I. ASCRC General Education Form

<table>
<thead>
<tr>
<th>Group</th>
<th>Group III</th>
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<tbody>
<tr>
<td>Dept/Program</td>
<td>Anthropology</td>
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<table>
<thead>
<tr>
<th>Course Title</th>
<th>Prerequisite</th>
<th>Credits</th>
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II. Endorsement/Approvals

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

<table>
<thead>
<tr>
<th>Please type / print name</th>
<th>Signature</th>
<th>Date</th>
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<tbody>
<tr>
<td>Instructor</td>
<td>Randall R. Skelton</td>
<td></td>
</tr>
<tr>
<td>Phone / Email</td>
<td>4245/randall.skelton@umontana.edu</td>
<td></td>
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<tr>
<td>Program Chair</td>
<td>John Douglas</td>
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<tr>
<td>Dean</td>
<td>Gerald Fetz</td>
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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

We propose that Group III be satisfied for Anthropology majors by completion of a course in statistics, such as ANTH 401, FOR 201, MATH 241 or 341, SOC 202, or PSYC 220.

Anthropology requires their majors to take a course in statistics in order to complete the BA degree. We have had this requirement as far back as even our eldest faculty can remember, over 30 years. Although we value foreign language, both requiring statistics and requiring students to fulfill their Group III requirement by taking a foreign language would be overly burdensome on them.

A statistics course helps our students understand the relevance of samples from the fossil, archaeological, ethnographic, and linguistic records. It does this by providing a way to link and test the connections between singular or anecdotal events and broad patterns in human culture, biology, and language.

Traditionally, this symbolic sequence has consisted of two courses, but students have always taken, and will continue to take under the new GER system, the first course of the sequence to fulfill their Group II (Mathematics) requirement. Therefore it seems superfluous to state it again here. Further, all of the courses in the list above have a prerequisite that is a course that would fulfill the Group II requirement or is a course that is itself a prerequisite to one of the Group II courses.

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

<table>
<thead>
<tr>
<th>Rigorously present a mapping</th>
<th>Mathematics clearly presents such a mapping</th>
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<tr>
<td>between a real-world system</td>
<td></td>
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<td>and a human abstraction of</td>
<td></td>
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<tr>
<td>the system</td>
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</table>
Applies analysis, reasoning and creative thinking in the understanding and manipulation of symbolic codes

Solving statistical problems applies such analysis, reasoning, and creative thinking. It includes the manipulation of mathematical symbols.

Utilizes alternative methods of communication, perception, and expression in order to encourage rigorous thinking

Mathematical/statistical formulae do this.

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

Demonstrate an understanding of the symbols and the transformations of the system

This is accomplished through successful solution of problems.

Relay and interpret information in terms of the given symbolic system

Results of hypothesis tests and other statistical analyses are reported in specific symbolic manners.

Apply creative thinking using the symbolic system in order to solve problems and communicate ideas

Solution of statistical problems required use of mathematical formulae, and there is a large element of creativity (originality) in the choice of precisely how this is done.

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

Attached is a syllabus for ANTH 401 as an example of a statistics course.

*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.

ANTHROPOLOGY 401

ANTHROPOLOGICAL DATA ANALYSIS

Dr. Randall Skelton   225 Social Sciences Building
Office Hours: MWF 1:10-2:00
Phone: 243-4245, Email: randall.skelton@umontana.edu

Goals and Expectations

This course is designed as a one-term introduction to how anthropologists use quantitative analysis to solve their problems of interest. I concentrate on conceptualization and interpretation of quantitative results and hope to promote critical thinking. The course is primarily assessed on your final ability to do four things:
· solve anthropological problems involving qualitative and quantitative data;
· your understanding of scientific reasoning;
· your ability to write clear and appropriate explanations of results; and,
· your ability to choose appropriate techniques to analyze anthropological data from simple data sets.

These expectations are appropriate because they increase the chances that you will be able to independently evaluate and understand quantitative concepts in monographs and journal articles. You will also be able to analyze data from your own research using quantitative techniques.

**Administrivia**

**Blackboard Supplement**

There will be a Blackboard supplement for this class, where I will post various types of materials and information, including some required materials. You should receive email from the Blackboard administrators, sent to your official University email address, which explains how to access Blackboard. If not, you will find that the people at IT Central in SS120 will be able to help you get access. As your instructor I can only be responsible for content placed on the Blackboard supplement – not for its administration or your ability to access it.

**Attendance Policy**

Attendance is virtually required. Experience shows that those who attend regularly do much better. Especially in a class of this sort, I do not expect that you can earn better than a grade of C without attending almost every class meeting. I will not take roll, but I will use some common strategies to encourage you to attend regularly, including having frequent graded in-class exercises.

**Academic Integrity**

Students will be held to the provisions of the Student Conduct Code with regards to cheating, plagiarism, abusive language, and other issues. Violations will not be tolerated.

**Disabilities**

Students with disabilities are encouraged to meet with me to discuss any accommodations they require. I assume that accommodation services and facilities will be provided by DSS. Note that all exams are take-home, and therefore accommodations in the form of extra exam time are not relevant. I am willing to work with students who have a genuine mathematical, symbolic, or calculational learning disability, but I do not have any expertise in doing so and any plan will have to be constructed by the student with consultation and approval of DSS.
Required Materials

Textbook: There is no printed textbook. Instead, we will use a variety of browsable resources on the WWW. Most lectures will have required browsing. Taken together, these required browsings, along with any handouts provided by the instructor, constitute the textbook for this class.

Required Browsing: The required browsing for each lecture will be provided via the Blackboard shell. I have specified the required browsing for the first 6 lectures (which are all I have completed at this time), and you should check Blackboard for the required browsing for the rest of the lectures.

Calculator: You will find that some form of calculator is essential. At a minimum, the calculator needs to have a square root function, but you don’t need to spend a lot of money on a fancy statistical calculator. It's far better to have a simple calculator that you know how to use, than a fancy calculator that you don’t know how to use.

Grading

For undergraduates, your grade will be based on in-class and take-home assignments (30%), a take-home midterm (30%), and a take-home final (40%). In-class assignments are offered in class only and no make-ups will be allowed. In cases of excused absence I will excuse you from the requirement to take the quiz. Late exams will lose credit at the rate of 20% per each day the University is open and holding classes.

Your score in the course will be calculated to yield your grade using this scale: A = 100-90, B = 89-80, C = 79-60, D = 59-50, F = <50. I reserve the right to modify these basic grades with a + or - in special cases if I believe it is appropriate.

Following Graduate School policy, Graduate students must in addition complete a “graduate increment”, which for this class will consist of a minimum five-page discussion of how you will use statistics in your graduate research. This will count 10% of your grade, with the items listed above scaled to represent 90% of your grade.

Basic Philosophy for This Class

This class is not required for any students (you can take MATH 241, SOC 202, PSYC 220, BIOL/WBIO 240, or FOR 201 instead). Therefore, I assume that all students who have enrolled in the class have done so because they want to learn how to do anthropological data analysis. Given this, I encourage and try to reward behavior which suggests that a student is attempting to enhance how quickly or thoroughly they learn the material, seeking to minimize the effort
involved in doing an analysis correctly, and similar wholesome strategies. On the other hand, I will have little respect or tolerance for any behavior which suggests that a student is trying to avoid learning the material.

I believe that genuine knowledge of statistics and data analysis includes understanding why statistics are used and why particular tests or analytical procedures are used in particular situations. I do not believe in memorizing formulas (they can be looked up in a textbook or online), endless repetitive calculations (you should do it by hand a couple of times, then use a computer thereafter), or that producing large quantities of mindless work enhances learning of genuine knowledge. I also do not believe that (within reason) the speed with which a student can solve a problem should be a criterion in their grade. I do not assign large penalties for clerical or calculation errors, but I assign larger penalties to logic errors. I will always be more interested in how you did the analysis than in the exact answer you got (right or wrong). Getting the correct answer the wrong way will not earn full credit.

Policy on Collaboration and Use of Outside Resources:

Students are encouraged to work and study together, including working together on completing the exercises. Additionally, there are many resources available on the internet and elsewhere. I encourage you to work together and use whatever resources you can find to the extent that it enhances your understanding of the material being learned. My only requirement is that you must acknowledge your collaboration with other students and/or your use of these and other resources in any work you turn in. Acknowledging collaborators and sources in this way is genuine scholarship, and failing to acknowledge them is a form of plagiarism.

However, the privilege of collaboration and use of external resources does not extend to copying other peoples’ work and turning it in as your own. Each student must write up the exercises and exam question independently using their own words. You should use these opportunities to show me that you individually understand the material. It is not acceptable for two or more students to work together and turn in similar answers that are a joint effort.

Regretfully, I must punish infractions of this policy. If I find that two or more students have turned in assignments or exams that are copies, or which I judge to be “too similar”, I will split the credit for that assignment evenly between the students involved. If I detect an answer that is too similar to one on a website, I will award that student zero credit.
Policy on Computer Use:

Use computers on homework or exams as much as you can. No professional does statistical calculations "by hand" unless they have no other choice. A good spreadsheet, such as Microsoft Excel will handle everything we will do in this class; and a good statistical software program, OpenStat, is available as a free download.

Course Content

The content of this course has been established to be as contained in the document at http://www.anthro.umt.edu/notes/401/content.htm. My approach to this content is my own and the order of presentation of topics will differ from their order of being listed in this document.

COURSE OUTLINE

We will cover the following topics, approximately in the order presented.

The midterm will be handed out on October 12, and will be due one week later. It will cover whatever we get to by that point. The final will be handed out at the beginning of the last week of class, and will be due on the scheduled final exam day. About 80% of the material covered on the final will be from what we did after the midterm, and about 20% will come from what we did before the midterm.

Required browsing materials are linked on Blackboard, as well as available through the URL specified. They should be read before the lecture on the subject. I will rely on you to keep track of where we are in this course outline and to have done the appropriate required browsing.

Lecture 1: Statistics in Anthropology

Lecture 2: The Scientific Method.


Lecture 3: The Basics of Data Collection

Required browsing:
   Read all five linked sections accompanying this article.
   Only read the first three of the linked sections.

Lecture 4: Types of Data
Required browsing:
Focus on the “Levels of Measurement” section.

Lecture 5: Working with Nominal Data: Counts and Frequencies
Required Browsing:

Lecture 6: Hypothesis Testing for Nominal Data.
Required Browsing:

Lecture 7: More Nominal Hypothesis Testing
Required Browsing: None

Lecture 8: Small Samples of Nominal Data
Required Browsing:
Lecture 9: Chi Squared
Required Browsing:

Lecture 10: Moving on to Other Types of Data
Required Browsing: None

Lecture 11: Working with Ordinal Data
Required Browsing:

Lecture 12: Wilcoxon (Rank Order) Hypothesis Tests for Ordinal Data
Required Browsing:

Lecture 13: More Tests for Ordinal Data
Required Browsing: None

Lecture 14: Spearman's r: Estimating the Strength of Association for Ordinal Data
Required Browsing:

Lecture 15: Describing Quantitative Data
Required Browsing:

Lecture 16: Displaying Quantitative Data
Required Browsing:
Lecture 17: Normality
Required Browsing:

Lecture 18: Grouped Data, Types of Errors, and Power
Required Browsing:

Lecture 19: Hypothesis Tests for Quantitative Data
Required Browsing:

Lecture 20: How to Make Almost Anything Into a z or t Score
Required Browsing:

Lecture 21: Correlation
Required Browsing:

Lecture 22: Interpreting Correlation
Required Browsing:

Lecture 23: Regression
Required Browsing:

Lecture 24: F-Tests & ANOVA
Required Browsing:

Lecture 25: Being an Intelligent Statistics Consumer
Required Browsing: