

Self-Paced Degree Program

MATH 105 - WA College Mathematics with Applications

Web-Based General Education Course Syllabus

INSTRUCTOR INFORMATION

Instructor Name: James Cliber

UIU faculty email: cliberj@uiu.edu

Telephone Number: 515-294-2510 CST

Availability: My office hours are Monday, Tuesday, Thursday, and Friday from 9:00 am to 10:00 am (Central Time). If you are unable to call during office hours you can leave a message and make an appointment.

I read messages daily and will respond within 24 hours.

If you need to contact Upper Iowa University, please call the toll free number: (800)553-4150

COURSE DESCRIPTION

Course Meeting Place: uiuLearn

Credits: 3 semester credits

Catalog Course Description: This course is a survey of mathematical applications of functions. Topics that will be covered include: fundamental concepts of algebra, algebraic equations and inequalities; functions and graphs; zeros of polynomial functions; exponential and logarithmic functions; systems of equations and inequalities. The mathematics of personal finance will also be studied.

Prerequisites: Prerequisite: Pass MATH 095 or ACT math score \geq 19 or an alternative placement mechanism as approved by the math department or instructor approval.

COURSE OBJECTIVES

- 1. Demonstrate an understanding of mathematical concepts and terminology as evidenced by the ability to utilize this information to solve both computational and application problems. Expectations apply, but are not limited to, the major skills of this course as listed below:
 - Solve linear equations in one variable.
 - Add, subtract, multiply and divide polynomials and utilize this skill in solving equations.
 - Simplify expressions with rational and negative exponents, as well as associated radicals.
 - Graph equations that are linear, quadratic and other various types.
 - Identify equations of linear functions using the slope-intercept and points-slope formulas.
 - Solve systems of equations via graphing, substitution, and elimination methods.

- Solve linear inequalities and related practical problems.
- Demonstrate knowledge of domain, range and graphing functions.
- Graph quadratic functions and find maxima and minima.
- Use logarithmic functions to solve practical problems.
- 2. Apply mathematical concepts and terminology to analyze numerical data, interpret results, compare options, propose solutions and make effective decisions in situations requiring quantitative thinking skills.
- 3. Utilize logic, reasoning, critical thinking skills and problems solving strategies in the fields of mathematics, sciences, social sciences and business.
- 4. Acquire fundamental knowledge and skills which are needed for success in related courses and careers that require quantitative analysis.

COURSE MATERIALS

As a student, it is solely your responsibility to make sure that you have access to all required course materials by the start of the term.

Ordering Textbooks

You may purchase your textbooks through MBS Direct: Toll free: (800) 325-3252. Please refer to this website for specific textbook information <u>http://bookstore.mbsdirect.net/uiu.htm</u>

Required Textbooks

Lial, M., Hungerford, T., & Holcomb, Jr., J. (2015) *Mathematics with applications* (11th ed.). Pearson. ISBN: 9780321931078.

Required Resources

- As a minimum, a scientific calculator, such as the TI-30 X IIS, or equivalent, is required. Graphing calculators are encouraged.
- Word processing software with an Equation Editor capability such as Microsoft Word or Open Office.
- A reliable graphing utility that has the capability to be inserted into word-processed documents.

COURSE EXPECTATIONS

Refer to myUIU for your official enrollment term and enrollment period.

Email: You are required to use your official UIU issued email account.

Computer and Internet: You are responsible for ensuring that you have a reliable up-to-date computer, updated virus protection, and Internet connection to access the course materials and complete course activities. You need to make alternate arrangements in case of unexpected computer and Internet problems.

Backup: Remember to regularly back up course files to avoid data loss in the event of hardware failure or user error.

You have six months from the date of your enrollment to complete this course. You should begin work on the course immediately upon enrollment and start submitting lessons for grading and evaluation in a timely manner. If no course work has been submitted within the first two months, an administrative withdrawal will be processed.

GRADES & FEEDBACK

You will receive your graded units within three days from the date you submit them. If there is a delay, please contact me as soon as possible. After receiving the graded feedback, review and contact me immediately with any questions.

GENERAL EDUCATION TASK

Task Statement

Apply mathematical problem solving skills to a variety of problems at the college level.

Task Assignment

To accomplish this task, you will

- 1. Identify what you are given and what you need to find.
- 2. Identify the type of problem you have been given and the tools necessary to solve the problems.
- 3. Correctly apply the tools to the information given to set up the problem.

Perform mathematically correct calculations to determine a solution.

Task

A new farm pond was stocked with 2500 crappies in 2003. The crappie population in 2006 was found to be 4320.

- a. Let *t* be the number of years after 2003 (in other words *t*=0 corresponds to 2003). Write the initial crappie population at *t*=0.
- b. Find the growth function of the form $f(t)=y(0)b^t$ that gives the crappie population t years after 2003.
- c. Predict the crappie population in 2010.
- d. In what year will the crappie population reach 13,000? Give the exact value for *t* and then use your calculator to approximate *t* to get the years.

Are your answers for c and d consistent with the given population data in your answer for b?

COURSE REQUIREMENTS AND GRADING CRITERIA

The course is completely developed in uiuLearn and consists of 8 units. All course materials will be available and all work should be completed in uiuLearn. Completion of a unit will release the subsequent unit. Even though you do not attend a regular classroom in the traditional sense and keep up with a set schedule of assignments, it is important to maintain a regular schedule, if possible, to complete all course work. It is too easy to set work aside and decide to do it later.

Student Autobiography

Student Autobiography is the first assignment in Unit 1. *Example*: Since we may never have the opportunity to meet face to face, I would like to know a little bit about you. Please provide the following information and tell me about yourself (i.e. - your educational aspirations, employment, family, hobbies). Submit this autobiography as an MSWord document to the Student Autobiography Dropbox under Unit 1 in uiuLearn.

Assignments

The course is divided into eight units and each unit has a set of assignments. These assignments consist of Readings from the textbook; a list of Lecture Notes for further study and examples; and a series of ten Study Problems to provide practice in the concepts and skills covered in the readings and Lecture Notes. Each problem will garner five points each.

Quizzes

During units 1, 2, 3, 4, 6, & 7 you will complete a quiz that covers the content reviewed.

Midterm Examination:

There will be a Midterm Examination. It will be given in Unit 5 and will cover all of the material in Units 1 through 5 and it will consist of 25 multiple choice problems. You will have three (3) hours to complete the exam. Each problem will garner four points so the Midterm Examination is worth 100 points.

Final Assessment

There will be a Final Examination. It will be given in Unit 8 and will cover all of the material in the course. It will consist of 25 multiple choice problems. You will have three (3) hours to complete the exam. Each problem will garner eight points so the Final Examination is worth 200 points.

Grading Criteria

The course letter grade will be based on the following grading criteria.

Activity	Points
Student Autobiography	20 (Extra Credit)
Study Problems (8 at 50 pts each)	400
Quizzes (6 at 50 pts. each)	300
Midterm Assessment	100
Final Assessment	200
Total	1000

Grading Scale

This course uses the A, B, C, D, and F grades.

Letter Grade	Percent	Points
А	90-100%	900-1000
В	80-89%	800-899
С	70-79%	700-799
D	60-69%	600-699
F	0-59%	0-599

COURSE SCHEDULE

Unit	Topics of Study	Activities	Assessments
Unit 1	Real Numbers	Review	Complete
	Polynomials	Course Syllabus	Student's Autobiography
	Factoring	About the Instructor	Study Problems
		Pages 1-8	Quiz
		Pages 11-15	
		Pages 18-23	
		Linked Lecture Notes	
Unit 2	Rational Expressions	Pages 24-29	Study Problems
	Exponents and Radicals	Pages31-40	Quiz
	1 st Degree Equations	Pages 43-49	
	Quadratic Equations	Pages 52-58	
		Linked Lecture Notes	
Unit 3	Graphing	Pages 65-71	Study Problems
	Equations of Lines	Pages 75-84	Quiz
	Linear Models	Pages 87-89	
	Linear Inequalities	Pages 95-100	
		Linked Lecture Notes	
Unit 4	Functions	Pages 115-121	Study Problems
	Graphs of Functions	Pages 123-130	Quiz
	Linear Applications	Pages 134-141	
		Linked Lecture Notes	
Unit 5	Quadratic Functions	Pages 145 through 154	Study Problems
	Polynomial Functions	Pages 158 through 165	Midterm Assessment
	Rational Functions	Pages 168 through 173	
		Linked Lecture Notes	
		Study Units 1 and 5	
Unit 6	Exponential Functions	Pages 183 through 189	Study Problems
	Exponential Applications	Pages 194 through 196	Quiz
	Logarithmic Functions	Pages 200 through 206	
	Logarithmic Applications	Pages 209 through 215	
		Linked Lecture Notes	
Unit 7	Two-Variable Systems	Pages 271 through 275	Study Problems
	Matrix Operations	Pages 298 through 303	Quiz
	Matrix Inverses	Pages 305 through 314	
Unit 8	Three-Variable Systems	Pages 277 through 285	Study Problems
		Linked Lecture Notes	Final Assessment
		Study Units 1 through 8	

LIBRARY RESOURCES

See the *Library Resources* section in uiuLearn.

TECHNICAL SUPPORT

Contact the UIU IT helpdesk for assistance with your UIU email and myUIU access. You can call 563-425-5876, email <u>helpdesk@uiu.edu</u> or visit <u>www.uiu.edu/helpcenter</u>.

You may contact uiuLearn 24X7 support for technical questions regarding your web-based course. Click "uiuLearn Tools" in the upper-right corner of your course and select "Help" in the drop down menu for more information.

ACADEMIC ACCOMMODATIONS

It is the policy of Upper Iowa University to ensure equal access to educational and co-curricular activities to students with disabilities as mandated by the Americans with Disabilities Act Amendments Act (ADAAA) and Section 504 of the Rehabilitation Act of 1973. A student seeking accommodations should contact the Director of Disability Services (DDS) as early in the term as possible. In order to receive accommodations, students must disclose their disability to the DDS by completing a *Voluntary Disclosure Form*, as well as providing appropriate documentation. The Voluntary Disclosure Form is available in the DDS' office or online at www.uiu.edu/disability services. Students will be given a *Request for Accommodations Contract* during their initial appointment with the DDS. **This appointment will be in person for** Fayette campus students and over the phone for Center, Online, and Self-Paced students. It is the student's responsibility to provide the instructors with a copy of the *Request for* Accommodations Contract. (For Center or online students, these contracts are emailed out to instructors by the DDS for the student). Additionally, students should work cooperatively with their instructors throughout the term to make sure that appropriate accommodations are being made. You can contact the DDS at (563) 425-5949, disabilityservices@uiu.edu, or stop by the office in the Student Center, Office of Student Development, Room 229.

USE OF ENCYCLOPEDIA IN WRITING

Encyclopedias of any kind, including the very popular Wikipedia, can be useful to help gather background information and to point the way to more reliable sources. However, they are not considered appropriate sources for papers at the graduate or undergraduate level.

WRITING PROFICIENCY

You are required to use the APA Manual, 6th ed., as a writing guide. All sources used in your papers must be cited where appropriate in the text of your work and in a reference list at the end of your work.

CHEATING, ACADEMIC DISHONESTY AND PLAGIARISM

Because cheating, academic dishonesty and plagiarism constitute a denial of the University's and the offender's own integrity, they will not be tolerated.

Cheating includes, but is not limited to:

- The use of unauthorized books, notes or other sources in the giving or securing of help in an examination or other course assignments.
- The copying of other students' work or allowing others to copy your work. The submission of work that is not your own or allowing others to submit your work as theirs,
- The submission of the same work for two or more classes without the approval of any instructors involved.

Academic dishonesty includes, but is not limited to:

- Sharing academic materials knowing they will be used inappropriately,
- Accessing another person's work without permission,
- Providing false or incomplete information on an academic document,
- Changing student records without approval,

• Obtaining and using texts or other materials intended for instructor use only. **Plagiarism** includes, but is not limited to:

• The presentation of another's published or unpublished work as one's own,

- Taking words or ideas of another and either copying them or paraphrasing them without proper citation of the source,
- Using charts, graphs, statistics or tables without proper citation.

Detected cheating or plagiarism will result in consequences that may, at the professor's discretion, include course failure. In addition, an offender can be reported to the Faculty/Student Conduct Board for possible further disciplinary action. www.uiu.edu/policies

WITHDRAWAL (W)

Withdrawing from classes is an expensive decision and may change the amount of, or eligibility to receive, financial aid. Your academic advisor is available to discuss this decision with you. A grade of W (withdrawal) is recorded for any course from which a student withdraws.

ADMINISTRATIVE WITHDRAWAL (AW)

A grade of AW (administrative withdrawal) is recorded for any course from which a student is administratively withdrawn. At least one complete assignment must be submitted within the first 60 days of the enrollment period or the student will be administratively withdrawn from the course.

INCOMPLETE/EXTENSION

Students who are enrolled in self-paced courses will be allowed to request one four-month extension and receive an 'I' (incomplete grade) at the end of their original six month enrollment period if:

- A minimum of one assignment has been received for grading per guidelines **AND**
- All course units and exams are not completed and submitted **OR**
- A course withdrawal has not been initiated

Incomplete grade details:

- When the extension is granted and an incomplete grade is issued, the student will receive a four-month enrollment period to complete the course.
- Students do not have the option to withdraw from a course after the initial six-month enrollment period.
- An 'I' grade posted to the student's official record will be replaced with a final letter grade; however, the incomplete will remain on the official transcript as a notation.
- If the course is not completed by the end of the incomplete/extension period, the instructor will assign a final grade (A-F) based on work completed in relation to the total course requirements.
- After that point, credit may be earned only by reenrolling and repeating the course in its entirety.

Note: Students are not reported as enrolled during the incomplete/extension period and are not eligible for student loan deferment.

The fee for a self-paced extension is \$99 per course. To request an extension, the "Self-Paced Course Extension Request" form must be completed and returned to the Self-Paced department. The form can be found at <u>https://my.uiu.edu</u> (Academics Tab under Student Forms). The request for an extension and payment must be submitted no earlier than one month before the end of the course

and no later than a week before the end of the course. Please see page 40 of the Academic Catalog for more information regarding the Incomplete/Extension guidelines. **If you do not request and pay for an extension, a final grade will be issued for the course based on coursework received by the original course end date.**

If you do not wish to use the extension option and will not be able to finish your Self-Paced class by the original six-month end date, you can submit a course withdrawal form before the course end date if you wish to withdraw from the course. The amount of the course refund is determined by the number of lessons submitted as compared to the total due. Please see page 38 of the Academic Catalog for more information on the refund policy.

COPYRIGHT PROTECTION

In recognition of the Copyright Law of the United States (Title 17, United States Code), Upper Iowa University reminds both faculty members and learners that a willful infringement of the law may result in disciplinary action. The University library has available materials discussing the "fair use" concept, along with criteria and guidelines for reproduction and use of copyrighted materials.

This syllabus is tentative and subject to change.

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