

# Math1127 Predictive Analytics 2 SYLLABUS

**Instructor:** Dr. Sheng Xiong

**Email:** [Sxiong@pitt.edu](mailto:Sxiong@pitt.edu)

**Office:** Thackeray Hall, 508

**Office Phone:** 412-624-2877

**Office Hours:** TTH 9: 00am-10: 00am or by appointment

**Class Meetings:** MWF 10 -10:50am, TBD

**Web:** The Canvas page for this course will contain assignments, handouts, due dates, and announcements.

## Course Materials/Texts:

1. *Regression Modeling with Actuarial and Financial Applications*, Edward W. Frees, 2010, New York: Cambridge. ISBN: 978-0521135962.

2. *An Introduction to Statistical Learning, with Applications in R*, James, Witten, Hastie, Tibshirani, 2013, New York: Springer. A PDF version of the text can be downloaded at <http://faculty.marshall.usc.edu/gareth-james/ISL/>

3. *R for Everyone, 2nd ed.* Lander, 2017, Boston: Addison-Wesley, ISBN 978-0-13-454692-6.

4. *Data Visualization: A Practical Introduction*, Healy, 2018, Princeton University Press, ISBN 978-0-691-18162-2. This book may be available as web pages at <https://soeviz.co/>

**Course Objectives:** This 3-credit course is a continuation of Math1126, “Predictive Analytics 1”. It will apply the knowledge of data science covered in Math1126 to insurance and business. Students will be introduced to Basic R, data acquisition, data cleanup, data exploration and visualization, predictive modeling (Linear Regression, Generalized Linear Models, Decision Tree, Principle Component Analysis and Clustering Analysis), and professional reporting. This course follows the syllabus for *Predictive Analytics (PA)* Exam of the Society of Actuaries and prepares students to pass the PA Exam.

**Prerequisite:** Math 1126

## Assessments:

### 1. Homework & Lab 50%

- Homework or lab activities will be assigned weekly.
- Some homework questions require coding in R.

### 2. Quiz 20%

- Four quizzes throughout the semester

### 3. Exams 30%

- Final project
- No midterm exam

**Grading Scale:** A+ (97-100%), A (93-96%), A- (90-92%), B+ (87-89%), B (83-86%), B- (80-82%), C+ (77-79%), C (73-76%), C- (70-72%), D+ (67-69%), D (63-66%), D- (60-62%), F(<60%)

**For the official Exam PA syllabus and registration information, visit the SOA website at**

<https://www.soa.org/globalassets/assets/files/edu/2020/2020-12-exam-pa-syllabus.pdf>

**Makeup policy:** Makeup examinations will be granted only for excused absences (prior approval of the instructor for required travel, or verifiable medical doctor's excuse). *Makeups for exams must be scheduled within twenty four hours of the originally scheduled exam time.* Failure to contact the instructor (Dr. Xiong) within this twenty four hour period with a valid medical/travel excuse will result in a zero for that examination.

#### **Disability Resource Services**

*If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 140 William Pitt Union, 412-648-7890, as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course.*

#### **Academic Integrity Policy**

*All students are expected to adhere to the standards of academic honesty. Cheating, plagiarism, and other acts of academic dishonesty will not be tolerated. Any student suspected of violating the University of Pittsburgh Policy on Academic Integrity: <https://www.as.pitt.edu/faculty/policies-and-procedures/academic-integrity-code> will be required to participate in the procedural process as initiated by the instructor, as outline in the University Guidelines on Academic Integrity. A minimum sanction of a zero score for the quiz, exam or paper will be imposed. You should note that only those resources explicitly authorized by the instructor can be used to complete assignments. Assessments are designed so that you learn by doing them. Copying homework or exam answers from outside sources and other such violations of the academic integrity code will not solidify your learning. Passing a course without adequate mastery of the material can set you up for limited success in subsequent courses. Also it is a violation of the academic integrity code to share any question from an assignment or an exam in any form. The instructor may choose to post a solution set after the assessment, but remember that assessments written by the instructor are copyrighted materials and you are not permitted to distribute them in any way. If you inadvertently have access to a shared exam or homework question, then you are obligated to inform the instructor. Remember, academic integrity is not about what you can get away with. It is about personal accountability, honor, ethics, respect, trust, and fairness.*

## **DIVERSITY AND INCLUSION STATEMENT:**

*The University of Pittsburgh does not tolerate any form of discrimination, harassment, or retaliation based on disability, race, color, religion, national origin, ancestry, genetic information, marital status, familial status, sex, age, sexual orientation, veteran status or gender identity or other factors as stated in the University's Title IX policy. The University is committed to taking prompt action to end a hostile environment that interferes with the University's mission. For more information about policies, procedures, and practices, see:*

<https://www.diversity.pitt.edu/civil-rights-title-ix-compliance/policies-procedures-and-practices>

*I ask that everyone in the class strive to help ensure that other members of this class can learn in a supportive and respectful environment. If there are instances of the aforementioned issues, please contact the Title IX Coordinator, by calling 412-648-7860, or e-mailing [titleixcoordinator@pitt.edu](mailto:titleixcoordinator@pitt.edu). Reports can also be filed online:*

*<https://www.diversity.pitt.edu/make-report/report-form>. You may also choose to report this to a faculty/staff member; they are required to communicate this to the University's Office of Diversity and Inclusion. If you wish to maintain complete confidentiality, you may also contact the University Counseling Center (412-648-7930).*

## **E-mail Communication Policy**

*Each student is issued a University e-mail address (username@pitt.edu) upon admittance. The University for official communication may use this e-mail address with students. Students are expected to read e-mail sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an e-mail forwarding service that allows students to read their e-mail via other service providers (e.g., Hotmail, AOL, Yahoo). Students that choose to forward their e-mail from their pitt.edu address to another address do so at their own risk. If e-mail is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University e-mail address. To forward e-mail sent to your University account, go to <http://accounts.pitt.edu>, log into your account, click on **Edit Forwarding Addresses**, and follow the instructions on the page. Be sure to log out of your account when you have finished. (For the full E-mail Communication Policy, go to [www.bc.pitt.edu/policies/policy/09/09-10-01.html](http://www.bc.pitt.edu/policies/policy/09/09-10-01.html).)*

**STATEMENT ON CLASSROOM RECORDING:** *To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the students' own private use.*