**Syllabus**

## I. Course Information:

**Title:** Probability Models
**Course #:** BANA 7031
**Credit Hours:** 4
**Term:** Fall 2016
**Time and Location:** Section 1 Monday 6:00-9:50pm RECCENTER 3220
         Section 2 Tuesday 6:00-9:50pm LINDER 221

## II. Instructor Information:

**Name:** Peng Wang
**Title:** Assistant Professor
**Office:** LCB 532
**Phone:** (513) 556-5793
**Email:** wangp9@ucmail.uc.edu
**Office Hours**: TW 2:00-3:00pm and by appointment

## III. Course Materials

### Required

- All of Statistics: A Concise Course in Statistical Inference by Larry Wasserman

### Optional

- Statistical Inference, 2$^{nd}$ ed by Casella and Berger.
- Introduction to Mathematical Statistics, 6$^{th}$ or 7$^{th}$ Ed., by Hogg, McKean, and Craig
- Introduction to Probability Models, Ross (any edition)
- Introduction to Stochastic Processes, by Hoel, Port and Stone

## IV. Course Description:

This course consists of two modules: probability and stochastic models. I will spend about 9-10 weeks on probability and the remaining 5-6 weeks on stochastic models. There would be two midterms for the probability module and one midterm for stochastic models. The final exam is comprehensive. Homework is assigned on weekly basis.

## V. Tentative Course Schedule

Week 1 (8/21-8/22): Probability, Independence, Conditional Probability,

Week 2 (8/28-8/29):  Random Variables and Distributions I

Week 3 (9/4-9/5): No Class

Week 4 (9/11-9/12): Random Variables and Distributions II

Week 5 (9/18-9/19):  Bivariate and Multivariate Distributions, Marginal and Conditional Distributions, IID Sample

Week 6 (9/25-9/26): Transformation of Random Variables, Expectations, Variances and Covariances, Conditional Expectations

 Week 7 (10/2-10/3): Law of Large numbers, Central Limit Theorem, Delta Method, Review for Exam 1.

Week 8 (10/2-10/43): Exam 1

Week 9 (10/9-10/10): Statistical Inferences and Models, Estimating CDF and Statistical Functional

Week 10 (10/16-10/17): Bootstrap

Week 11 (10/23-10/24): Parametric Inference

Week 12(10/30-10/31): Hypothesis Testing I

Week 13 (11/6-11/7):  Hypothesis Testing II

Week 14 (11/13-11/14): Bayesian Inference I

Week 15 (11/20-11/21):  Bayesian Inference II

Week 16: (12/4-12/5): Exam 3 (Final Exam)

## VI. Student Learning Outcomes:

This course will provide students with fundamental theory of probability and necessary skills in stochastic modeling.  Upon successful completion, the students are expected to solve probabilistic problems arising in statistics and analytics as well as utilize stochastic process to solve real-world problems.

**VII. Instructional Methods (Including Description about Bb):**

The following course utilizes the Blackboard (Bb) Learning Management System to provide student-centered online learning that will enhance the teaching and learning process. Through a variety of instructional methods (e.g. discussion boards, video lectures, readings, online assessments, etc.) the learner will become immersed and engaged in the learning process. If you are not familiar with these tools, please visit http://www.uc.edu/ucit/learningtechnologies/mobilelearn.html.

**VIII. *Course Communication:***

University policy requires that the email set up in Blackboard is the primary means of communication. It is advisable that you use your UC email for this purpose and that you check it often. If you choose to change your email in Blackboard to a non-UC email it is your responsibility to ensure you check it frequently. Please see the attached Student Email Policy for more information: http://www.uc.edu/content/dam/uc/infosec/docs/general/Policy_StudentEmail.pdf.

**IX. Course and Grading Policies:**

1. ***Course Structure:*** Changes to the syllabus, due dates, course requirements or grading requirements will be made as far in advance as possible. Due dates will be clearly marked in Blackboard. All assignments will be submitted in class.

2. ***Academic Integrity:*** As with all Lindner College of Business efforts, this course will uphold the highest ethical standards, critical to building character. Ensuing your integrity is vital and your responsibility. LCB instructors are required to report ANY incident of academic misconduct (e.g., cheating, plagiarism) to the college review process, which could result in severe consequences, including potential dismissal from the college. For further information on Academic Misconduct or related university policies and procedures, please see the UC Code of Conduct (http://www.uc.edu/conduct/Code_of_Conduct.html).

   All academic programs at the Lindner College of Business will apply a **"Two Strikes Policy"** regarding Academic Integrity. Any student who has been found responsible for two cases of academic misconduct may be dismissed from the College. The "Two Strikes Policy" supplements the UC Student Code of Conduct. All cases of academic misconduct (e.g., cheating, plagiarism, falsification) will be formally reported by faculty. Students will be afforded due process for allegations, as outlined in the policy

3. ***Disability:*** Students with disabilities who need academic accommodations or other specialized services while attending the University of Cincinnati will receive reasonable accommodations to meet their individual needs as well as advocacy assistance on

disability-related issues. Students requiring special accommodation must register with the Disability Services Office. http://www.uc.edu/sas/disability

5. ***Missed and/or late examinations, quizzes, and graded exercises:*** **No late homework will be accepted.** If a student misses a mid-term exam, the exam may be made up if the individual has a strong excuse. However, this must be done by the following Monday. A student making up an exam should expect a more challenging exam than the ordinary one.


6. ***Campus Closures***: In the event of inclement weather and the university is closed, the closure *will not* affect the online course. All course assignments and activities will remain as scheduled in the course syllabus.

7. ***Criteria for letter grades***:
   Your course grades will be based on your performance on the following:


***Point Allocation:***

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|---|---|
| Exam 1 (covers week 1- week6) | 30 Points |
| Exam 2 (covers week 8- week 15) | 30 Points |
| Homeworks | 30 Points |
| Project | 10 Points |
| **Total Points Available** | **100 Points** |

***Grading Scale (example)***

90% and above = A

| | | |
|---|---|---|
| 87%= A- | 83%  = B+ | 80% = B |
| 77%= B- | 73% = C+ | 70% = C |
| 65% = C- | 60% = D | Below 60% = F |