Cell phones must be turned off (not on vibrate) before coming to class. Use (defined as having one physically in your hand) of a cell phone during a test or quiz will be considered contact with another person and will be viewed as a form of academic dishonesty because I cannot be assured in such a circumstance that you have not taken a picture of the test/quiz or sent a text message to someone. As a result, **using a cell phone during a test or quiz for any reason will result in an automatic grade of zero and possible disciplinary action.** Wait until after you have left the room and are finished with the test/quiz to use it.

Music Players

iPods and other music players are not to be used during class tests and quizzes. Having one out during a test or quiz will result in a grade of zero and possible disciplinary action.

Students with Learning Disabilities

Students requesting class and exam accommodations must first register with the Dean of Students Office Disability Resource Center (DRC), www.dso.ufl.edu/drc/. That office will provide a documentation letter via email to the course coordinator. This must be done as early as possible in the semester, **at least one week before the first exam**, so there is adequate time to make proper accommodations.

COVID Policy

In response to COVID-19, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available and have been demonstrated to be safe and effective against the COVID-19 virus. Visit one.ufl.edu for screening / testing and vaccination opportunities.
- If you are sick, stay home. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

Diversity and Inclusion

The Mathematics Department is committed to diversity and inclusion of all students. We acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements. It is our intent to present materials and activities that are respectful of diversity: race, color, creed, gender, gender identity, sexual orientation, age, religious status, national origin, ethnicity, disability, socioeconomic status, and any other distinguishing qualities.

Academic Honesty Guidelines

All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust, and respect. Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity. Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XIV of the Student Code of Conduct. The conduct set forth hereinafter constitutes a violation of the Academic Honesty Guidelines (University of Florida Rule 6C1-4.017).

The Mathematics Department expects you to follow the Student Honor Code. We are bound by university policy to report any instance of suspected cheating to the proper authorities. You may find the Student Honor Code and read more about student rights and responsibilities concerning academic honesty at the link www.dso.ufl.edu/sccr/.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A class lecture is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To publish means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student

Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Important Spring 2024 Academic Dates and Deadlines

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|-----------------------------------|---|
| Classes Begin | Monday, January 8 |
| Drop/Add | Monday, January 8 - Friday, January 12 (11:59 PM) |
| Withdrawal deadline (full refund) | Friday, January 12 (11:59 PM) |
| Withdrawal deadline (25% refund) | Friday, February 2 |
| Drop deadline (no refund) | Friday, April 12 (11:59 PM) |
| Classes end | Wednesday, April 24 |

Holidays (no classes)

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|----------------------------|--|
| Martin Luther King Jr. Day | Monday, January 15 |
| Spring Break | Saturday, March 9 - Saturday, March 16 |

Tentative Schedule

| Week | Monday | Tuesday | Wednesday | Thursday | Friday |
|------|---|---------------------------|---|---|---|
| 1 | January 8 Introduction | January 9 Meet Your TA | January 10 L1 - Integration by Parts 1 | January 11 Meet Your TA | January 12 L2 - Integration by Parts 2 |
| Due | | | | | |
| 2 | January 15 Martin Luther King Jr. Day - No classes | January 16 | January 17 L3 - Trigonometric Integrals 1 | January 18 | January 19 L4 - Trigonometric Integrals 2 |
| Due | | Quiz 1: L1-L2 | Xronos Tutorial | Quiz 1: L1-L2 | Xronos 1 |
| 3 | January 22 L5 - Trigonometric Substitution 1 | January 23 | January 24 L6 - Trigonometric Substitution 2 | January 25 | January 26 L7 - Partial Fractions 1 |
| Due | | Quiz 2: L3-L4 | | Quiz 2: L3-L5 | Xronos 2 |
| 4 | January 29 L8 - Partial Fractions 2 | January 30 | January 31 L9 - Improper Integrals | February 1 | February 2 L10 - Techniques of Integration |
| Due | | Quiz 3: L5-L7 | Xronos 3 | Quiz 3: L6-L8 | |
| 5 | February 5 L11 - Areas and Volumes | February 6 | February 7 L12 - Disk and Washer Method | February 8 | February 9 L13 - Shell Method |
| Due | Xronos 4 | Quiz 4: L5-7 | Xronos 5 | Quiz 4: L6-8 | Xronos 6 |
| 6 | February 12 L14 - Probability | February 13 | February 14 Exam 1 Review | February 15 Exam 1 (L1-L13) | February 16 L15 - Work |
| Due | Xronos 7 | Quiz 5: L11-L13 | Xronos 8 | Quiz 5: Attendance | |
| 7 | February 19 L16 - Sequences | February 20 | February 21 L17 - Series | February 22 | February 23 L18 - Summing Series |
| Due | Xronos 9 | Quiz 6: Attendance | | Quiz 6: L15-L16 | Xronos 10 |
| 8 | February 26 L19 - Integral Test | February 27 | February 28 L20 - Direct Comparison | February 29 | March 1 L21 - Limit Comparison |
| Due | Xronos 11 | Quiz 7: L16-L18 | | Quiz 7: L17-L19 | Xronos 12 |

| Week | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|--|--|--|--|---|
| 9 | March 4 L22 - Alternating Series Test | March 5 | March 6 L23 - Ratio/Root Test | March 7 | March 8 L24 - Series Summary |
| Due | Xronos 13 | Quiz 8: L19-L21 | | Quiz 8: L20-L22 | Xronos 14 |
| 10 | March 11 Spring Break - No Classes | March 12 Spring Break - No Classes | March 13 Spring Break - No Classes | March 14 Spring Break - No Classes | March 15 Spring Break - No Classes |
| Due | | | | | |
| 11 | March 18 Review for Exam 2 | March 19 Exam 2 (L14-24) | March 20 L25 - Power Series | March 21 | March 22 L26 - Power Series Rep. 1 |
| Due | Xronos 15, 16, 17 | Quiz 9: Attendance | | Quiz 9: Attendance | |
| 12 | March 25 L27 - Power Series Rep. 2 | March 26 | March 27 L28 - Taylor Series 1 | March 28 | March 29 L29 - Taylor Series 2 |
| Due | | Quiz 10: L25-L26 | Xronos 18 | Quiz 10: L25-L27 | |
| 13 | April 1 L30 - Taylor Series 3 | April 2 | April 3 L31 - Power Series Summary | April 4 | April 5 L32 - Arc Length |
| Due | Xronos 19 | Quiz 11: L27-L29 | | Quiz 11: L28-L30 | Xronos 20 |
| 14 | April 8 Review for Exam 3 Exam 3 (L25-L31) | April 9 | April 10 L33 - Parametric Equations | April 11 | April 12 L34 - Calculus of Parametric Curves |
| Due | Xronos 21, 22 | Quiz 12: Attendance | | Quiz 12: Attendance | Xronos 23 |
| 15 | April 15 L35 - Polar Coordinates | April 16 | April 17 L36 - Graphing Polar Curves | April 18 | April 19 L37 - Calculus of Polar Curves |
| Due | | Quiz 13: L33-L34 | Xronos 24 | Quiz 14: L33-L35 | Xronos 25 |
| 16 | April 22 L38 - Polar Area | April 23 | April 24 Review for Final Exam | April 25 Reading Day - No Classes | April 26 Reading Day - No Classes |
| Due | | No Quiz | Xronos 26 | | Xronos 27, 28 |
| Saturday, April 27 - Final Exam (7:30 AM - 9:30 AM) (Cumulative L1-38) | | | | | |