Instructor: Dr. James Z. Zhang

Contact Info: Office Hours: Please see the office hours posted on my door. Please call or e-mail if this time will not work with you. I can be reach at:
Office Tel: 828-227-2167
E-mail: zhang@email.wcu.edu

Office Location: 336 Belk Building

Meeting Periods: Lecture – Tuesday and Thursday 2:05pm-3:20pm; in Belk 365.

Course Eval Dates: November 10 – November 21, 2008

Course Description: This course focuses on engineering applications of probability theory. Problems on events, independence, random variables, distribution and density functions, expectations, and characteristic functions will be discussed. Other topics include dependence, correlation, and regression, and multivariate Gaussian distribution. Stochastic processes, stationarity, ergodicity, correlation functions, spectral densities, random inputs to linear systems, and Gaussian processes are an integral part of this course.

Course Goals: The purpose of this course is to provide an opportunity for students to gain a working knowledge of random variables and stochastic processes for electrical engineering problem solving. Specifically, the course will provide students with an opportunity to attain the following objectives:

1. Gain an in-depth understanding of the topics listed above;
2. Develop a working knowledge of selected probability models and distributions;
3. Gain a working knowledge of modeling engineering problems as stochastic processes;
4. Apply knowledge to solving specific engineering problems in various fields;
5. Expand knowledge to the student’s research area;

Prerequisites: An undergraduate course in statistics.

Required Text: none required. The instructor will provide class-notes based on the reference textbook.


Instructional Approach: Two lecture/discussion periods per week and reading assignments. Open class discussion is an important element of this class. Students are responsible for the content of all reading assignments whether or not the material is covered in class. Additionally all students will be required to utilize the assigned software for project administration.

Evaluation: Final grades will be based on the following percentages:

| Assignments (10) | 4% each |
| Project | 10% |
| Term Exams (3) | 30% |
| Final Exam | 20% |

Grading Scale:

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<tr>
<th>Grade</th>
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<tr>
<td>A</td>
<td>90-100</td>
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<td>B</td>
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<td>C</td>
<td>70-79</td>
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<td>F</td>
<td>69 &amp; below</td>
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Assignments: There will be 10 assignments, 1 Project, 3 term exams, and a final exam. Some the problems sets will involve both hand calculations (calculator ok) and computer generated calculations. Late work (no more than one week) accepted with 50% penalty, otherwise will not be accepted.

Project: Each student must complete an applied research project. This project will be completed during the last 4 weeks of class (but do not wait until week 12 to start). A preliminary proposal must be submitted for instructor approval by week 8. The project will be treated as equivalent to 4 weekly problem sets. A format guide for writing the final report is attached. With minor modifications and proper formatting, it is expected that the final report is publishable in an appropriate media.

Honor Code: Students are expected to comply with the spirit and intent of the University Academic Honesty Policy as stated in the Undergraduate Catalogue. Visit WCU’s Undergraduate Student Handbook for all related policies and procedures. http://www.wcu.edu/studentd/StudentHandbook

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require disability services or reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716 or 144 Killian Annex.
PROJECT FORMAT/GRADING SHEET

POINTS

(15) **PROPOSAL**: A two page report having the following sections.
   (5) 1. Research purpose and problem statement.
   (5) 2. Objectives (specific)
   (5) 3. Procedures

(70) **FINAL REPORT**: Include the following sections.

   **Title Page**: Show project title.

   **Table of Contents**: Show index of report including all sections, tables, charts, graphs, drawings.

   **Main Body**:

   (5) 1. *Abstract* - Provide summary statement of the project including the purpose, project overview, results, and conclusions.
   (5) 2. *Introduction* - State the problem, the objectives, background, definitions and delimitations.
   (10) 3. *Procedure* - Describe the steps taken and statistical methods employed in carrying out the project.
   (10) 4. *Results* - The results section describes the presentation of data both in summary and tables. There should be at least one result for each stated objective.
   (15) 5. *Data analysis, conclusion, and recommendations* - Restate the problem, and provide a thorough data analysis. Draw logical conclusion(s) based on data presented. State recommendations for further research.
   (15) 6. *Appendix* - The appendices should include the raw data, statistical procedure printouts, charts, graphs, tables, and other relevant supporting documentation.
   (10) 7. *Bibliography* - Reference all sources used in the written report following standard IEEE format.

(15) **PRESENTATION**

(100) **TOTAL POSSIBLE POINTS**