



Course Syllabus

Spring 2022

Course Prefix/Number: MATH 102 01 & 02 **Instructor:** LEEN TAHA
Course Title: INTRODUCTION TO **Office Location:** A322
MODERN MATHEMATICS **Office Phone:** 3707
Class Meeting Times: TRU 01 02:00-02:50PM **Email:** LTAHA@AUK.EDU.KW
02 01:00-01:50PM **Office Hours:** LISTED BELOW
Instructional Modality: ONLINE/ONSITE
Class Location: G 301

AUK Mission Statement

The American University of Kuwait is a liberal arts institution dedicated to teaching, learning, and scholarship. The University offers programs that provide students with the knowledge and skills necessary for lifelong learning and professional success. AUK enriches society by fostering an environment that encourages critical thinking, effective communication, personal growth, service, and leadership.

College of Arts & Sciences Mission Statement

The College of Arts and Sciences (CAS) is committed to cultivating lifelong learning that empowers students to pursue technical competency in professional fields, self-awareness, a sense of civic and moral responsibility, and a breadth of vision in the tradition of liberal arts education. The College offers quality undergraduate programs leading to a bachelor's degree.

Department of Mathematics and Natural Sciences Mission Statement

The Department of Mathematics and Natural Sciences is committed to excellence in teaching, research, and scholarly activities. The department prepares AUK students in different disciplines with the fundamental scientific and analytical skills critical to a quality liberal education. The department strives to prepare students to be successful in their careers and promotes lifelong learning.

Course Description:

A brief survey of several branches of mathematics that have arisen during the past 150 years. Topics are examined so their influence on modern life can be appreciated. They include the mathematics of voting, sharing and apportionment, graph theory, networks and fractal geometry. Prerequisite: MATH 095 or by placement test.

Textbook: (Purchase ACCESS CODE only from AUK eCampus Store)

Excursions in Modern Mathematics, Peter Tannenbaum, Pearson

Additional Resources: Lecture notes and practice worksheets will be posted on Moodle to supplement textbook and MyLab material.

Course Objectives:

This course is designed to help the student:

1. Appreciate mathematics and its rich history.
2. Develop an understanding of the mathematics of symmetry and motion in everyday life.
3. Become familiar with relationship between mathematics, geometry, and nature.
4. Understand growth and form through examination of number patterns that are arithmetic, geometric, and Fibonacci-like.
5. Apply the basic concepts of graph theory.
6. Explore different types of voting theory.

Student Learning Outcomes:

Upon successful completion of the course, students should be able to:

1. Perform reflections, rotations, translations, and glide reflections on two dimensional objects.
2. Understand and identify the different types of symmetry.
3. Understand the theories used in fractal geometry including the Koch Snowflake, the Sierpinski Gasket, and the Mandelbrot Set and how they can be evidenced in nature.
4. Find values using the Fibonacci numbers and relate these values to nature.
5. Describe a Fibonacci spiral, the golden ratio, and gnomonic growth.
6. Use graph modeling, including Euler's theorem, to accurately and beneficially solve problems in real life scenarios.
7. Understand different types of voting methods and their applications.

Methodology:

Classes will meet 3 days per week online/onsite depending on your student ID and the schedule determined by the Registrar. The material will be presented in live lecture form via Moodle – Zoom with topics taken from your text and supplemented through other sources. The material will also be presented via videos, PowerPoint Presentations and worksheets supplemented through MyLab. There will be evaluations/assessments, in-class, “online” OR take-home assessments that will be collected for grading. Assignments will be posted on MyLab – categorized as either “assignments” or “quizzes”.

OFFICE HOURS: SUNDAY, TUESDAY, THURSDAY : 08:40-09:00AM, 09:50-10:00, 11:50-01:00PM, 01:50-02:00PM ,02:50-03:10PM

Class Attendance:

The American University of Kuwait recognizes that class attendance is an important element of students' classroom success. Students are expected to attend all classes, laboratories, and/or required fieldwork. Because excessive absences prevent students from receiving full course benefit, and disrupt orderly course progress, AUK has established the following policy on class attendance:

Any student who misses MORE THAN 15% of class sessions of any course during a semester should expect to receive an (FN), unless s/he submits documented evidence to the course instructor of inpatient medical care, death of an immediate family member, academic instructional activities, or national athletic activities. If excused, students are required to satisfy all coursework due or assigned during their absence, as determined by the course instructor. If a student does not submit documented evidence for her/his absence exceeding the limit, it is the student's responsibility to withdraw from the course by the specified deadline, as indicated on the Academic Calendar. Students who withdraw from a course receive a grade of “W.” Students who do not withdraw from a course nor submit

supporting documents for excessive absences should expect to receive a grade of “FN” (failure for non-attendance).”

On-site Attendance: Depending on schedule, you are required to be present in class on the week designated for you to be on campus.

Online Attendance: Depending on schedule, you are required to be present online, with camera switched on the week designated for you to be online.

Students attending classes online must turn their cameras on at eye level, or risk being removed from the class session.

MASKS are to be worn properly all the time when on campus grounds. Repeated violations of the MASK policy will result in removal from class and/or campus.

Evaluation Standards:

Student evaluation will be based on the following performance criteria:

1. Correct use of concepts, laws, formulas, and principles.
2. Appropriate use of language, terminology, and nomenclature
3. Accuracy of language, calculations, and simplifications.
4. Adequate interpretation of solutions to problems.
5. Presentation of homework and assessments.

Assessment: The final grades for the semester will be weighted as follows:

Evaluation:

<u>Category</u>	<u>Weight</u>
MyLab Assignments, Participation	<u>15%</u>
<u>Assessments</u>	<u>40%</u>
<u>Projects</u>	<u>45%</u>

AUK Official Grading Scale:

Letter Grade	Percentage	University Points
A	94-100	4.0
A-	90-93	3.7
B+	87-89	3.3
B	84-86	3.0
B-	80-83	2.7
C+	77-79	2.3
C	74-76	2.0
C-	70-73	1.7
D+	67-69	1.3
D	64-66	1.0
D-	60-63	0.7
F	0-59	0.0

Calculator usage is allowed.

Note: To pass the course, your grade should be at least **60%**.

Disability Accommodations:

AUK provides equal and inclusive educational environment in order to enable all students to meet and perform requisite academic standards and to participate in the opportunities and activities of its community. If you believe you can benefit from accommodations for a learning, physical, or mental health disability, [click here to book a session through the Counseling Center/Disability Services Booking Page](#), to ask about disability services at AUK, initiate an accommodation plan, or receive disability services. You can also email counseling@auk.edu.kw if you need assistance in booking a session.

Academic Integrity:

Academic integrity is the foundation of an academic community and without it none of the educational goals of the university can be achieved. All members of the AUK community are responsible for its academic integrity. Existing policies forbid cheating on examinations, plagiarism and other forms of academic dishonesty. The current policies are described in the AUK Academic Honesty Policy available from Students Center.

Code of Academic Honesty and Integrity:

Upon admission to the American University of Kuwait, students agree to act responsibly in all areas of academic, personal and social conduct and to take full responsibility for their individual and collective action. Such regulations are found in the American University of Kuwait Catalogue, Student Handbook, and the AUK website at www.auk.edu.kw. Any question of interpretation regarding the code of academic honesty and Integrity shall be reported to the appropriate academic dean. The Code shall be reviewed annually at the discretion of the academic deans. Any student or student organization found to have committed the cited violations or misconduct, either on or off campus, is subject to the disciplinary sanctions outlined in adjudication procedures.

Plagiarism:

The term “plagiarism” includes, but is not limited to, an attempt of an individual to claim the work of another as the product of his or her own thoughts regardless of whether that work has been published. Plagiarism includes, but is not limited to, quoting improperly or paraphrasing text or other written materials without proper citation on an exam, term paper, homework, or other written material submitted to an instructor as one’s own work. Plagiarism also includes handing in a paper to an instructor that was purchased from a term paper service or downloaded from the Internet and presenting another person’s academic work as one’s own.

Cheating:

The term “cheating” includes but is not limited to, copying homework assignments from another student; working together with another individual on a take-home test or homework when not approved by the instructor, looking at and/or copying text, notes or another person’s paper during an examination when not permitted to do so. Cheating also includes the giving of work information to another student to be copied and/or used as his or her own. This includes but is not limited to giving someone answers to exam questions either when the exam is being given or after having taken an exam; informing another student of specific questions that appear or have appeared on an exam in

the same academic semester; giving or selling a term paper, report, project or other restricted written materials to another student.

Academic Support:

Learning Support Services focuses on empowering students to become independent and successful learners by developing their literacy skills, enhancing their understanding, and helping them improve their academic and study skills. Learning Support Services is comprised of two centers: the Tutoring Center and the Writing Center. The Tutoring Center provides free academic support in various subjects to AUK student. Email: tutoringcenter@auk.edu.kw.

The Writing Center provides multilingual support (English, Arabic, French, and Spanish) through individual or small-group consultations. Email: writingcenter@auk.edu.kw

Class Policies-

1. Participation and attendance are essential to your success in this class. Asking questions and keeping up with assignments will be critical to your understanding of material. It is the students' responsibility to find out about assigned tasks in the event they miss a lecture.
2. Be on time. Please make arrangements to log in early to avoid any connectivity issues. Lectures will be open 5 minutes before class is set to begin. If you are scheduled to attend on campus, please be on time.
3. In the case of an emergency, you may attend online. Please provide official documentation proving inability to be in class.
4. Every week an assignment or quiz will be submitted for grading. Assignments will be completed using **MyLab**. Guidelines will be emailed to clarify submissions and MyLab registration. **No late assignments** will be accepted. For "live"/ "real time" assessments/evaluations – no make-ups unless official medical documentation is provided or proof of inability to connect. Calculator usage is allowed throughout the semester for assignments, quizzes, and assessments.
5. All **assignments and quizzes** will be administered using the online service **MyLab**. This lab is directly connected to your textbook and provides a wide variety of services to students. You will have online access to your textbook, tutorials, and sample practice problems. Access to the service must be acquired within the first week of classes and is available to purchase online and through the AUK Bookstore.
6. **Academic Honesty:** If you submit work that you did not complete by yourself, or if you are caught cheating on an exam or a homework assignment, you will receive a grade of 0. You may also be subject to further disciplinary action, since such behavior is an offence under AUK's Student Code of Conduct (Section 4, Dishonesty and False Representation).
7. **Submission guidelines**
 - Messy, hard to follow work will not be graded.
 - Your name and student ID must be written on the work to be submitted. No name = no grade.
 - Online submissions of Assessments must be in PDF format sent by email. Download an app called CamScanner or ScanBot to convert photos into PDFs.
8. **Three Assessments** will be given this semester – the first will be on campus as per the Registrar's schedule and the second and third will be split into two parts – online/take-home and in-class examinations. The assessments may be in the format of "live"/ "real time assessment" online or on campus. Missing a "live"/ "real time" assessment will result in a grade of **zero, unless official documentation is provided.**
9. Check your emails regularly, all communication and announcements are made via email.
10. Please email me during business hours – (8AM-5PM) and expect a reply within 24 business hours.
11. To schedule meetings during my office hours – email me 24 hours in advance to schedule an appointment. Once I receive your request, a link for the meeting will be sent.
12. Effective eLearning requires the following:

- Steady internet connection.
- Computer, laptop, or tablets. Phones can be used as a backup.
- Microphones and headsets.
- Cameras.
- A quiet space.
- Other requirements as indicated by the instructor.

13. Video-recording of class sessions (by instructors and/or students) is prohibited.

14. The privacy of the session is to be maintained (no other members of the household should be available during the session).

15. Professional physical appearance is expected during online classes. All participants in the online class should ensure proper attire and setting (blurred background can be used to accommodate settings).

16. Please be sure to use your official AUK email account, write your full name, and indicate which class and section you are taking (**Class ###, DAY/TIME section**) when you send me an email. If you have a question, please check the syllabus first and if your question is not answered there, then please feel free to send an email and I will be happy to clarify. I respond to questions **via email** within 24 hours of receiving them.

17. The projects will be submitted on Turn It In via Moodle. For every day it is submitted late, 10% will be deducted from the final grade. For a similarity percentage greater than 29%, 10% will be deducted for every additional 10% increment. For a similarity percentage greater than 50%, the project will not be graded and a zero will be recorded.

18. Technology Issues:

All assessments/projects must be submitted through Moodle. However, you may experience trouble submitting due to technology or internet issues. If such a situation does arise and you are unable to submit your assignment through Moodle, please send me an email at Ltaha@auk.edu.kw and include the **completed** assignment. Please make sure that you email the assignment **before** the deadline as this documents that you did finish everything by the due date and time, but that you had a technology issue. This will ensure that your submission will be accepted, and you will not **[receive a late penalty/get a 0, etc.]**. Once the technology or internet issue is resolved, please upload the submission to Moodle. In general, always be sure to frequently save your files and keep backups of your assignments.

Receipt of Course Syllabus MATH 102

I (Print your Name) Student ID have registered for MATH 103, *I have received a copy of the Course Syllabus.*

I know that the Language of Instruction at AUK is English. If I have problems understanding a technical term used in math I will refer to the text's glossary. If having done this I still fail to understand then I will ask for an explanation of the meaning. All my conversations and submissions will be conducted and written in English.

I understand that I can reach the instructor via e-mail, and that I can virtually meet with the instructor by appointment. I also understand that should I have *any* doubt about requirements in this course *I am responsible for seeking clarification.*

I know that all written communication to and from the instructor regarding this course will be handed out in class or sent via my AUK e-mail. I understand that I must check my AUK e-mail regularly (i.e. before every class) for any important information about this course sent to me from the instructor. I note that failure to check my e-mail does not constitute an excuse for lack of information, misunderstanding, etc.

I know that I am responsible for learning. I will be present in class during the week that permits me to be on campus (determined by Registrar)

I know that virtual attendance is expected. I know that a poor virtual attendance record may result in a lower course grade.

I know that participation is different from virtual attendance. I must come to class prepared, ready and willing to ask and answer questions relevant to the topic at hand. I must bring the course textbook/learning portfolio, a calculator and my own writing materials to take notes during the class.

I know that I am free to raise questions at any time, but that I must show courtesy to my peers and instructor. I must behave as a professional. I understand that disruptive behavior in class is not acceptable. I know that Mobile phones are to be turned off during class and that cell/mobile phones are not allowed during assessments.

I know that I must take assessments when they are scheduled. I know that no make-up assessments will be given, nor will additional projects be assigned to increase a grade before or after an exam or quiz, or at the end of the semester.

I know that students caught cheating, or using a mobile phone will get an "F" for that assessment.

I have been given a copy of this statement for my retention and future reference.

I know cameras must be switched on. I must be seated in a quiet place. I will not record any part of the session and respect my peers' and instructor's privacy.

Effective eLearning requires the following:

- Steady internet connection.
- Computer, laptop, or tablets. Phones can be used as a backup.
- Microphones and headsets.
- Cameras.
- A quiet space.
- Other requirements as indicated by the instructor.

Video-recording of class sessions (by instructors and/or students) is prohibited.

The privacy of the session is to be maintained (no other members of the household should be available during the session).

Professional physical appearance is expected during online classes. All participants in the online class should ensure proper attire and setting (blurred background can be used to accommodate settings).

Course objectives, expectations and the grading policy have been explained.

Students attending classes online must turn their cameras on at eye level, or risk being removed from the class session.

MASKS are to be worn properly all the time when on campus grounds. Repeated violations of the MASK policy will result in removal from class and/or campus.

Signature

____/____/____

Date

Spring 2022 Schedule *		
Week	Odd University ID numbers (ending with 1, 3, 5, 7, 9) For example: S00012345	Even University ID numbers (ending with 0, 2, 4, 6, 8) For example: S0003456
September 26-30	Online (All Students)	
October 3 - 7	On-campus	Off Campus: Online study only
October 10-14	Off Campus: Online study only	On-campus
October 17-21	On-campus	Off Campus: Online study only
October 23	Online (All Students)	
October 24-28	Off Campus: Online study only	On-campus
October 31 – November 4	On-campus	Off Campus: Online study only
November 7-11	Off Campus: Online study only	On-campus
November 14- 18	Midterm Exams – on campus	Online learning
November 21-25	Online Learning	Midterm Exams – on campus
November 28 – December 2	Off Campus: Online study only	On-campus
December 5- 9	On-campus	Off Campus: Online study only
December 12-16	Off Campus: Online study only	On-campus
December 19-23	On-campus	Off Campus: Online study only
December 26-30	Winter break – University Closed	
January 2- 6	Off Campus: Online study only	On-campus
January 9-13	On-Campus	Off Campus: Online study only
January 16-20	Final exams -On Campus (All Students)	
*Schedule is subject to change per Private Universities Council decisions		
Online Classes will be held in real time, i.e. synchronously, according to class schedule. Moodle , the university's mandated learning management system (LMS) is the main gateway to access online		

- Students who have special medical cases preventing them from physically attending classes are requested to submit a medical report certified by the Ministry of Health to the office of the registrar by email: registrar@auk.edu.kw.
- International students who are still abroad are advised to secure their return to Kuwait as soon as possible. Any complications regarding your return to Kuwait will be addressed by the Office of the Registrar on a case-by-case basis.

Course Topics - Math 102: Introduction to Modern Mathematics

Ch. 1-The Mathematics of Elections

Sections:

1. The Basic Elements of an Election
2. The Plurality Method
3. The Borda Count Method
4. The Plurality with Elimination Method
5. The Method of Pairwise Comparisons
6. Fairness Criteria

Ch. 5-The Mathematics of Getting Around

Sections:

1. Street Routing Problems
2. An Introduction to Graphs
3. Euler's Theorems & Fleury's Algorithm
4. Eulerizing and Semi-Eulerizing Graphs

Ch. 11-The Mathematics of Symmetry

Sections:

1. Rigid Motions
2. Reflections
3. Rotations
4. Translations
5. Glide Reflections
6. Symmetries and Symmetry Types
7. Patterns

Ch.12-Fractal Geometry

Sections:

1. The Koch Snowflake and Self-Similarity
2. The Sierpinski Gasket and the Chaos Game
3. The Twisted Sierpinski Gasket
4. The Mandelbrot Set

Ch.13-Fibonacci Numbers and the Golden Ratio

Sections:

1. Fibonacci Numbers
2. The Golden Ratio
3. Gnomons
4. Spiral Growth in Nature

