

Course Syllabus
Math 1113-25H: Precalculus - Honors
Fall Semester, 2018
University of West Georgia

Instructor: Dr. David G. Robinson, Hum #221, 678-839-4137
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Office Hours: *MWF* 11 – 11:50 a.m., 2 – 2:50 p.m.

Class Meetings: **M W 3:30 – 4:45 p.m., F 3:30 – 4:20 p.m., Pafford #307**
These will consist primarily of lectures and problem sessions. All reading and exercises will be assigned in advance of the meeting thereon. (See schedule.)

Text/Resources: Zill, D. and M. Dewar, Essentials of Precalculus with Calculus Previews, 6th ed., Jones & Bartlett, 2016
Graphics calculator (**TI-84** or its equivalent)

Prerequisites: Four years of high-school math, including algebra and trigonometry, or College Algebra (Math 1111) with a grade of B or better, and *currently in good standing as a member of the UWG Honors program.*

Topics (including brief introductions to the **calculus** topics listed in brackets):

Coordinate Geometry (§1.1 – 1.5): Real number line, intervals, coordinate plane, distance and midpoint formulas, graphs, circles; [limits and continuity.]

Functions (§2.1 – 2.10): Function definition and notation, domain and range, power functions, even/odd functions; linear transformations of functions (translation, reflection, dilation); slope, equation of a straight line, linear functions, intersection points, economics problems; quadratic functions and their graphs, quadratic formula, vertex of a parabola, motion problems; piecewise defined functions, compound functions, composition and iteration, inverse functions; [tangent lines, differentiation, optimization problems.]

Polynomials and Rational Functions (§3.1 – 3.5): Definitions and terminology, expanded/factored forms, global/local behavior of graphs, zeros (simple/multiple, rational/irrational, real/complex), factor theorems, polynomial division (quotient & remainder), rational functions (reduced/unreduced, proper/improper), intercepts, asymptotes, branches, discontinuities; [vertices and concavity via differentiation.]

Exponential Functions (§5.1 – 5.4): General exponential and logarithmic functions, laws of exponents and logarithms, exponential and logarithmic equations, exponential growth and decay problems; [base e and natural logs.]

Trigonometric Functions (§4.1 – 4.14): Angle measure, unit circle and right triangle definitions of trig. functions, trig. identities, graphs of trig. functions, inverse trig. functions, law of sines, law of cosines; applications to: triangles, harmonic motion, projectile motion, intersection angles, areas, etc.; [trig. derivatives.]

Analytic Geometry (§6.1 – 6.7): conic sections – parabolas, ellipses and hyperbolas (equations, graphs and physical properties); polar coordinates, graphs of polar equations (cardioids, limaçons, rose curves, lemniscates, etc.); parametric equations (cycloids, Lissajous curves, etc.); [terrestrial and celestial motion via Newton's laws of gravitation.]

General Objectives: Besides developing and deepening your understanding of the topics mentioned above, there are some general skills you should improve upon along the way in order to be able to carry what you learn in this course into future courses of study and future work situations. These include:

- use of appropriate mathematical terminology and notation
- construction and use of tables, graphs and formulas
- recognition of function types

- equation-solving (by hand and by machine)
- curve sketching (on paper as well as on a calculator)
- translation of practical problems into mathematical models and vice versa
- heuristics (problem-solving strategies)

Evaluation Procedures: Your understanding of the material and your progress toward the aforementioned objectives will be evaluated on the basis of your *contributions to class discussions* and your performances on *four written tests and a comprehensive final exam*. (See attached schedule for details.)

Homework problems from the text or from class will be assigned regularly. These are for practice, self-evaluation and class discussion. Be prepared to discuss them as soon as possible after they are assigned.

Evaluation Criteria: Grades on all work will be based upon

- accuracy of information (including calculations and use of mathematical notation and terminology)
- depth and breadth of solutions
- logic and clarity of arguments
- neatness and clarity of presentation
- correctness of grammar and spelling
- thoroughness and timeliness of work
- intellectual honesty and creativity
- achievement of personal potential
- relative difficulty of the assignment/test

Grades: My scale for converting numerical grades (i.e., percentage points) to letter grades will be as follows:

89-100 A, 77-88 B, 65-76 C, 50-64 D, below 50 F.

Your final grade will be based on your *four test scores (70%)*, *your final exam score (20%)*, and *your class participation (10%)*. The class participation grade includes *attendance* at meetings as well as active involvement in class discussions. There will be an automatic deduction of 1 pt. (from the 10 pts. available) for each absence beyond the 3rd, *regardless of the reason*.

Important policies regarding attendance, tests, extra help and correspondence:

- Attendance is important! However, should you find for some reason that you must miss a class meeting, remember that you are still responsible for any and all material you may have missed during your absence.
- *Cell phones* should be turned *off* during class meetings. If you need to make or receive a call/text, please excuse yourself from the class and take care of your business outside the classroom.
- Tests must be taken at the prescribed times (see attached schedule), except by permission from the instructor. Such permission will be given only under the direst of circumstances (serious illness, e.g.) and only if your request is granted *before* the test is over. Otherwise you will receive a score of zero for that test.
- If you find yourself falling behind in the course, do not delay in seeking out assistance and/or advice from someone (the Instructor, a tutor, etc.) who is competent in the subject area and who has your best interests at heart! **The Math Tutoring Center is in Boyd #205 and is open daily at the posted times.**
- *All electronic correspondence between student and instructor about matters pertaining to this course should be by way of your UWG e-mail account.* In particular, any documents handed out in class can also be obtained from me via e-mail.
- I assume you will abide by the *UWG Honor Code*. This means among other things that you will not submit any work for a grade that is not your own work. Violators of the code will receive no credit for the work in question and, in more serious cases, may be expelled from the course with a grade of 'F'.
- *Disabilities Act/Accessibility for the Course:* If you are a student who is disabled as defined under the Americans with Disabilities Act and require assistance or support services, please notify me and provide me with a copy of your packet from Student Services.