UAF DMS Guidelines for

MATH 152X –Trigonometry

Across all sections of Math 152X offered by UAF campuses (delivered in person or online), all syllabi must minimally satisfy the following requirements.
Note: This course meets 1 hour per day 3 days a week (or should be set up for equivalent "class" time).

1. General guidelines set by UAF; follow this link to the UAF syllabus requirements
2. GER Information (sample statement below):
This course is listed as a General Education Math Course as such this course is expected to meet the general learning outcomes 1 and 2.

1. Build knowledge of human institutions, sociocultural processes, and the physical and natural works through the study of mathematics. Competence will be demonstrated for the foundational information in each subject area, its context and significance, and the methods used in advancing each.
2. Develop intellectual and practical skills across the curriculum, including inquiry and analysis, critical and creative thinking, problem solving, written and oral communication, information literacy, technological competence, and collaborative learning. Proficiency will be demonstrated across the curriculum through critical analysis of proffered information, well-reasoned solutions to problems or inferences drawn from evidence, effective written and oral communication, and satisfactory outcomes of group projects.

3. Text: Precalculus by Sisson
   • Chapter 7: 7.1-7.4 (r)
   • Chapter 8: 8.1-8.4 (r)
   • Chapter 9: 9.1-9.7 (r), 9.8 (o)

4. Timing of material
For each of the following, the minimum time spent on the sections is listed.
This is a suggested outline with Mastery Assessments (score of 80% minimum) and comprehensive Final Exam.
Section Topic Approx. timing

Review of equation solving, functions and graphing	5-8 days
Exam on review material	
7.1 Radian and Degree Measure	1- 2 days
7.2 Trigonometric Functions and Right Angles	1- 2 days
7.3 Trigonometric Functions and the Unit Circle	1- 2 days
7.4 Graphs of Sine and Cosine Functions	1- 2 days
7.5 Graphs of Other Trigonometric Functions	1- 2 days
7.6 Inverse Trigonometric Functions	1- 2 days
8.1 Fundamental Trigonometric Identities	1- 2 days
8.2 Sum and difference Identities	1- 2 days
8.3 Product-Sum Identities	1- 2 days
8.4 Trigonometric Equations	1- 2 days
Exam over Chapters 7 and 8	
9.1 The Law of Sines	1- 2 days
9.2 The Law of Cosines	1- 2 days
9.3 Polar Coordinates and Polar Equations	1- 2 days
9.4 Parametric Equations	1- 2 days
9.5 Trigonometric Form of Complex Numbers	1- 2 days
9.6 Vectors in the Cartesian Plane	1- 2 days

9.7 The Dot Product   1- 2 days
                                    Exam over Chapter 9
Review Chapters 7-9
Final over Chapters 7-9

5. Types of Assessments
  • Midterm Exams
    – at least two exams during the semester
    – exams must be proctored, timed, closed book, closed notes
    – use of non-graphing calculators are allowed
    – exams must be majority written answer (not multiple choice)
    – exams must be paper-and-pencil exams, written and graded by faculty members
    – exams should not be reused from previous semesters, limited reuse of edited problems is acceptable
  • Final Exam
    – must be cumulative and representative of the entire course
    – must include problems from each Assessment Criteria listed on the next page
    – Students are expected to know on their own (no formulas provided on the test for the following):
      * definitions of all trigonometric functions
      * Pythagorean identities
      * cofunction identities
      * addition and subtraction formulas for sine and cosine
      * double angle formulas for sine and cosine
  • Other Assessed Work
    – for online work through HAWKES, mastery level should be no less than 75%
    – instructors should provide written feedback to students approximately weekly throughout the semester; this can be through humanly-graded assignments or email correspondence
6. Grading Policy
  • The syllabus must include a grading scale of some form.
  • Plus/minus grading is at the discretion of the instructor, but must be stated explicitly.
  • Withdrawal and Incomplete policies must be stated explicitly.
  • The final grade in this course must adhere to the following:
      Written Assessed Work at least 15% and at most 25%
      HAWKES (individualized mastery work) at least 10% and at most 20%
      Exams at least 40%
      Comprehensive Final Exam At least 15%
7. Tutoring Services
      DMS Math and Stat Lab: If you need extra math help, there is free tutoring available. The Math and Stat Lab is located in CHAP 305 and is staffed by Math Graduate students, upper-division Math students and Math faculty. This lab operates on a walk-in basis and schedules are posted that provide tutor times.

      DMS One-on-one Tutoring: Free tutoring by appointment. This service is available to any UAF student registered in a core MATH course. Tutoring is available in CHAP 210. Appointments can be made for 30 minutes or an hour and can be scheduled up to two weeks in advance. Students can sign up for an appointment at https://fairbanks.go-redrock.com

      DMS Online Tutoring: Free tutoring available Monday - Saturday! This service is available to any UAF student registered in a MATH or STAT course. Tutoring is accessible through Zoom. Appointments can be made for 30 minutes or an hour and can be scheduled up to two weeks in advance. To schedule an appointment students can sign up for an appointment at https://fairbanks.go-redrock.com

Assessment Criteria

Final exams should contain problems that demonstrate the students' acquired knowledge of the following topics.

- Angle Measures
- Trigonometric Values
    - basic angles
    - coterminal angles
    - for a given point
- Trigonometric Graphs
    - find domain and range
    - find amplitude, phase shift, and period
    - find intercepts
    - find asymptotes
- Verify Trigonometric Identities
- Solve Trigonometric Equations
    - Linear trigonometric equations
    - Equation involving either quadratic, factoring, or the use of identities
- At least two of the following:
    - Evaluate inverse trigonometric functions
    - Evaluate composition of trigonometric and inverse trigonometric function (both orders)
    - Domain, range, and properties of inverse trigonometric functions
- Polar coordinates
    - Conversion of points
    - Conversion of equations
- Applications
    - Right angle trigonometry (such as angle of elevation/depression)
    - Laws of Sine and Cosine (such as navigation, bearing)
    - Arc length and/or area of sector
    - Linear/angular velocity