I COURSE SCOPE
A. Course Description
This one-year course is the study of advanced mathematical topics and their applications to prepare students for college-level mathematics. The course will cover the forth year common core standards as well as topics for students who plan on a non-calculus based major in college. Emphasis will be on refining problem solving skills through modeling and project-based learning. The use of technology, including calculators and computers, is an integral part of this course. The prerequisite for this course is successful completion of Algebra II.

B. Course Goals
1. To develop the Standards for Mathematical Practice.
2. To investigate and apply properties of matrices to solve systems of equations. [N.VM.C.6–10; N.VM.C.12; A.REI.C.8–9]
3. To derive, graph, and apply the four conic relations. [G.GPE.A.1-3]
4. To use trigonometric functions and their applications in problem solving, including triangle trigonometry and circular functions. [G.SRT.D.9-10; F.TF.A.3-4; F.TF.B.6-7; F.TF.C.9]
5. To solve problems and study real-world applications of vectors, complex numbers, and parametric equations. [N.VM.A.1-3; N.VM.B.4-5; N.VM.C.11; N.CN.A.3; N.CN.B.4-6; F.BF.A.1c]
6. To graph equations using both the Cartesian and polar coordinate system. [N.CN.B.4]
7. To use probability for decision making, calculate expected values and use them to solve problems, and to use probability to evaluate outcomes of decisions. [S.MD.A.1-5]
8. To solve network problems involving optimum paths and conflict resolution using graph theory.
9. To explore and expand geometric concepts and to solve problems involving transformations, tiling, and non-Euclidean geometry.
10. To explore and apply the methods of game theory to business and the social sciences.
11. To develop and apply the concepts of elementary number theory, including Euclidean algebra, sequences and series, modular arithmetic, and prime numbers.
12. To analyze and solve problems in logic, including the use of truth tables and Venn diagrams.
13. To explore various techniques of problem solving using inductive and deductive reasoning.
14. To communicate effectively using the language of mathematics in both oral and written forms.

C. Materials
2. A graphing calculator (TI-Nspire or TI-84 preferred)
3. Loose-leaf Binder
II COURSE OUTLINE

<table>
<thead>
<tr>
<th>unit</th>
<th>title</th>
<th>text sections</th>
<th>test date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Probability Distributions</td>
<td>4.1-4.4; 5.1, 5.7, 13.2</td>
<td>14 Feb, 17</td>
</tr>
<tr>
<td>2</td>
<td>Matrices</td>
<td>1.1; 3.1-3.7</td>
<td>22/23 Mar, 17</td>
</tr>
<tr>
<td>3</td>
<td>Conics and Rational Equations</td>
<td>15.1-15.4</td>
<td>21 Apr, 17</td>
</tr>
<tr>
<td>4</td>
<td>Transcendental Functions</td>
<td>14.1-14.3</td>
<td>10/11 May, 17</td>
</tr>
<tr>
<td>5</td>
<td>Vector Algebra</td>
<td>4.1-4.4; 5.1, 5.7, 13.2</td>
<td>14 Feb, 17</td>
</tr>
<tr>
<td>6</td>
<td>Polar and Complex Numbers</td>
<td>1.1; 3.1-3.7</td>
<td>22/23 Mar, 17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15.1-15.4</td>
<td>21 Apr, 17</td>
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<td>10/11 May, 17</td>
</tr>
</tbody>
</table>

First semester final: 17/18 January, 2017

Second semester final: 6/7 June, 2017

Test dates are approximate. Google Calendar will have an updated test date, if needed.

Test dates still may be changed for unexpected reasons.

Technology applications will be applied throughout the course.

III GRADING POLICY

A. Grading Rubric:
   4= EXCEEDS STANDARDS, without errors. Also written in clear and concise understandable language, i.e. an excellent job!
   3= MEETS STANDARDS, with minor errors or omissions. Also written in understandable language, i.e. an above average job!
   2= APPROACHES STANDARDS, with errors or omissions. Writing may also have some flaws, i.e. an average job.
   1= PARTIALLY MEETS STANDARDS, with major errors or omissions. Writing may also have some flaws, i.e. a below average job.
   0= DOES NOT MEETS STANDARDS. Shows no understanding of subject, work is off topic or there is no attempt to complete.

B. Grading Procedure.
   1. Test= 100 points. There will be 3 tests per quarter. The summative grade, i.e. test, 75% of the quarter grade.
   2. Attendance will have no effect on direct grading. Some investigations may need to be modified if you are absent.
   3. Citizenship Grade (per quarter)
      O: On time to class
      S: Occasional lapses in the above behaviors.
      N: Frequent lapses in the above behaviors.
      U: Continually misbehaviors resulting in parental contact and referral to the assistant principal in charge of behavior.
III B. Continued

4. A Notebook is expected for Modern Maths in which class notes, handouts, and returned papers are to be kept. Also student is to be a member of the Google Classroom (class code: 52px7d) and check Google class calendar.

5. Homework will be assigned for each objective. 4 possible points will be based on percentage correct of core problems and associated do-nows.
   • 90% to 100%=4 points
   • 80% to 89.9%=3.5 points
   • 70% to 79.9%=3 points
   • 60% to 69.9%=2.5 points
   • 30% to 59.9%=1.5 points
   • 0.0% to 29.9%=.5 points

6. As reflected by the rubric of page 2, writing is expected to be legible, flawless in spelling and grammar. Whenever possible, a word processor should be used.

7. Generally extra-credit will not be assigned. Occasionally there will be extracurricular topics that may be explored for extra-credit.

8. Assignments without supporting work will be considered “missing” until supporting work is included (see Late Work).

C. Basis for Quarter and Semester Grades:

1. Quarter and semester grades are determined by percent

<table>
<thead>
<tr>
<th>Percent</th>
<th>Quarter grades</th>
<th>points</th>
<th>Semester grades</th>
<th>points</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥90%</td>
<td>A</td>
<td>≥360</td>
<td>A</td>
<td>≥900</td>
</tr>
<tr>
<td>80-89.9%</td>
<td>B</td>
<td>320-359.9</td>
<td>B</td>
<td>800-899.9</td>
</tr>
<tr>
<td>70-79.9%</td>
<td>C</td>
<td>280-319.9</td>
<td>C</td>
<td>700-799.9</td>
</tr>
<tr>
<td>60-69.9%</td>
<td>D</td>
<td>240-239.9</td>
<td>D</td>
<td>600-699.9</td>
</tr>
<tr>
<td>&lt;60%</td>
<td>F</td>
<td>&lt;240</td>
<td>F</td>
<td>&lt;600</td>
</tr>
</tbody>
</table>

2. Final exam=200 points. This is 20% of the semester grade as per A-TECH policy. The points will be added to the two quarter grades to obtain the semester grade.

D. Makeup Work:

1. Assignments will be on Google Calendar, including the date of the unit test. Therefore, the student should be aware of missed work before returning form an absence.

2. LATE HOMEWORK will only be accepted until the student takes the unit test.

3. MAKE-UP TEST for an absence, where you missed instruction of new material, must contact Mr. Loose within 3 school days of your return to set time to make up test. If you did not miss instruction, then you will be expected to take the test on your return.

E. Late Work:

Any assignment may be turned in late up until the day the student takes the unit test. This includes assignments that have already been turned in and the students wants to improve their grades. Late homework will be for 70% of the original grade, no matter how late; unless due to an absence or the student comes in for extra help.
IV CLASSROOM BEHAVIOR EXPECTATIONS
A. Students are responsible for the proper use of the classroom computers in accordance with CCSD Board Policy R-3991. Students, with parental permission, must have a signed Acceptable Use Policy prior to using instructional technology networks.
B. The internet is a powerful classroom tool. Use of the internet for class assignments cannot violate Intellectual Property laws by plagiarizing or reproducing copy written materials.
C. A TARDY will be given if you are not in the room by the tardy bell unless you have a corridor pass. If you arrive more than 30 minutes late, it will be an absence. You need to sign the Tardy Notebook when you arrive late to class regardless if you have a pass or not. Consult student handbook for the A-TECH Tardy policy.
D. CORRIDOR PASSES will be limited to real emergencies.
E. Eating and drinking (except for water) will not be permitted in class.
F. This class is designed for collaborative group learning. Rules for collaborative groups:
   • Each student in the group is responsible for his/her own work.
   • Each student will respect the other group members
   • Mr. Loose will only answer group questions so please discuss it between yourselves first.
   • Group discussion should be centered on the task at hand.
   • When class comes together as a whole group, all conversations within the group must stop.
G. CLASSROOM DISRUPTIONS such as off-task talking, hate speech, or any other behavior that disrupts the educational atmosphere will not be tolerated. Any talking during a test will be considered cheating and a failing grade will be given on the test.
H. PROGRESSIVE DISCIPLINE PLAN:
   Step 1 Talk to student
   Step 2 Contact home by phone or e-mail
   Step 3 Referral to the counselor
   Step 4 Referral to the dean
   Steps maybe combined or accelerated if determined by the severity of the problem.
I. This class is to be taught bell-to-bell. Classes will start with a “do-now” which will be displayed as the bell rings. The class will end with an “exit ticket” on Socrative. Socrative may be access from a smart phone app or on the internet. Room name is ATECH708.
J. MATERIALS that will be needed daily will be the Topics in Modern Maths notebook, paper, a writing instrument (pen or pencil are ok), and a graphing calculator (TI-Nspire or TI-84 preferred). The TI-Nspire will be used for class activities. A smart phone or tablet with wi-fi capabilities is desirable.
ADVANCED TECHNOLOGIES ACADEMY
COURSE EXPECTATIONS
Please print and return by 20 October, 2016

COURSE: Topics in Modern Mathematics
INSTRUCTOR: Tim Loose

Student’s Name____________________________ Date:________________

I have read and understand the course expectations that I must follow.

____________________________________
Student Signature

Dear Parent/Guardian:

Hello, my name is Tim Loose, and I will be your son’s or daughter’s Topics in Modern Mathematics teacher this year. Could you please take a moment to read these expectations, sign, and complete this information sheet? At some time during the semester, I may find it necessary to contact you concerning the class work or behavior of your son or daughter. This information requested is not intended to invade your privacy, but it will help me in seeking your assistance. I need specific information on where I can reach you by phone during school hours and possibly in the evening. I am also requesting your email address as this is most often the easiest and quickest way to inform parents of progress or lack of progress in class. If there is anything you do not wish to fill out, I will understand. However, please fill in as much as you can because the strongest ally I have in the classroom is you – students do better in class when teachers and parents are in communication.

Thank you in advance for your support. Please call if you have any concerns. The my cell phone number is 702- 300-2422. The best way to contact me is through email, wtloose@interact.ccsd.net or go to atech.org, go to Parents and my email address is under the Staff Directory. This is an easy and quick way to contact me so please take advantage of it.

Tim Loose

PLEASE PRINT
Parent/Guardian’s Name: ____________________________________________ (primary)

_________________________________________ (secondary)

PARENT Email Address: ___________________________ Home Phone:__________________

May I contact you at work? Work phone (s)_____________________________________

When is the best time to contact you at home?____________________________________

I have read and understood my son/daughter’s course expectations:

____________________________________
Parent’s/Guardian’s Signature