## I. ASCRC General Education Form

<table>
<thead>
<tr>
<th>Group</th>
<th>Group II Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept/Program</td>
<td>Applied Arts and Sciences/MAT</td>
</tr>
<tr>
<td>Course Title</td>
<td>Probability and Linear Math</td>
</tr>
<tr>
<td>Course #</td>
<td>117</td>
</tr>
<tr>
<td>Prerequisite</td>
<td>B- or above in MAT 005D</td>
</tr>
<tr>
<td>Credits</td>
<td>3</td>
</tr>
</tbody>
</table>

## II. Endorsement/Approvals

Complete the form and obtain signatures before submitting to Faculty Senate Office

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Josef S. Crepeau</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone / Email</td>
<td><a href="mailto:josef.crepeau@umontana.edu">josef.crepeau@umontana.edu</a></td>
</tr>
<tr>
<td>Program Chair</td>
<td>Cathy Corr</td>
</tr>
<tr>
<td>Dean</td>
<td>Barry Good</td>
</tr>
</tbody>
</table>

## III. Description and purpose of the course:

General Education courses must be introductory and foundational. They must emphasize breadth, context, and connectedness; and relate course content to students’ future lives: See Preamble: http://www.umt.edu/facultysenate/gened/GEPreamble_final.htm

Systems of linear equations and matrix algebra. Introduction to probability with emphasis on models and probabilistic reasoning. Examples of applications of the material in many fields.

## IV. Criteria:

Briefly explain how this course meets the criteria for the group. See: http://www.umt.edu/facultysenate/ASCRCx/Adocuments/GE_Criteria5-1-08.htm

MAT 117 provides students with instruction in solving applied problems in probability, elementary statistics, matrix algebra, and linear programming. The methods introduced highlight mathematical reasoning and problem solving in these areas.

## V. Student Learning Goals:

Briefly explain how this course will meet the applicable learning goals. See: http://www.umt.edu/facultysenate/ASCRCx/Adocuments/GE_Criteria5-1-08.htm

Successful students in MAT 117 will have learned to apply both mathematical and elementary statistical reasoning to solve a broad range of applied problems.

## VII. Syllabus:

Paste syllabus below or attach and send digital copy with form. The syllabus should clearly describe how the above criteria are satisfied. For assistance on syllabus preparation see: http://teaching.berkeley.edu/bgd/syllabus.html

Please See Attached Sheets

*Please note: As an instructor of a general education course, you will be expected to provide sample assessment items and corresponding responses to the Assessment Advisory Committee.*
Instructor:
Phone:       Office Hours:
E-Mail:


Course Description: U 117 Probability and Linear Mathematics 3 cr. Offered every term. Prereq., MAT 005 with a grade of B– or better, or MAT 100, or appropriate placement score. Systems of linear equations and matrix algebra. Introduction to probability with emphasis on models and probabilistic reasoning. Examples of applications of the material in many fields. Credit not allowed for both MAT 117 and MATH 117.

Learning Goals:
1. To master the basic concepts of lines, linear systems, and linear programming (graphical method only).
2. To understand basic probability concepts: probability models (Venn diagrams, two-way tables), sample spaces with equally likely outcomes (counting), conditional probability (tree diagrams), Bayes’ theorem, binomial probabilities, probability distributions.
3. To understand the rudiments of statistics: measures of center and spread, the normal distribution and the normal approximation to the binomial distribution.
4. To learn how to use the above concepts to solve application problems (this includes to learn to precisely formulate a problem, and to interpret solutions).

Course Content:
1. Sets and Probabilities (Sets, Applications of Venn Diagrams, Basic Concepts of Probability, Conditional Probability; Independent Events, Bayes’ Theorem)
2. Counting Principles; Further Probability Topics (The Multiplication Principle, Permutations, Combinations, Probability Applications of Counting Principles, Binomial Probability, Probability Distributions; Expected Value)
3. Statistics (Frequency Distributions; Measures of Central Tendency, Measures of Variation, The Normal Distribution, Normal Approximation to the Binomial Distribution)
4. Linear Functions (Slopes and Equations of Lines, Linear Functions and Applications, Linear vs. Exponential Functions)
5. Uses of Percentages

Grading: Your course grade will be based on 3 exams, a cumulative final, and weekly quizzes. The grades will be assigned as follows:

Quizzes: 100 points  3 Exams: 100 points each  Final Exam: 150 points

A: ≥ 93%  A-: 90 – 92%  B+: 87 – 89%  B: 83 – 86%  B-: 80 – 82%

C+: 75 – 79%  C: 70 – 74%  C-: 65 – 69%  D+: 62 – 64%  D: 58 – 61%

D-: 55 – 57%  F: ≤ 55%  CR: ≥ 55%

If you are not taking this course as a general education requirement, you must take it for a traditional letter grade (not CR/NCR). A grade of “D-” is considered passing and will earn you credit for the course, BUT it will NOT fulfill your general education requirement and you will have to retake the class. A grade of **C or better** is needed to fulfill the math literacy requirement.

There is no graded homework, however recommended problems are given for each section and are strongly encouraged. **All quizzes will be on Wednesdays** (some will be take-home) and will be based on the homework for the sections covered in class during the previous week. You must be present to take any of the exams or quizzes. **THERE ARE NO MAKE-UPS** for the turn-in assignments and quizzes, but I will drop the lowest few scores. Exam make-ups will ONLY be given under special and extenuating circumstances. At most one make-up exam will be given. It is your responsibility to notify me as soon as you know you will miss any exam and it must be either prior to or within 24 hours of the exam.

Add/Drop Policy: The last day to add/drop or change grading option to Audit by Cyberbear is **September 15th**. The last day to change sections and to change grading options is **October 6th**. This is also the last day to drop. Changes after this deadline and until **December 5th** must be done by Petition to Drop/Add after deadline and approved by me, your advisor, and the appropriate Dean. Approval requires genuine extenuating circumstances as listed in the university catalog.

Extenuating circumstances are:
1. Missing a substantial number of classes due to illness, accident or family emergency.
2. A change in work schedule that makes it impossible to attend class or devote adequate time to the course.
3. Registration in the course by error and never attending class.
Reasons that are not satisfactory include:
1. Forgetting to turn in a drop slip.
2. Protecting your grade point average.

**Incomplete (I) Grades**: To be eligible for an "I", the following conditions must be met:
1. The student must have been in attendance and passing the course up to 3 weeks before the semester ends; and
2. The student is unable to complete the course due to extenuating circumstances, which usually means serious illness or death in the family.

Incompletes are not given under any other circumstances and are always given at the discretion of the instructor. See the 2008-2009 catalog for further information.

**Misconduct**: All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. Available for review online at http://life.umt.edu/VPSA/name/StudentConductCode.

**Special Accommodations**: Students with disabilities are welcome to discuss accommodations with me.

**Semester Schedule**: The following schedule is subject to modifications:

**Week Sections Exam & Important Dates**

8/25 – 8/29 7.1, 7.2
9/1 – 9/5 7.2, 7.3 **Sept 1: Labor Day Holiday**
9/8 – 9/12 7.4, 7.5, 7.6
9/15 – 9/19 Review, **Exam 1** Sept 15: Last Day to Add/Drop and Audit by CyberBear

**Exam 1: Wednesday, Sept 17**
9/22 – 9/26 8.1, 8.2
9/29 – 10/3 8.3, 8.4
10/6 – 10/10 8.5, 9.1, 9.2 **Oct 6: Last Day to Drop by Paper Form**
10/13 – 10/17 9.3, 9.4
10/20 – 10/24 Review, **Exam 2 Exam 2: Wednesday, Oct 22**
10/27 – 10/31 3A, 8A, 1.1
11/3 – 11/7 1.2, 1.3, 2.2 **Nov 4: Election Day**
11/10 – 11/14 2.3, 2.4, 2.5 **Nov 11: Veterans Day Holiday**
11/17 – 11/21 Review, **Exam 3 Exam 3: Wednesday, Nov 19**
11/24 – 11/28 3.1, 3.2 Nov 26: Last Day to Withdraw from all courses

Nov 26 – 28: Thanksgiving Holiday

12/1 – 12/5 3.3, Review Dec 5: Last Day to petition drop/change grading option