COURSE SYLLABUS

Course Prefix/Number: STA5326-2093/2094

Course Title: Mathematical Statistics II

Course Credit Hours: 3 HRS

Instructor Name and Contact Information:
Dr. Subhash C. Bagui,
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Prerequisites or Co-Requisites: STA4321 (or MAP5471)

Course Description: Advanced topics in probability, Point and interval estimation, Measures of quality of estimates, Bayesian estimates, Robust estimation, Statistical hypothesis testing, SPR test, Cramer-Rao inequality, Completeness, Rao-Blackwell theorem, Distribution of quadratic form, Multivariate normal distributions.

Student Learning Outcomes:
Upon completion of this course the student will:
- Demonstrate the ability to solve problems in advanced topics in probabilities.
- Demonstrate the ability to solve problems related to discrete and continuous distributions, mgf, expectations for special distributions, and limit theorems.
- Demonstrate the ability to find sufficient statistics, complete sufficient statistics, UMVU, MLE, consistent estimators, method of moments estimators, and Bayes estimators.
- Demonstrate the ability to construct MP, UMP, UMPU, MLR, LR, and SPR tests.
- Demonstrate the ability to construct confidence intervals.

Topics Covered: Advanced topics in probability, Stochastic independence, Basic limit theorems, Modes of Convergence, Relationship among the various modes of convergence, CLT, and Laws of large numbers, Sufficiency, Completeness, Unbiasedness, Exponential family, Consistent estimators, UMVU, Cramer-Rao inequality, Rao-Blackwell theorem, MLE, and Method of moments. Neyman-Pearson lemma, MP, UMP, and UMPU tests. LR and SPR tests, and Confidence intervals.

Texts:
Required texts:

Grading / Evaluation:
Exam-I (Mid-term)  40%
Exam-II (Final)  40%
Homework (4)  20%

References/Bibliography: (optional)
For further reading:
1. Introduction to mathematical statistics by Hogg, McKeane Craig
2. Introduction to probability and mathematical statistics by Bain and Engelhardt
3. An introduction to probability theory and mathematical statistics by V.K. Rohatgi
4. Linear statistical inference and its applications by C.R. Rao
5. Mathematical Statistics by Keith Knight
Special Technology Utilized by Students: *Scientific Calculator*

**Brief description of the format of the online STA5326 class:**

This is a real time online class. In order to successfully complete the class you need a computer, high speed internet connection, a head-set to listen to the class lectures, a scanner to scan documents in pdf format, and a printer.

**Elluminate** and **elearning**, will be used to deliver the class. Two elluminate URLs will be emailed to you for each class. The first link will be for attending the class real time (called the *Class Link*) and the second link will be called the *Recording Link*. During the scheduled class time (or 5 to 10 minutes earlier) click the *Class Link* to join the class. By doing this you will be able to view and listen to the live class lecture. There are options available to ask questions during the lecture.

The *Recording Link* may be used to view and listen to recorded lecture at a later time. The class syllabus, class notes, additional notes, homework assignments, and exams will be posted on **elearning**, [https://elearning.uwf.edu](https://elearning.uwf.edu). You will be able print them from elearning. You must get a UWF email address. All communications will be done via UWF email.

**Email:** Email will be answered in the order that it was received. There may be a delay due to the high volume of email received.

**Expectations for Academic Conduct/Plagiarism Policy:**

As members of the University of West Florida, we commit ourselves to honesty. As we strive for excellence in performance, integrity—personal and institutional—is our most precious asset. Honesty in our academic work is vital, and we will not knowingly act in ways which erode that integrity. Accordingly, we pledge not to cheat, nor to tolerate cheating, nor to plagiarize the work of others. We pledge to share community resources in ways that are responsible and that comply with established policies of fairness. Cooperation and competition are means to high achievement and are encouraged. Indeed, cooperation is expected unless our directive is to individual performance. We will compete constructively and professionally for the purpose of stimulating high performance standards. Finally, we accept adherence to this set of expectations for academic conduct as a condition of membership in the UWF academic community.

**The Student Code of Conduct**

The Student Code of Conduct sets forth the rules, regulations and expected behavior of students enrolled at the University of West Florida. Violations of any rules, regulations, or behavioral expectations may result in a charge of violating the Student Code of Conduct. It is the student’s responsibility to read the Student Code of Conduct and conduct themselves accordingly. You may access the current Student Code of Conduct at [http://www.uwf.edu/judicialaffairs](http://www.uwf.edu/judicialaffairs).

**Late withdrawals:** Students who are requesting a *late withdraw* from class, must have the approval of the advisor, instructor, and department chairperson (in that order) and finally, by the Academic Appeals committee. Requests for late withdraws may be approved only for the following reasons (which must be documented):

1. A death in the immediate family.
2. Serious illness of the student or an immediate family member.
3. A situation deemed similar to categories 1 and 2 by all in the approval process.
4. Withdrawal due to Military Service (*Florida Statute 1004.07*)
5. National Guard Troops Ordered into Active Service (*Florida Statute 250.482*)

Requests without documentation should not be accepted. Requests for a late withdraws simply for not succeeding in a course, do not meet the criteria for approval and should not be approved.

**WEATHER EMERGENCY INFORMATION**

In the case of severe weather or other emergency, the campus might be closed and classes cancelled. Official closures and delays are announced on the UWF website and broadcast on WUWF-FM.

**Weather Emergency Information**
- WUWF-FM (88.1MHz) is the official information source for the university. Any pertinent information regarding closings, cancellations, and the re-opening of campus will be broadcast.
- In the event that hurricane preparation procedures are initiated, the [UWF Home Web Page](http://uwfhome.web) and [Argus](http://uwfargus) will both provide current information regarding hurricane preparation procedures, the status of classes and the closing of the university.

Emergency plans for the University of West Florida related to inclement weather are available on the following UWF web pages:

Information about hurricane preparedness plans is available on the UWF web site: [http://uwfemergency.org/hurricaneprep.cfm](http://uwfemergency.org/hurricaneprep.cfm)

Information about other emergency procedures is available on the UWF web site: [http://uwfemergency.org/](http://uwfemergency.org/)