### Course Information

<table>
<thead>
<tr>
<th>Course #:</th>
<th>STAT 5329</th>
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<tbody>
<tr>
<td>Course Title:</td>
<td>Statistical Programming</td>
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<tr>
<td>Credit Hrs:</td>
<td>3</td>
</tr>
<tr>
<td>Term:</td>
<td>Fall 2019</td>
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<tr>
<td>Course Meetings &amp; Location:</td>
<td>Online and Bell Hall Computer Lab, R 1:30 – 2:50</td>
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<tr>
<td>Prerequisite Courses:</td>
<td>Department Approval Required</td>
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**Course Fee: (if applicable)** NA

**Instructor:** Amy Wagler

**Office Location:** Bell Hall 311

**Contact Info:**
- Phone #: 744-6847
- E-mail address: awagler2@utep.edu
- Fax #: 744-6502

**Office Hrs:** TBA

**Textbook(s), Materials:**
- Required: none
- Suggested: The Art of R Programming, Matloff

### Course Objectives (Learning Outcomes):

Introduces students to the principles and concepts of programming in SAS and R. Students will be able to manipulate data, create summary reports and lists, edit and interactively debug code, manage complex data sets, transform and generate data, create effective graphics for data visualization, create user-defined functions and SAS macros, handle various data formats, and learn the fundamentals of resampling methods in SAS and R.

### Course Activities/Assignments:

Each week will require in-class work completed by the end of the week. Additionally, bi-weekly assignments are given. A midterm and final exam will also be administered during the semester.

A grading rubric will be used for the bi-weekly assignments. There will be a mid-term and final in-class exam. Daily in-class assignments are graded for completeness only. There is a minimum score (40%) that you are expected to obtain on both the midterm and final exams. If the mean of both exams does not exceed 40%, then the homework grade will be dropped from your course grade.
Course Schedule:
Week 1: Getting Started in SAS; SAS syntax
Week 2: SAS Data Sets
Week 3: Reading in Data; Validating and Cleaning Data
Week 4: Manipulating Data; Combining Data; SAS reports
Week 5: Input and outputting Data; Processing and Restructuring Data
Week 6: Combining Data v2; SAS Macros
Week 7: Extra SAS topics or handling simulations in SAS
Week 8: R Intro, help and packages – MIDTERM EXAM (in-class)
Week 9: vectorized calculations, matrices and arrays
Week 10: lists and data frames, programming structures
Week 11: simulations and efficient programming
Week 12: permuting and bootstrapping
Week 13: creating R functions (packages?)
Week 14: final topics and FINAL EXAM

Grading Policy:
20% Weekly Lab assignments
20% Midterm Exam (there is an in-class and take-home portion)
20% Final Exam (there is an in-class and take-home portion)
40% Homework Assignments (about 5)

Make-up Policy:
If class is missed for a valid and documented reason, the daily in-class assignments may be made-up for full credit. All other assignments must be turned in on time.

Attendance Policy:
You are expected to attend class so that you may turn in the in-class assignments and bi-weekly homework assignments.

Academic Integrity Policy:
Please see http://academics.utep.edu/Default.aspx?tabid=23785

Civility Statement:
This is a class where participation is required. You will be seated in front of a computer all class period and you are expected to follow the lecture/discussion and at various times complete in-class assignments. You are not to browse the internet during class time or work on any other material. If you regularly do not complete in-class assignments in a satisfactory manner, participate in class, or if you work on other material in class you will have points deducted from your in-class assignments portion of your grade.

Disability Statement:
If a student has or suspects she/he has a disability and needs an accommodation, he/she should contact the Disabled Student Services Office (DSSO) at 747-5148 or at <dss@utep.edu> or go to Room 106 Union East Building. The student is responsible for presenting to the instructor any DSS accommodation letters and instructions.
Military Statement: If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact me as soon as possible.

UTEP College of Science Policies: The UTEP Spring 2019 drop deadline is November 1, 2019. The College of Science will remain aligned with the University and not approve any drop requests after that date.

All grades of Incomplete must be accompanied by an Incomplete Contract that has been signed by the instructor of record, student, departmental chair, and the dean. Although UTEP will allow a maximum of one year to complete this contract, the College of Science requests it be limited to month based upon completion data. A grade of Incomplete is only used in extraordinary circumstances confined to a limited event such as a missed exam, project, or lab. If the student has missed a significant amount of work (e.g. multiple assignments or tasks), a grade of Incomplete is not appropriate or warranted.
<table>
<thead>
<tr>
<th>Criterion</th>
<th>Approx. % of Grade</th>
<th>Excellent (100%)</th>
<th>Adequate (80%)</th>
<th>Poor (60%)</th>
<th>Not Met (0%)</th>
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<tbody>
<tr>
<td>Program Specifications /</td>
<td>50%*</td>
<td>No errors, program always works correctly and meets the specification(s).</td>
<td>Minor details of the program specification are violated, program functions</td>
<td>Significant details of the specification are violated, program often</td>
<td>Program only functions correctly in very limited cases or not at all.</td>
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<td>Correctness</td>
<td></td>
<td></td>
<td>incorrectly for some inputs.</td>
<td>exhibits incorrect behavior.</td>
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<tr>
<td>Readability</td>
<td>20%</td>
<td>Code is clean, understandable, and well-organized.</td>
<td>Minor issues with consistent indentation, use of whitespace, variable naming,</td>
<td>At least one major issue with indentation, whitespace, variable names, or</td>
<td>Major problems with at three or four of the readability subcategories.</td>
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<td></td>
<td></td>
<td></td>
<td>or general organization.</td>
<td>organization.</td>
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<tr>
<td>Documentation</td>
<td>5%</td>
<td>Code is well-commented.</td>
<td>One or two places that could benefit from comments are missing them or the code</td>
<td>File header missing, complicated lines or sections of code uncommented or</td>
<td>No file header or comments present.</td>
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<td></td>
<td></td>
<td>is overly commented</td>
<td>lacking meaningful comments.</td>
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<tr>
<td>Code Efficiency</td>
<td>20%</td>
<td>Code uses the best approach in every case.</td>
<td>Code uses poorly-chosen approaches (though correct in result) in at least one</td>
<td>Code uses poorly-chosen approaches (though correct in result) in at least</td>
<td>Many things in the code could have been accomplished in an easier, faster,</td>
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<td></td>
<td></td>
<td>place.</td>
<td>two places.</td>
<td>or otherwise better fashion.</td>
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<tr>
<td>Assignment Specifications</td>
<td>5%</td>
<td>No errors</td>
<td>Minor details of the assignment specification are violated, such as files named</td>
<td>Minor details of the assignment specification are violated, such as files</td>
<td>Significant details of the specification are violated, such as extra</td>
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<td></td>
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<td></td>
<td>incorrectly or extra instructions slightly misunderstood.</td>
<td>named incorrectly or extra instructions significantly misunderstood.</td>
<td>instructions ignored or entirely misunderstood.</td>
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