

**UCC/UGC/ECCC**

Proposal for Course Change

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| **[x]  FAST TRACK (Select if this will** **be a fast track item. Refer to**  [***Fast Track Policy***](http://www4.nau.edu/avpaa/UCCPolicy/Agenda_FastTrack_Consent.docx) **for eligibility)** |

# *If the changes included in this proposal are significant, attach copies of original and proposed syllabi in* [*approved university format*](http://www4.nau.edu/avpaa/UCCForms/syllabus.doc)*.*

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| 1. Course subject and number: | STA 473 | 2. Units: | 3 |

 [**See upper and lower division undergraduate course definitions**](http://www4.nau.edu/avpaa/UCCPolicy/Uplow.doc).

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| 3. College: | CEFNS | 4. Academic Unit: | Mathematics & Statistics |

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| 5. Current Student Learning Outcomes of the course.Upon successful completion of the course, the student will be able to:Use the axioms and other elementary propertiesof probability, as well as combinatorial methods(with and without replacement), to solve problems involving events defined on a sample space.2) Apply the concepts of probability, conditional probability, and independence to prove elementary results.3) Derive properties of random variablesusing appropriate density or probability mass functions, cumulative distribution functions,expectation, and moment generating functions.4) Work with jointly distributed random variables and calculate marginal and conditional density or probability mass functions; joint, marginal, and conditional expectation, and covariance.5) Find the probability distribution of a function of a random variable.6) Recognize commonly used discrete(binominal, hypergeometric, geometric, Poisson) and continuous (uniform, normal, exponential, beta, gamma, and chi-square) random variablesAnd use them to solve problems.7) Express proofs, derivations, and other results in a coherent form using correct mathematicallanguage and reasoning. | Show the proposed changes in this column (if applicable). Bold the proposed changes in this column to differentiate from what is not changing, and Bold with strikethrough what is being deleted. *(*[*Resources & Examples for Developing Course Learning Outcomes*](http://www4.nau.edu/avpaa/Assessment/CourseLearningOutcomesPDF_090712.pdf)*)*Upon successful completion of the course, the student will be able to:Use the axioms and other elementary propertiesof probability, as well as combinatorial methods(with and without replacement), to solve problems involving events defined on a sample space.2) Apply the concepts of probability, conditional probability, and independence to prove elementary results.3) Derive properties of random variablesusing appropriate density or probability mass functions, cumulative distribution functions,expectation, and moment generating functions.4) Work with jointly distributed random variables and calculate marginal and conditional density or probability mass functions; joint, marginal, and conditional expectation, and covariance.5) Find the probability distribution of a function of a random variable.6) Recognize commonly used discrete(binominal, hypergeometric, geometric, Poisson) and continuous (uniform, normal, exponential, beta, gamma, and chi-square) random variablesAnd use them to solve problems.7) Express proofs, derivations, and other results in a coherent form using correct mathematicallanguage and reasoning. |

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| 6. Current **title,** **description** and **units**. Cut and paste, in its entirety,from the current on-line academic catalog\* [**http://catalog.nau.edu/Catalog/**](http://catalog.nau.edu/Catalog/).STA 473 Introduction To Mathematical Statistics I (3) Elementary combinatorial probability theory, random variables, probability distributions, and moments. Letter grade only.**Prerequisite:** MAT 238 with grade of C or better | Show the proposed changes in this column **Bold** the proposed changes in this column to differentiate from what is not changing, and **~~Bold with strikethrough~~**what is being deleted.STA 473 Introduction To Mathematical Statistics I (3) Elementary combinatorial probability theory, random variables, probability distributions, and moments. Letter grade only.**Prerequisite:** MAT 238 **and (STA 270 or STA 275)** with grade**s** of C or better |

\*if there has been a previously approved UCC/UGC/ECCC change since the last catalog year, please copy the approved text from the proposal form into this field.

 7. Justification for course change.

Elementary statistical concepts and methods are relied on in this course and subsequent courses. Since STA 270 or 275 is required of mathematics majors, this will not add any courses to a students program, it will merely insure that they have the elementary course prior to taking STA 473.

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| 8. Effective **BEGINNING** of what term and year? | **Fall 2014** |
| [**See effective dates calendar**](http://www4.nau.edu/avpaa/timelines/1314Effective.xls). |  |

**IN THE FOLLOWING SECTION, COMPLETE ONLY WHAT IS CHANGING**

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| **CURRENT** | **PROPOSED** |
| Current course subject and number: | Proposed course subject and number: |
| Current number of units: | Proposed number of units: |
| Current short course title: | Proposed short course title (max 30 characters): |
| Current long course title: | Proposed long course title (max 100 characters): |
| Current grading option:letter grade [ ]  pass/fail [ ]  or both [ ]  | Proposed grading option:letter grade [ ]  pass/fail [ ]  or both [ ]  |
| Current repeat for additional units: | Proposed repeat for additional units: |
| Current max number of units: | Proposed max number of units: |
| Current prerequisite: MAT 238 with grade of C or better | Proposed prerequisite (include rationale in the justification): **MAT 238 and (STA 270 or STA 275) with grades of C or better** |
| Current co-requisite: | Proposed co-requisite (include rationale in the justification): |
| Current co-convene with: | Proposed co-convene with: |
| Current cross list with: | Proposed cross list with: |

9. Is this course in any plan (major, minor, or certificate) or sub plan (emphasis)? Yes [x]  No [ ]

 If yes, describe the impact. If applicable, include evidence of notification to and/or response

 from each impacted academic unit.

BS Mathematics-related plan change being submitted concurrently.

Statistics Minor (elective)-no impact.

10. Is there a related plan or sub plan change proposal being submitted? Yes [x]  No [ ]

 If no, explain.

11. Does this course include combined lecture and lab components?                  Yes [ ]  No [x]

 If yes, include the units specific to each component in the course description above.

**Answer 12-15 for UCC/ECCC only:**

12. Is this course an approved Liberal Studies or Diversity course?                    Yes [ ]  No [x]         If yes, select all that apply.   Liberal Studies [ ]    Diversity [ ]    Both [ ]

13. Do you want to remove the Liberal Studies or Diversity designation?            Yes [ ]  No [ ]

 If yes, select all that apply.   Liberal Studies [ ]    Diversity [ ]     Both [ ]

14. Is this course listed in the [**Course Equivalency Guide**](https://aztransmac2.asu.edu/cgi-bin/WebObjects/Admin_CEG.woa/wa/ByInst?inst=NAU)?                               Yes [ ]  No [x]

15. Is this course a [**Shared Unique Numbering**](https://aztransmac1.asu.edu/cgi-bin/WebObjects/ATASS.woa/wa/SUNList?S=X) (SUN) course?                            Yes [ ]  No [x]

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| **FLAGSTAFF MOUNTAIN CAMPUS** |  |
| **Scott Galland**  | **12/2/2013** |
| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals**: |  |
|  | 01/27/2014 |
| Department Chair/Unit Head (if appropriate) | Date |
|  |  |
| Chair of college curriculum committee | Date |
|  |  |
| Dean of college | Date |
|  |  |
| **For Committee use only:** |  |
|  |  |
| UCC/UGC Approval | Date |

Approved as submitted: Yes [ ]  No [ ]

Approved as modified: Yes [ ]  No [ ]

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| **EXTENDED CAMPUSES** |  |
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| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals:**  |  |
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| Academic Unit Head | Date |
|  |
| Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning) | Date |
|  |
| Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning) | Date |
|  |
| Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning) | Date |
|  |
| Chief Academic Officer; Extended Campuses (or Designee) | Date |
|  |  |

Approved as submitted: Yes [ ]  No [ ]

Approved as modified: Yes [ ]  No [ ]