MATH/STAT 5140(W): Time series analysis Spring, 2020

Professor: Dr. Sumen Sen.

E-mail: sens@apsu.edu

Office: Maynard 240 Phone: 931/221-7827

Class meets in: CX 331. (TR 12:45-2:10pm)/Online

 Office Hours: MW 2:00 pm– 3:30 pm, TR 10:00 am – 11:30 am,

or by appointment.

PREREQUISITES: STAT 4120/5120 or permission of instructor.

DESCRIPTION AND OBJECTIVES: This course covers methods for analyzing data collected over time. Topics include autoregressive-moving average models (MA, ARMA, ARIMA), exponential smoothing, model identification, and estimation, diagnostic, forecasting. Appropriate statistical software (such as ITSM, R or SAS) used throughout.

## LEARLING OUTCOMES:

On completing this course, students will be able to

* Conduct independent analysis of time series data.
* Specify and test the fit of multiple time series model specifications for the same data.
* Forecast time series data over different time horizons, with appropriate methods of assessment and uncertainty.
* Compare and contrast different time series methods.
* Solve nontraditional problem.
* Conduct Independent study based on technical paper.

TEXT: Time Series Analysis and Its Applications: With R Examples 4th ed. by Robert H. Shumway, David S. Stoffer. ISBN-13: 978-3319524511

GRADES: Your grade in this class will be based on homework exams as follows:

For online students: Homework: 35%, Discussions 10%, Exam I: 15%, Exam II, 15%, Final Exam: 25%.

For in class students: Homework: 35%, Exam I: 20%, Exam II: 20%, Final Exam: 25%.

Your final average will correspond to letter grades as follows:

Undergraduate (4120):

[90%, 100%] A, [80%, 90%) B [70%, 80%) C [60%, 70%) D < 60% F

Graduate (5120):

[95%, 100%] A, [85%, 95%) B [75%, 85%) C [65%, 75%) D < 65% F

I reserve the right to curve in your favor if necessary.

## Discussion Board Participation (Online students only):

You should make at least two legitimate posts to the Discussion Board in D2L each week. Your very first post should be a brief biography of yourself in the [Biography] forum. The remaining discussion points throughout the semester will come from asking and answering each other’s questions in the weekly or other forums (e.g., the R forum, exam forums, etc.). You may ask about specific homework questions, concepts, formulas, terminology, or how to use R, etc.- basically anything at all pertaining to the course. Your instructor will regularly monitor these discussions and join in as needed. If no one has answered a posted question within a day or two, you need to email the question to the instructor using sens@apsu.edu.

ATTENDANCE: Come to class and must take notes. No make-up exams will be given, so try not to miss. If your absences are excessive, I will put you on academic alert and ask you to come by my office and discuss your situation.

STUDENTS WITH DISABILITIES: Any student who has a disability that may affect his/her academic performance is encouraged to make an appointment with me to discuss this matter, or you may contact Disability Services; telephone 221-6230; voice 221-6278; voice tty.

WITHDRAWING FROM CLASS: If you withdraw from class by the date listed in the university calendar as the last day to drop a class with a "W", "F", "FN", or "FA", you will receive a “W”. If you withdraw after that date you will receive an F unless there are unusually extenuating circumstances such as hospitalization, etc.

POLICY ON MINORS: According to APSU policy #3:032, minors (any non-student under the age of 18) accompanying staff, faculty, students, or visitors on campus are not permitted in the classroom. While I recognize that extenuating circumstances occur and make it difficult for some students to attend without bringing children with them on occasion, I must enforce University policy and thus will deny any request for a child in my classroom. You should also be aware that minors are not allowed in academic labs, computer labs, science labs, or the library. Further, children cannot be left in halls outside classrooms. Please be aware that the policy on unattended minors is for the purpose of ensuring that our classrooms are conducive to learning and for the safety and protection of minors. For additional information on minors on campus, contact the Office of Student Affairs in the Morgan University Center.

ACADEMIC AND CLASSROOM MISCONDUCT: Students are expected to conduct themselves appropriately at all times. Academic and classroom misconduct will not be tolerated. Students must read the “Code of Student Conduct” in the new Student Handbook for an understanding of what will be expected of them within the academic setting.

A note on cell phones: be considerate of your fellow classmates. Turn off your cell phones before entering class unless there are special circumstances requiring your phone to be on.

## Course Schedule:

HW 1 due: 02/04/2020

HW 2 due: 02/20/2020

EXAM #1: 03/1/2020—03/03/2020 (Online Students)

03/03/2020 (Inclass Student)

HW 3 due:03/17/2020

HW 4 due: 03/31/2020

EXAM #2: 04/05/2020—04/07/2020 (Online Students)

04/07/2020 (In class Students)

HW 5 due: 04/29/2020

Final Exam: 05/01/2020—05/03/2020 (Online Students)

05/01/2020 (10:30am-12:30pm) (In class Students)

-----The above material is subject to change in the event of extenuating circumstances. -----