MATH125

Course Summary

Course : MATH125 **Title :** Math for Liberal Arts Majors
Length of Course : 8
Prerequisites : N/A **Credit Hours :** 3

Description

Course Description: THIS COURSE DOES NOT FULFILL MATH PREREQUISITE REQUIREMENTS IN SCIENCE PROGRAMS. STUDENTS IN AS OR BS PROGRAMS OR IN PROGRAMS THAT REQUIRE MATH302 SHOULD TAKE MATH110 OR HIGHER AS THEIR MATH GEN ED UNLESS CLEARED WITH ACADEMIC ADVISOR FIRST. This course examines various mathematical concepts and problem solving techniques and provides mathematical functional literacy for those majoring in non-technical subject areas such as intelligence, military history, economics, and management. Students will learn how to solve a wide variety of problems from such areas as: mathematical thinking; logic; number theory and real numbers; introduction to algebraic equations, inequalities, and problem solving; functions and graphs; geometry; mathematical systems and matrices; sophisticated counting techniques; consumer math; and an introduction to probability and statistics. This course is principally a problem-solving course where students learn how to solve a wide variety of mathematical problems, rather than a conceptual course where problem solving is not emphasized.

Course Scope:

MATH125 is a distance learning course designed to help students achieve a greater understanding of the mathematical concepts and problem solving techniques important for their college work. It covers a variety of mathematical concepts and techniques relevant to non-technical applications both in college and in a career. The course provides an excellent overview of contemporary mathematical concepts for those majoring in non-technical subject areas such as intelligence, military history, economics, and management and satisfies the general education math requirement in non-technical subject areas. Topics that are covered include mathematical reasoning as it relates to problem solving; algebraic concepts used in solving problems with ratio, proportion, and variation; solving systems of linear equations; real- world application of functions and associated graphing; measurement techniques and application to problems that involve geometrical shapes and figures; probability and counting techniques; basic concepts, terms, and calculations associated with statistical methods; and understanding interest, loans, home mortgages, and investment terms and calculations.

Objectives

After successfully completing this course, you will be able to:

CO-1 Analyze problems using inductive reasoning, deductive reasoning, conjecture , pictorial graphs and diagrams to arrive at a general conclusion based on observation of specific examples;

CO-2 Apply set operations to solve real-world problems;

CO-3 Solve real-world problems using algebraic concepts such as linear equations, ratios, proportions and variation;

CO-4 Solve systems of linear equations using graphical and algebraic techniques

CO-5 Solve problems involving credit card interest and annuity payouts;

CO-6 Analyze the financial process of buying a house and the purchase of stocks and bonds;

CO-7 Convert units of measure including the Metric System;

CO-8 Use the geometry of points, lines, planes, and angles to find angle measure;

CO-9 Use geometric techniques such as similar triangles, the Pythagorean Theorem, perimeters, area, and volume to solve real-world problems

CO-10 Solve problems using right triangle trigonometry;

CO-11 Compute the number of ways in which complicated events can occur without actually counting them through the use of the fundamental counting principle, permutations, combinations, tree diagrams and tables;

CO-12 Compute probabilities, odds, and expected values of outcomes

CO-13 Compute measures of average, variation and position;

CO-14 Use the characteristics of a normal distribution to find percentages, probabilities, and percentile ranks.

Outline

Week 1: Problem Solving and Set Theory

Learning Objectives

CO-1: Analyze problems using inductive reasoning, deductive reasoning, conjecture , pictorial graphs and diagrams to arrive at a general conclusion based on observation of specific examples;

CO-2: Apply set operations to solve real- world problems.

Readings

Text Readings:

Sobecki and Bluman**,** Chapter 1, Sections 1.1,

1.2, and 1.3; Chapter 2, Sections 2.1, 2.2, 2.3, and 2.4

In Course Materials:

Week 1: Problem Solving and Set Theory

Connect – Unit 1, Sections 1.1, 1.2, and 1.3 and Sections 2.1, 2.2, 2.3, and 2.4

This Week's Tasks

Classroom

Assignment: Honor Pledge
Forum: Post to Forum #1
Assignment: Test #1 Critique

Connect

Homework: Unit 1
Test: Unit #1 Test

Week 2: Algebra

Learning Objectives

CO-3: Solve real-world problems using algebraic concepts such as linear equations, ratios, proportions and variation; and

CO-4: Solve systems of linear equations using graphical and algebraic techniques.

Readings

Text Readings: Sobecki and Bluman**,** Chapter 6, Sections 6.1, 6.2, 6.3, and 6.4 and Chapter 7, Sections 7.1 and 7.2

In Course Materials:

Week 2: Algebra

Connect – Unit 2, Sections 6.1, 6.2, 6.3, and 6.4 and Sections 7.1 and 7.2

This Week's Tasks

Classroom

Forum: Post to Forum #2
Assignment: Test #2 Critique

Connect

Homework: Unit 2
Test: Unit #2 Test

Week 3: Consumer Math

Learning Objectives

CO-5: Solve problems involving credit card interest and annuity payouts

CO-6: Analyze the financial process of buying a house and the purchase of stocks and bonds.

Readings

Text Readings: Sobecki and Bluman**,** Chapter 8, Sections 8.1, 8.2, 8.3, 8.4, 8.5, and 8.6

In Course Materials: Week 3: Consumer Math

Connect – Unit 3, Sections 8.1, 8.2, 8.3, 8.4, 8.5, and 8.6

This Week's Tasks

Classroom

Forum: Post to Forum #3
Assignment: Test #3 Critique

Connect

Homework: Unit 3
Test: Unit #3 Test

Week 4: Measurement and Geometry I

Learning Objectives

CO-7: Convert units of measure including the Metric System

CO-8: Use the geometry of points, lines, planes, and angles to find angle measure.

Readings

Text Readings: Sobecki and Bluman**,** Chapter 9, Sections 9.1, 9.2 and 9.3 and Chapter 10, Sections 10.1, 10.2, and 10.3

In Course Materials: Week 4: Measurement and Geometry I

Connect – Unit 4, Sections 9.1, 9.2 and 9.3 and Sections 10.1, 10.2, and 10.3

This Week's Tasks

Classroom

Forum: Post to Forum #4
Assignment: Test #4 Critique

Connect

Homework: Unit 4
Test: Unit #4 Test

Week 5: Geometry II and III

Learning Objectives

CO-9: Use geometric techniques such as similar triangles, the Pythagorean Theorem, perimeters, area, and volume to solve real-world problems; and

CO-10: Solve problems using right triangle trigonometry.

Readings

Text Readings: Sobecki and Bluman**,** Chapter 10, Sections 10.4, 10.5 and 10.6

In Course Materials: Week 5: Geometry II and III

Connect – Unit 5, Sections 10.4, 10.5 and 10.6

This Week's Tasks

Classroom

Forum: Post to Forum #5
Assignment: Test #5 Critique

Connect

Homework: Unit 5
Test: Unit #5 Test

Week 6: Probability

Learning Objectives

CO-11: Compute the number of ways in which complicated events can occur without actually counting them through the use of the fundamental counting principle, permutations, combinations, tree diagrams and tables

CO-12: Compute probabilities, odds, and expected values of outcomes.

Readings

Text Readings: Sobecki and Bluman**,** Chapter 11, Sections 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, and 11.8

In Course Materials: Week 6: Probability

Connect – Unit 6, Sections 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, and 11.8

This Week's Tasks

Classroom

Forum: Post to Forum #6
Assignment: Test #6 Critique

Connect

Homework: Unit 6
Test: Unit #6 Test

Week 7: Statistics

Learning Objectives

CO-13: Compute measures of average, variation and position

CO-14: Use the characteristics of a normal distribution to find percentages, probabilities, and percentile ranks.

Readings

Text Readings: Sobecki and Bluman**,** Chapter 12, Sections 12.1, 12.2, 12.3, 12.4, 12.5, 12.6 and 12.7

In Course Materials: Week 7: Statistics

Connect – Unit 7, Sections 12.1, 12.2, 12.3, 12.4, 12.5, 12.6, and 12.7

This Week's Tasks

Classroom

Forum: Post to Forum #7
Assignment: Test #7 Critique

Connect

Homework: Unit 7
Test: Unit #7 Test

Week 8: Course Review and Final Examination

Learning Objectives

CO-1 through CO-14

Readings

In Course Materials: Week 8: Final Exam

Connect – Unit 8, Chapters 1, 2, 6, 7, 8, 9, 10, 11, and 12

This Week's Tasks

Classroom

Forum: Post to Forum #8
Assignment: Final Exam Critique

Connect

Test: Final Exam

Evaluation

Reading Assignments:

Please refer to the Course Outline section of this syllabus for the weekly reading assignments. While reading assignments are not graded, it is very important that you read the assigned material and work practice problems as necessary and appropriate.

Supplemental Readings:

Online lectures keyed to the textbook chapters are provided in the Connect application. The Connect link will appear near the bottom of the list of tools. Once clicked, a pop-up window will open and silently log the student into the Connect site where work can begin without having to login or type in credentials.

Forum Assignments:

The forums are designed for students to provide information and ask questions on course content for the week. Your forum posts must meet the minimum requirement for the number of posts and the content for that assignment. These forums should not be used to discuss specific exam questions, but can be used to ask questions relative to practice exercises, practice tests, and textbook problems.

Three significant posts are required per forum. Posts should be made as indicated in the forum instructions. Be sure to click on the link "Read Full Description" so that you will be familiar with each forum requirement and the grading rubric. (A significant post generally contains at least 100 words—single sentence responses such as "Now I understand" or "Thank you for your help" do not constitute significant posts.)

Grading for each forum will follow the point structure outlined in the description for each forum.

Introductory Forum: It is very important that you submit and participate in the Introduction Forum. Please introduce yourself to me and the class. Share where you work or plan to work after completing your program, your family, and any hobbies or special interests. Also tell us why you are taking this course and what you hope to gain from obtaining your degree. In addition, please take a look at the course objectives in the syllabus and discuss the relevance to your career goals.

<u>Instructions</u>: Your initial post should be at least 250 words. Please respond to at least 2 other students. Responses should be a minimum of 100 words. This forum submission serves as your official entry into the course and this is why we have drawn special attention to this assignment. You will be reminded of this Forum again in the Week 1 Lesson Module, but please keep in mind that this Introduction Forum must be submitted by 11:55 p.m., ET, on Sunday of Week 1 to maintain your registration in the course.

Homework Assignments and Practice Tests:

Homework assignments are contained in Connect. Please be sure to ask each other (and/or your professor) questions about homework problems, practice test questions or other textbook material in the Open Questions Forum! Please do not divulge only answers, but provide assistance in developing solutions for problems as well. This will help you learn through explaining and help your classmates find where they are missing the point. Teamwork is encouraged in working homework problems so that you can learn through sharing problem- solving techniques. If you are unsure of a problem, please ask about it in the Open Questions Forum so that everyone can share in the conversation.

Unit Tests:

Unit tests are contained in Connect. Please complete each test by the due date noted in the syllabus, in the classroom and in Connect. These are open-book and open-note tests, but are not collaborative efforts. They are timed, so be sure that you have the appropriate time available before you enter each test. You will have three attempts to take each unit test except Unit 8 - the Final Exam. You will report your test grade and critique your performance in the Assignment section of the classroom. This is required in order for your grade to be posted.

Final Exam:

The final exam will be completed during the last week of the term. It is a three-hour online exam in Connect. The final exam will be open-book and open-notes *but you may not receive* <u>*help from anyone*</u>. The final will consist of all material covered during the term. You will not need a proctor to take the final exam. Since this is a timed exam, be sure that you have the appropriate time available before you enter it. The Final is a single-access exam. Once you have accessed the exam, you must complete it in its entirety or it will time out and give you a grade based on the material that you have completed.

Late Assignments:

Students must plan and manage competing demands and priorities on their time and are expected to submit classroom assignments on time. The instructor will post assignment due dates and times in the Weekly Announcements.

Students are expected to submit assignments by the posted due date and to complete the course according to the published class schedule. Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days. For late assignments, students need to contact the faculty member ahead of time about their individual situation.

This late policy does not apply once the class semester has ended. All assignments, unit tests, and exams must be submitted by the last day of class unless you have an approved course extension.

Grading.

The points earned on the graded course assignments will determine the course grade. The final grade in the course will be based on total points.

Students' course grades will be posted as soon as the instructor receives and evaluates the Final Exam. Official grades will continue to be issued by the University on the grade report form. Instructors have 7 days from the end of the semester to submit their grades to the University.

Grading:

Name	Grade %
Academic Integrity	1.00 %
Academic Integrity - Honor Pledge	1.00 %
Homework	16.00 %
Homework: Connect Math	16.00 %
Unit Tests	48.00 %
Unit 2 Test	6.86 %
Unit 3 Test	6.86 %
Unit 4 Test	6.86 %
Unit 5 Test	6.86 %
Unit 6 Test	6.86 %
Unit 7 Test	6.86 %
Unit 1 Test	6.86 %
Final Exam	20.00 %
Unit 8 - Final Exam	20.00 %
Forums	16.00 %
Forum #1	2.00 %
Forum #2	2.00 %
Forum #3	2.00 %
Forum #4	2.00 %
Forum #5	2.00 %
Forum #6	2.00 %
Forum #7	2.00 %
Forum #8	2.00 %

Materials

Book Title: Math in Our World, 3rd. Ed. - The VitalSource e-book is provided via the APUS Bookstore; Connect access provided inside the classroom

Author: Sobecki

Publication Info: McGraw-Hill

ISBN: 9780073519678

Book Title: You must validate your cart to get access to your VitalSource e-book(s). If needed, instructions are available here - http://apus.libguides.com/bookstore/undergraduate

Author: N/A

Publication Info: N/A

ISBN: N/A

All students have access to the e-Book; a copy is available through Vitalsource, and instructions on how to access it is available in the "Lessons" link under Readings and Resources for each unit.

Connect, a system that provides personalized instruction for students and access to the e-Book, will be provided via a link on the left-hand side of the page on the navigation bar. It will appear near the bottom of the list of tools. Once registered, the student can click on the link in the navigation bar, a pop-up window will open and silently log the student into the Connect site where work can begin without having to login or type in credentials.

Students will need a calculator (either a physical calculator or an online calculator) to successfully complete this course. The calculator should include a memory, square root, and simple trig functions. At the student's discretion, a scientific calculator capable of performing statistical functions or a computer spreadsheet program like Microsoft Excel may be used.

Students may make use of the above for all graded assignments and exams during the course.

In addition to the required course texts, the following public domain websites are useful. Please abide by the university's academic honesty policy when using Internet sources as well. Also website addresses are subject to change.

Web Sites:

In addition to the required course texts, the following public domain web sites are useful. Please abide by the university's academic honesty policy when using Internet sources.

Mathematics Videos	http://www.apus.edu/media/mathWV/index.htm
Calculator Website	http://www.calculator.com
The Khan Academy	http://www.khanacademy.org/
Purple Math	http://www.purplemath.com/
Video Tutorials by APUS	Video Tutorials

Course Guidelines

Citation and Reference Style

Students will follow RefWorks 2.0 as the sole citation and reference style used in written work submitted as part of coursework for this class. Assignments completed in a narrative essay or composition format must follow the citation style cited in RefWorks 2.0. RefWorks is an online web-based application that can be accessed through the APUS Online Library.

Tutoring

Tutor.com offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

Turn It In

Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

Academic Dishonesty

Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

Submission Guidelines

Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

Disclaimer Statement

Course content may vary from the outline to meet the needs of this particular group.

Communicating on the Forum

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- "Substantive" means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says "I agree" is not substantive. A substantive comment

contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.

- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

University Policies

Student Handbook

- Drop/Withdrawal policy

- Extension Requests

- Academic Probation

- Appeals

- Disability Accommodations

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.