Course information:
Copy and paste current course information from Class Search/Course Catalog.

<table>
<thead>
<tr>
<th>Academic Unit</th>
<th>College of Liberal Arts and Sciences</th>
<th>Department</th>
<th>School of Human Evolution and Social Change</th>
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<tbody>
<tr>
<td>Subject</td>
<td>ASM</td>
<td>Number</td>
<td>465</td>
</tr>
<tr>
<td>Title</td>
<td>Quantification Analysis for Anthropologists</td>
<td></td>
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<tr>
<td>Units</td>
<td>3</td>
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</table>

Is this a cross-listed course? No
If yes, please identify course(s) 

Is this a shared course? Choose one
If so, list all academic units offering this course

Course description:

Requested designation: (Choose One)
Note- a separate proposal is required for each designation requested

Eligibility:
Permanent numbered courses must have completed the university's review and approval process.

For the rules governing approval of omnibus courses, contact the General Studies Program Office at (480) 965-0739.

Area(s) proposed course will serve:
A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

Checklists for general studies designations:
Complete and attach the appropriate checklist
• Literacy and Critical Inquiry core courses (L)
• Mathematics core courses (MA)
• Computer/statistics/quantitative applications core courses (CS)
• Humanities, Fine Arts and Design core courses (HU)
• Social and Behavioral Sciences core courses (SB)
• Natural Sciences core courses (SQ/SG)
• Global Awareness courses (G)
• Historical Awareness courses (H)
• Cultural Diversity in the United States courses (C)

A complete proposal should include:
☒ Signed General Studies Program Course Proposal Cover Form
☒ Criteria Checklist for the area
☒ Course Syllabus
☒ Table of Contents from the textbook, and/or lists of course materials

Contact information:
Name: Melissa Beresford
Phone: 480-965-9649

Mail code: 2402
E-mail: melissa.beresford@asu.edu

Department Chair/Director approval: (Required)

Chair/Director name (Typed): Alexandra Brewis Slade
Date: 9/13/2013

Chair/Director (Signature): __________________________
Rationale and Objectives

The Mathematical Studies requirement is intended to ensure that students have skill in basic mathematics, can use mathematical analysis in their chosen fields, and can understand how computers can make mathematical analysis more powerful and efficient. The Mathematical Studies requirement is completed by satisfying both the Mathematics [MA] requirement and the Computer/Statistics/Quantitative Applications [CS] requirement explained below.

The Mathematics [MA] requirement, which ensures the acquisition of essential skill in basic mathematics, requires the student to complete a course in College Mathematics, College Algebra, or Precalculus, or demonstrate a higher level of skill by completing a mathematics course for which any of the first three courses is a prerequisite.

The Computer/Statistics/Quantitative Applications [CS] requirement, which ensures skill in real world problem solving and analysis, requires the student to complete a course that uses some combination of computers, statistics, and mathematics.

Approved: Feb. 2000
Proposer: Please complete the following section and attach appropriate documentation.

### ASU-[CS] CRITERIA

**A COMPUTER/STATISTICS/QUANTITATIVE APPLICATIONS [CS] COURSE MUST SATISFY ONE OF THE FOLLOWING CRITERIA: 1, 2, OR 3**

<table>
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<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Documentation Submitted</th>
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</table>

1. **Computer applications**: courses must satisfy both a and b:

   a. Course involves the use of computer programming languages or software programs for quantitative analysis, modeling, simulation, animation, or statistics.

   | ☐ | ✗ |

   b. Course requires students to analyze and implement procedures that are applicable to at least one of the following problem domains (check those applicable):

   | ☐ | ☐ |
   | ☐ | ☐ |
   | ☐ | ☐ |
   | ☐ | ☐ |

   i. Spreadsheet analysis, systems analysis and design, and decision support systems.

   ii. Graphic/artistic design using computers.

   iii. Music design using computer software.

   iv. Modeling, making extensive use of computer simulation.

   v. Statistics studies stressing the use of computer software.

   *The computer applications requirement cannot be satisfied by a course, the content of which is restricted primarily to word processing or report preparation skills; learning a computer language or a computer software package; or the study of the social impact of computers. Courses that emphasize the use of a computer software package or the learning of a computer programming language are acceptable, provided that students are required to understand, at an appropriate level, the theoretical principles embodied in the operation of the software and are required to construct, test, and implement procedures that use the software to accomplish tasks in the applicable problem domains.*

2. **Statistical applications**: courses must satisfy both a and b.

   a. Course has a minimum mathematical prerequisite of College Mathematics, College Algebra, or Precalculus, or a course already approved as satisfying the MA requirement.

   | ✗ | ☐ |

   b. The course must be focused principally on developing knowledge in statistical inference and include coverage of all of the following:

   | ☐ | ☐ |
### ASU--[CS] CRITERIA

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<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Document Submitted</th>
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<tbody>
<tr>
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<tr>
<td>i.</td>
<td></td>
<td>Design of a statistical study.</td>
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<tr>
<td>ii.</td>
<td></td>
<td>Summarization and interpretation of data.</td>
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<td>iii.</td>
<td></td>
<td>Methods of sampling.</td>
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<tr>
<td>iv.</td>
<td></td>
<td>Standard probability models.</td>
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<td>v.</td>
<td></td>
<td>Statistical estimation</td>
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<td>vi.</td>
<td></td>
<td>Hypothesis testing.</td>
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<tr>
<td>vii.</td>
<td></td>
<td>Regression or correlation analysis.</td>
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</tbody>
</table>

3. **Quantitative applications**: courses must satisfy both a and b

   a. Course has a minimum mathematical prerequisite of College Mathematics, College Algebra, or Precalculus, or a course already approved as satisfying the MA requirement.

   b. The course must be focused principally on the use of mathematical models in quantitative analysis and decision making. Examples of such models are:

   i. Linear programming.

   ii. Goal programming.

   iii. Integer programming.
<table>
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<tr>
<th>YES</th>
<th>NO</th>
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<th>Identify Documentation Submitted</th>
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<tr>
<td></td>
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<td>iv. Inventory models.</td>
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<td>v. Decision theory.</td>
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<td>vi. Simulation and Monte Carlo methods.</td>
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<td>vii. Other (explanation must be attached)</td>
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</table>
Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

<table>
<thead>
<tr>
<th>Criteria (from checksheet)</th>
<th>How course meets spirit (contextualize specific examples in next column)</th>
<th>Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2a</td>
<td>pre-req = MAT 119 or higher</td>
<td>See green highlight in syllabus</td>
</tr>
<tr>
<td>2b i–vii</td>
<td>course focuses principally on developing knowledge in statistical inference</td>
<td>see yellow highlight in syllabus</td>
</tr>
</tbody>
</table>
ASM 465 – Quantification and Analyses for Anthropologists
David R. Abbott
Spring, 2011

General Information
Class meets: Monday and Wednesday 3:00-4:15, Language and Literature Rm. 230
Abbott’s ph/mail: 480-965-6452, david.abbott@asu.edu
Abbott’s office hours: SHESC Rm. 358, Thursday 1:30-4:30, or by appointment

Prerequisite: MAT 119 or higher

Course Description
This course will use an intuitive approach to introduce students to quantitative analysis in anthropology. The fundamentals of descriptive and inferential statistics will be covered with examples drawn from the anthropological literature.

Course Procedures
Each student is responsible for the material covered in lecture and for assigned readings (to be read before each class period). Readings come from the required textbook and are listed on the course schedule. Homework exercises will be assigned on a regular basis but will not be collected or graded. Students are encouraged to work collaboratively on the homework exercises. Time will be allotted for questions on the homework at the beginning of each class period.

Please bring your textbook and hand calculator to each class and exam.

Regarding Missed Exams: Few excuses are acceptable for missing an exam, and permission must be obtained from me prior to the listed exam date to be considered for taking a make-up exam. No make-up is allowed for the final exam.

I take issues related to academic honesty very seriously. Acts of academic dishonesty (i.e., cheating on exams and quizzes) on the part of any student will result in failure of the course.

Grades will be assigned on the basis of three equally weighted exams (25% each) and the average of in-class quizzes (25%).

Exams: The exams are non-cumulative (although topics later in the course will build on the material covered earlier in the course). Each exam will follow one day of in-class review. All exams are open book. Computers and cell phones may not be used during exams. Final Exam Date and Time: May 11, 12:10-2:00.

Quizzes: All quizzes are regularly scheduled (see the course schedule) and are taken immediately following the questions section at the beginning of the class period. All quizzes are open book. Computers or cell phones may not be used during quizzes. To derive the average of the quizzes, two missed quizzes will be dropped first. If one quiz was missed then the lowest grade will also be dropped. If no quizzes were missed, the lowest two grades will be dropped. There are no make-ups for quizzes.
Required Materials
Hand Calculator: Any model will do that offers a square root function.

Student Standards
Students are required to read and act in accordance with university and Arizona Board of Regents policies, including:

The ABOR Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308:
http://www.abor.asu.edu/1_the_regents/policymanual/chap5/5Section_C.pdf

Student Support and Disability Accommodations
ASU offers support services through Counseling (http://students.asu.edu/counseling), the Learning Resources Center (www.asu.edu/lrc), and the Disability Resource Center (http://www.asu.edu/studentaffairs/ed/drc/). If you are a student in need of special arrangements, we will do all we can to help, based on the recommendations of these services. For the sake of equity for all students, we cannot make any accommodations without formal guidance from these services.

Grade Appeals
ASU has formal and informal channels to appeal a grade. If you wish to appeal any grading decisions, please see http://catalog.asu.edu/appeal.
Schedule of Topics, Exams, Quizzes, and Homework

1. Introduction – Design of Statistical Study
   Homework: Read Chapters 1 and 2; skip “Likert Scales” on pp. 43-45.

2. Scales of Measurement, Frequency Distributions, Graphs – How to interpret statistical data
   Homework: Read Chapter 4; Exercise 2.2.

3. Descriptive Statistics, Box Plots
   Homework: Read Chapter 5; Exercises 4.1, 4.2, 4.4, 4.5, 4.6, 4.14.

4. QUIZ 1
   Methods of Sampling – Random sampling and non-random sampling
   Homework: Exercise 5.2 (exclude part 4, use raw data – don’t tabulate)

5A. Probability
   Homework: Worksheet handed out in class (problems 1-12).

5B. QUIZ 2
   Permutations and Combinations
   Homework: Continue with worksheet (problems 13-14).

6. Discrete Random Variables, Multiple Trials, Probability Distributions, Binomial Distribution
   Homework: Read Chapter 8, pages 225-234 only. Worksheet

7. Statistical Estimation - More Binomial, Normal Distribution, Z-scores
   Homework: Exercise 8.1. Worksheet – Review Exercises

8. QUIZ 3
   Review for Exam 1

9. EXAM 1
   Homework: Read Chapter 7.

10. Tests of Significance/Hypothesis Testing
    Homework: Read Chapter 8, pages 234-246 only.

11. Central Limit Theorem, Normality Assumption, Estimate of a Proportion

12. Confidence Intervals
    Homework: Finish reading Chapter 8 except pp. 246-256 (will include a mix of material we have already discussed and new material on hypothesis testing); Exercises 8.6 (questions 1 and 2 only), 8.7 (question 1 only), 8.8 (questions 1-6 only).

13. QUIZ 4
    Testing a Mean and a Proportion, Directional Hypotheses
    Homework: Read pp. 246-256 (t-test); Exercise handed out in class.
14. One-sample t-test
   Homework: Exercises 8.2 (questions 1-3) and 8.6 (questions 3, 4).

15. Difference of Means and Difference of Proportions: Tests and Confidence Intervals,
   Homework: Read Chapter 9, pp. 271-288; 303-310 only; Exercise handed out in class.

16. QUIZ 5
   Difference of Means: t-test
   Homework: Read Chapter 10, pp. 317-343 only; Exercises: 9.1 and 9.3.

17. Analysis of Variance (ANOVA)
   Homework: Read: pp. 150-164, 408-411; Exercises: 10.3, 10.5.

18. QUIZ 6 (ANOVA – Take Home)
   Review for Exam 2

19. EXAM 2
   Homework: Read pp. 359-366, 398-408, 412-421

20. Non-parametric Tests: Chi-square Goodness of Fit Test
    Homework: Exercise handed out in class.

21. QUIZ 7
    Contingency Table Analysis: Chi-square Test of Independence
    Homework: Exercise handed out in class.

22. Contingency Table Analysis: Two-step Process, Measuring the Strength of Association
    Homework: Exercises 12.1 (do $\chi^2$ and Cramer’s V only), 12.3 (do $\chi^2$ and Cramer’s V only), problems handed out in class.

23. QUIZ 8
    Mann-Whitney-Wilcoxon Test of Two Medians
    Homework: Exercise handed out in class.

24. Correlation and Regression

25. Review for Final Exam

26. FINAL EXAM