



Andrew J Hamm
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Pre-Calculus is a transition course between Algebra & Trigonometry and Calculus, relating the two concepts and preparing students for the study of limits and Calculus. Probability & Statistics is also heavily covered in this course. Success in this course requires hard work and dedication. You should expect I strongly recommend you to form study groups with your classmates. If you ever have questions, including homework questions and conceptual questions, **do not hesitate to ask me!**

Textbook: Newmark, Joseph. *Statistics and Probability in Modern Life*. Fort Worth: Saunders College Pub., 1997.

Standards-Based Grading

I will be using Standards-Based Grading into this course. There are several reasons for this research-based¹ grading method, including:

- The qualitative differences between the grades A, B, C, D, and F are clarified for students and parents, reducing questions and confusion about grades
- More data is provided to me about student learning, allowing me to adjust instruction based on student learning
- Students focus shifts from grades to learning by providing students multiple opportunities to demonstrate proficiency in the standards
- Student grades are calculated based on final student proficiency, not an average of all grades earned during the quarter
- Student grades become much more consistent by reducing subjectivity and clarifying student objectives for learning
- Students are encouraged to develop a high level of critical-thinking skills, preparing them well for life after high school

Students will earn a score of from 0.0 – 4.0 for each objective in the course on an assessment¹. Students will have one in-class assessment on each objective and will be allowed re-assessments only when showing proof of completed practice. Students must initiate each re-assessment. *MOODLE* online software will be used for all assessments in class. Remediation work will be done on paper and must be completed satisfactorily for the reassessment grade to count.

The student's **highest score** on every standard will be recorded for grading purposes.

Scale	Description
4.0	Student can demonstrate a complete understanding of all topics related to the standard. Student can also apply knowledge of the standard to situations not specifically described in class without any assistance.
3.0	Student can demonstrate a complete understanding of all topics related to the standard without any assistance.
2.0	With help student can demonstrate complete understanding of standard or student demonstrates partial understanding of standard without any help
1.0	With help student can demonstrate partial understanding of standard
0.0	Even with help, student cannot demonstrate any understanding of standard

Half-steps (3.5, 2.5, 1.5, 0.5) are earned for non-conceptual errors (algebra mistakes, calculator mistakes, etc.)

¹ Marzano, Robert J. *Formative Assessment & Standards-based Grading*. Bloomington, IN: Marzano Research Laboratory, 2010.
 Print.



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Letter grades will still be assigned in this course each quarter, with the semester grades resulting in awarding of credit and remaining on the student’s transcript. **Standards-Based Grading of Content Objectives will be worth 50% of the overall grade.** The following qualitative definitions of grades will be used in this course, and are based on Marzano's research:

Letter Grade	Standard Average	Letter Grade	Standard Average
A+	4.0	C	2.50 - 2.64
A	3.60 - 3.99	C-	2.40 - 2.49
A-	3.40 - 3.59	D+	2.30 - 2.39
B+	3.20 - 3.39	D	2.15 - 2.29
B	3.00 - 3.19	D-	2.00 – 2.14
B-	2.80 - 2.99	F	0 – 1.99
C+	2.65 - 2.79		

Grades will be calculated using the following weights:

Standards-Based Content Objectives	50%
Standards-Based Laboratory Objectives /Activities	20%
Summative Assessments	15%
Midterm/Final Exam	15%

Summative Assessments and Midterm/Final Exams will be standards-based and completed in class. Summative Assessments will allow for one retake per standard to be initiated by the student.

Letter grades will be assigned according to the percentages listed above.

Feel free to contact me if you have questions. E-mail is preferred.

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E-mail: andyha@boyceville.k12.wi.us
Website: <http://www.boycevillescience.com>

Mr. Hamm is available for student questions and assistance before school by appointment from 7:30 - 8:05 as well as during his advertised preparation period. Appointments are needed because this is also the time where Mr. Hamm will be preparing for classes, including making copies and creating other instructional materials, meeting administrative requirements, contacting parents, and examining new technologies and classroom materials. Daily intervention time is also an opportunity for student assistance. Mr. Hamm is rarely available after school due to other commitments.

Attendance Expectations

Regular attendance is **very important** to success in this course. Please do your best to attend class every day. If you cannot attend class, please get any notes missed from a friend or the class website and copy them into your notebook as soon as possible. **Students must be seated in their seats and ready to learn when the bell rings or they will be marked tardy** and will be disciplined starting at step one and increasing steps for every subsequent unexcused tardy.

Students that miss an assessment due to an excused absence must make the assessment up on their own time within two days of returning to class. Failure to make up the assessment will result in a loss of the first opportunity to demonstrate



mastery of the objectives and will result in the student needing to complete the practice assignments and complete a re-assessment.

Classroom Behavior Expectations

- Respect everyone, including the teacher, other teachers, staff, administrators, other students, and yourself *at all times*.
- Put forth your best effort *at all times*.
- Ask questions if you are confused, need something clarified, or seek help...I am here to help!

Specific Classroom Rules

- Raise your hand to talk and respect others while they talk, including the teacher.
- This class is not your nap time. Please refrain from sleeping *at all times*.
- Cheating is **not tolerated under any circumstances** and will result in an automatic zero and referral under the district/school policy. Talking is **not allowed** during assessments.
- Please come to class prepared to learn *every day*. This includes bringing a pencil, a notebook, your textbook, your folder/binder, and any completed practice. ***You will not be allowed to go to your locker if you forget anything.***
- Students on the weekly detention list are not allowed to leave the classroom.
- Stay on task! If you are given time to work on practice, then work on practice. If you should be taking notes, then take notes. If you have a question, ask Mr. Hamm! Come to class on time. You must be seated in your seat ready to learn when the bell rings or you will be marked tardy. Unexcused tardiness will not be tolerated.
- The tools available in the classroom are for everyone's use. Please do not remove anything from the classroom without Mr. Hamm's permission.
- Keep your area clean. You are asked to clean your area at the end of the period and make sure that it is at least as clean as it was when you arrived.
- Keep your cell phone out of the room or packed away. I don't want to see it!
- Be respectful to substitute instructors. Any students who cause problems for a substitute teacher will automatically escalate to step 2.

Classroom Consequences

Step 1: You will serve 30 minutes with Mr. Hamm before school. You will lose all pass privileges for the remainder of the quarter and must remain in the classroom for the entire period.

Step 2: You will serve 60 minutes of detention with Mr. Hamm before school. Additionally, your parents will be contacted regarding your behavior. Failure to serve your time results in an escalation to Step 3.

Step 3. You will be required to attend a parent/student/teacher conference to discuss your behavior and the options available to you to improve your behavior. This conference will be set up after your parents have been contacted and will be completed as soon as possible. A Behavior Improvement Plan will be designed during this conference. Failure to adhere to the plan will result in an escalation to Step 4



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Step 4. You will be referred to the appropriate administrator and your parents will be contacted and informed that you have violated the plan. Significant violations will immediately escalate to step 4. All further disciplinary action will be handled by the appropriate administrator and the instructor.

Positive behavior will be rewarded in a variety of ways, which will be communicated to students each quarter. Students with no disciplinary actions in class each quarter will be eligible for the positive behavior rewards. Disciplinary actions in regards to positive behavior will be reset every quarter.

Electronic Device Expectations

Possession and/or use of a cell phone is not required or needed to complete the math curriculum at Boyceville High School. Students are expected to keep their phones and other small personal electronic devices in their locker unless prior approval is obtained from the instructor and all electronic devices must be registered according to school policy. Any student in violation of this policy will have their phone taken away and the student handbook guidelines will be applied.

Laptops, IPADs, and other tablets or similar (non-small) electronic devices may be used throughout the year in class. Any student wishing to use personal electronic devices must have the approval of the instructor before they will be allowed to be used in class and these devices must be registered according to school policy.

Resource Expectations

The following materials will be needed for this course:

- One two-inch binder or larger for handouts and assignments
- One 70-page spiral notebook for note-taking
- White loose-leaf paper for assignments
- A scientific calculator though a graphing calculator (TI-83 or similar) is highly recommended
- Several pens for writing laboratory reports
- A composition-style notebook for laboratory reports
- Several pencils for completing assessments, taking notes, and completing practice assignments.

General Course Timeline Expectations

The content and laboratory practice standards for this course are listed on the coming pages. Below is a tentative timeline for standards per quarter

Quarter 1: Standard A1.1 through Standard A8.2

Quarter 2: Standard S1.1 through Standard S6.3

Quarter 3: Standard S7.1 through Standard S11.2 and Standards P1, SS1, SS2, SS3, SS4, SS5, SS6

Quarter 4: Standard S12.1 through Standard S14.8 and Standards P2 and P3



Pre-Calculus Content Standards

A1.1	Add, subtract, multiply, and divide fractions with unlike denominators
A1.2	Write large and small numbers in scientific notation and expand numbers written in scientific notation
A1.3	Apply the order of operations to solve mathematical expressions
A2.1	Write the equation of a line through two points, as well as lines parallel or perpendicular to a given line
A2.2	Graph and solve linear equations
A2.3	Solve systems of linear equations using graphing, substitution, and elimination
A3.1	Define the imaginary number and simplify complex numbers
A3.2	Solve quadratic equations using graphing, factoring, and the quadratic equation
A3.3	Complete the square for a quadratic equation to determine the vertex of a parabola
A3.4	Solve complicated quadratic equations
A3.5	Factor polynomial functions
A3.6	Use long division to simplify the division of polynomials
A4.1	Write intervals in interval notation
A4.2	Find the domain and range of various functions
A4.3	Evaluate and simplify composite functions
A4.4	Determine whether a function is even or odd
A4.5	Find the inverse of a function, if it exists
A5.1	Graph exponential functions
A5.2	Rationalize the denominator of algebraic expressions
A5.3	Simplify rational expressions
A5.4	Find the zeroes of exponential functions
A5.5	Evaluate logarithmic functions
A5.6	Use the Laws of Logarithms to simplify logarithmic expressions
A5.7	Solve exponential equations
A6.1	Relate angles measured in degrees to radians
A6.2	Define and evaluate the six simple trigonometric ratios
A6.3	Graph the six simple trigonometric functions
A6.4	Define and evaluate the inverse trigonometric functions
A6.5	Solve trigonometric equations
A6.6	Use the Laws of Sines and Cosines to solve application problems
A7.1	Use the trigonometric addition formulas to simplify algebraic expressions
A7.2	Use the trigonometric double and half angle identities to simplify algebraic expressions
A7.3	Use various trigonometric identities to simplify algebraic expressions
A8.1	Define the equation of a parabola given a focus and a directrix
A8.2	Define the equations of the conic sections ellipse, hyperbola, and circle
A8.3	Relate the graphs to the equations of the conic sections



S1.1	Differentiate between natural and sampling variability
S1.2	Identify IVPPSS for given situations
S1.3	Differentiate among types of variables
S2.1	Identify the parts of an EDA
S2.2	Use various graphical tools to describe the shape of a distribution
S2.3	Describe the center of a distribution using a variety of descriptors
S2.4	Describe the dispersion of the data using range, IQR, variance, and standard deviation
S2.5	Identify probable outliers in a sample
S2.6	Identify correct situations to use mean vs. median and IQR vs. standard deviation
S2.7	Compute the variance and standard deviation for a sample
S2.8	Construct and interpret a boxplot for a sample
S2.9	Construct and interpret a frequency table
S3.1	Identify and describe the properties of a normal distribution
S3.2	Standardize a variable into a test statistic using the mean and standard deviation
S3.3	Find the area under a standard normal distribution between given values
S3.4	Find the value of a measurement from a test statistic, mean, and standard deviation
S4.1	Define and identify the important parts of experimental design
S4.2	Define and identify the three basic principles of experimental design
S4.3	Identify and differentiate among voluntary response, convenience, probability-based, and simple random sampling techniques
S4.4	Use a random number table to conduct a simple random sample
S5.1	Define a sampling distribution and compare it to a sample distribution
S5.2	Define standard error and compare it to standard deviation
S5.3	Differentiate between statistical accuracy and statistical precision
S5.4	Define the central limit theorem and list its assumptions
S6.1	Define confidence interval in terms of a parameter of interest and margin of error
S6.2	Compute various confidence intervals using a Z test statistic
S6.3	Interpret various confidence intervals using the Z test statistic
S7.1	List the general steps to completing a statistical hypothesis test
S7.2	Compare and contrast a null hypothesis with an alternative hypothesis
S7.3	Relate alpha and beta to Type I and Type II errors
S7.4	Define statistical power, relate it to beta, and identify ways to increase it in a hypothesis test
S8.1	Identify the characteristics of a 1-sample Z test and apply it to solve a problem
S8.2	Identify the characteristics of a t-distribution and differentiate it from a z-distribution
S8.3	Identify the characteristics of a 1-sample t-test and apply it to solve a problem
S8.4	Identify the characteristics of a 1-sample comparison of proportions test and apply it to solve a problem
S9.1	Classify the association of bivariate data and graph using a scatterplot
S9.2	Calculate the correlation coefficient of a set of bivariate data
S9.3	Calculate the equation for the line of best fit for bivariate data



S9.4	Define residual and calculate residuals for set of data
S9.5	Calculate the coefficient of determination for a set of data
S9.6	Identify the assumptions needed to calculate a least-squares linear regression (line of best fit)
S10.1	Identify the characteristics of a 2-sample t-test and apply it to solve a problem
S10.2	Identify the characteristics of a matched-pairs t-test and apply it to solve a problem
S10.3	Identify the characteristics of a 2-sample comparison of proportions test and apply it to solve a problem
S10.4	Identify the characteristics of a chi-squared test and apply it to solve a problem
S11.1	Identify the characteristics of a 1-way ANOVA and apply it to solve a problem
S11.2	Differentiate among the types of dependency that must be avoided to use an ANOVA
S12.1	Define probability and calculate simple probability
S12.2	Draw tree diagrams to solve counting problems
S12.3	Use the counting rule to solve elementary probability problems
S12.4	Calculate the number of possible permutations of a set of numbers
S12.5	Calculate the number of possible combinations of a set of numbers
S12.6	Calculate the mathematical expectation of an event
S12.7	Calculate the odds in favor of an event occurring
S13.1	Define mutually exclusive and identify events that are mutually exclusive
S13.2	Use the addition rule of probability to solve problems
S13.3	Define conditional probability and use it to solve problems
S13.4	Use the multiplication rule of probability in coordination with conditional probability to solve problems
S13.5	Use Bayes' Formula to compute the probability of multiple interrelated events
S14.1	Define discrete random variable and contrast it with a continuous random variable
S14.2	Identify binomial variables and use the binomial distribution formula to determine probability
S14.3	Calculate the mean of a random variable for a given probability distribution
S14.4	Calculate the variance of a random variable for a given probability distribution
S14.5	Calculate the mean of the binomial distribution
S14.6	Calculate the variance and/or standard deviation of the binomial distribution
S14.7	Use the Poisson probability distribution to calculate the probability for a situation
S14.8	Use the Hypergeometric probability distribution to calculate the probability for a situation
P1	Create a statistical model to predict future events (NCAA Tournament Model)
P2	Effectively communicate through a reflection paper lessons learned through the development of the statistical model
P3	Compare and contrast the community of Boyceville with the community represented in the movie <i>Stand and Deliver</i> .
SS1	Use technology to calculate the standard deviation of a sample
SS2	Use technology to calculate the summary statistics for a sample
SS3	Use technology to calculate the correlation coefficient of a set of bivariate data
SS4	Use technology to calculate the equation for the line of best fit for bivariate data
SS5	Use technology to calculate the coefficient of determination for a set of data



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Pre-Calculus Syllabus

2018-2019

Please complete, detach, and return this portion of the Course Syllabus to Mr. Hamm

I have read the Course Syllabus and pledge to give my best effort.

Student Printed Name

Student Signature

Date

I have read the Course Syllabus and will contact Mr. Hamm if I have any questions.

Parent/Guardian Printed Name

Parent/Guardian Signature

Date