

**University of Portland (UP)**  
**School of Engineering**

**EGR 361A – Analysis of Engineering Data – 3 cr. hrs.**

**Spring 2019**

**Tentative Course Outline Sheet**

**Course Purpose:** The purpose of this course is to introduce the students to properties and principles of signals and systems. Some applications with specific emphasis encountered in electrical and/or electronic systems will also be covered.

**Student Outcomes:**

At the successful completion of this course, the student is expected to gain the following skills:

- Ability to organize, summarize, present, and analyze data graphically (e.g., Box Plots, and Histograms); and calculate mean, variance, standard deviation, median, mode, and outliers. Ability to perform above using Excel.
- Ability to calculate likelihood of events using probability theory.
- Ability to analyze discrete probabilistic processes using discrete random variables, pmf's and cdf's including Binomial and Poisson distributions.
- Ability to analyze continuous probabilistic processes using continuous random variables, pdf's and cdf's including the Normal and Chi-Squared distributions.
- Ability to understand random samples and the Central Limit Theorem.
- Ability to understand measurement issues (e.g., systematic vs. random error), significant figures, and error propagation.
- Ability to present paired "x-y" data in Scatter Plots and perform Simple Linear Regression using Excel.
- Ability to perform statistical inference on the mean, proportion, and variance of one population using Hypothesis Testing and Confidence intervals (including z-test, t-test, chi-square test, and P-value).
- Ability to perform statistical inference on the means and proportions of two populations using Hypothesis Testing and Confidence intervals (including z-test and the "Paired t-test").

**Instructor:** Aziz S. Inan, [ainan@up.edu](mailto:ainan@up.edu); <http://faculty.up.edu/ainan/>  
Office#: Shiley Hall 215  
Phone#: 503-943-7429, Fax#: 503-943-7316

**Office Hours:** M 13:30-15:30; W 14:30-16:30; & F 13:30-14:30

<p><i>"I prefer death to lassitude. I never tire of serving others,"</i> by Leonardo da Vinci (1452–1519)</p>
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**Lecture Hours:** MWF 12:30-13:25 (Location: Shiley Hall 124)

**Textbook:** *Engineering Statistics* Fifth Edition by D. C. Montgomery, G. C. Runger & N. F. Hubele  
(John Wiley & Sons, Inc., ISBN 978-0-470-63147-8, 2011)

**Course Content:** Probability & Pascal's Triangle  
Descriptive Statistics: Data Summary and Presentation (Chapter 2)  
Random Variables and Probability Distributions (Chapter 3)  
Central Limit Theorem (Chapter 3)  
Statistical Inference and Hypothesis Testing on a Single Sample (Chapter 4)  
Decision making on Two Samples (Chapter 5)

**Prerequisite:** MTH 202.

**Grading Policy:** The total numerical grade is computed based on the following percentages:

- 20% for homework
- 50% for the two midterm exams (25% each) and
- 30% for the final exam

The final letter grade in the course is assigned based on the following total numerical grade intervals out of a total of 100 points:

90–100	A <sup>-</sup> -A	(Excellent Performance)
80–89	B <sup>-</sup> -B <sup>+</sup>	(Good Performance)
70–79	C <sup>-</sup> -C <sup>+</sup>	(Average Performance)
60–69	D <sup>-</sup> -D <sup>+</sup>	(Poor Performance)
<60	F	(Inadequate Performance)

Typically, the numerical average of the total numerical grades is assigned to about a B<sup>-</sup> grade.

**Exam Dates:** The exam dates are tentatively set as follows:

<p><u>Midterm #1</u>–Friday, February 22, 2019 <u>Midterm #2</u>–Friday, April 5, 2019 <u>Final Exam*</u>–Wednesday, May 1, 2019, 10:30-12:30 *Comprehensive and mandatory for all the students.</p>
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**No-Class Dates:** Monday-Friday, March 4 through 8, 2019 (Spring Break)  
Friday & Monday, April 19 & 22, 2019 (Easter Break)  
Tuesday, April 9, 2019 (Founder's Day Presentations\*)  
\*Students are expected to attend Founder's Day presentations.

**Homework:** Weekly homework will be assigned. Homework assignments are mandatory, that is, every student is expected to do the homework assignments on time to qualify for consideration to receive a passing grade in the course.

**University of Portland's Code of Academic Integrity:**

Academic integrity is openness and honesty in all scholarly endeavors. The University of Portland is a scholarly community dedicated to the discovery, investigation, and dissemination of truth, and to the development of the whole person. Membership in this community is a privilege, requiring each person to practice academic integrity at its highest level, while expecting and promoting the same in others. Breaches of academic integrity will not be tolerated and will be addressed by the community with all due gravity.

**University of Portland's Assessment Disclosure Statement:**

Student work products for this course may be used by the University for educational quality assurance purposes.

**University of Portland's Accessibility Statement:**

The University of Portland endeavors to make its courses and services fully accessible to all students. Students are encouraged to discuss with their instructors what might be most helpful in enabling them to meet the learning goals of the course. Students who experience a disability are also encouraged to use the services of the Office for Accessible Education Services (AES), located in the Shepard Academic Resource Center (503-943-8985). If you have an AES Accommodation Plan, you should make an appointment to meet with your faculty member to discuss how to implement your plan in this class. Requests for alternate location for exams and/or extended exam time should, where possible, be made two weeks in advance of an exam, and must be made at least one week in advance of an exam. Also, you should meet with your faculty member to discuss emergency medical information or how best to ensure your safe evacuation from the building in case of fire or other emergency.

**University of Portland's Mental Health Statement:**

As a college student, you may sometimes experience problems with your mental health that interfere with academic experiences and negatively impact daily life. If you or someone you know experiences mental health challenges at UP, please contact the University of Portland Health and Counseling Center in Orrico Hall (down the hill from Franz Hall and Mehling Hall) at <https://www.up.edu/healthcenter/> or at 503-943-7134. Their services are free and confidential, and if necessary they can provide same day appointments. Also know that the University of Portland Public Safety Department (503-943-4444) has personnel trained to respond sensitively to mental health emergencies at all hours. Remember that getting help is a smart and courageous thing to do – for yourself, for those you care about, and for those who care about you.

**University of Portland's Non-Violence Statement:**

The University of Portland is committed to fostering a community free from all forms of violence in which all members feel safe and respected. Violence of any kind, and in particular acts of power-based personal violence, are inconsistent with our mission. Together, we take a stand against violence. Join us in learning more about campus and community resources and reporting options, along with our prevention strategy, Green Dot on our Community Against Violence website, [www.up.edu/cav](http://www.up.edu/cav).

**University of Portland's Ethics of Information Statement:**

The University of Portland is a community dedicated to the investigation and discovery of processes for thinking ethically and encouraging the development of ethical reasoning in the formation of the whole person. Using information ethically, as an element in open and honest scholarly endeavors, involves moral reasoning to determine the right way to

access, create, distribute, and employ information including: considerations of intellectual property rights, fair use, information bias, censorship, and privacy. More information can be found in the Clark Library's guide to the Ethical Use of Information at [libguides.up.edu/ethicaluse](http://libguides.up.edu/ethicaluse).

**The Learning Commons:**

The Learning Commons, located in Buckley Center 163, offers a variety of peer tutoring programs that facilitate your active learning and mastery of skills and knowledge. For questions about the Learning Commons, please send all correspondence to Jeffrey White, Administrator, at [white@up.edu](mailto:white@up.edu). The Learning Commons is a program of the Shepard Academic Resource Center.

**Math Resource Center:** Monday through Thursday, 6:00 p.m. through 9:00 p.m. during the first week of classes. Regular shifts begin the Sunday after the first week. For a course-specific schedule visit [www.up.edu/learningcommons](http://www.up.edu/learningcommons), or the reception desk in BC 163.

**Writing Assistance:** Start brainstorming ideas for your paper with a Writing Assistant. Visit [www.up.edu/learningcommons](http://www.up.edu/learningcommons) to access our Writing Center schedule.

**The Language Studio:** Contact the language assistance hotlines to schedule a time to meet throughout the semester at [chinesetutor@up.edu](mailto:chinesetutor@up.edu), [frenchtutor@up.edu](mailto:frenchtutor@up.edu), [germantutor@up.edu](mailto:germantutor@up.edu), or [spanishtutor@up.edu](mailto:spanishtutor@up.edu).

**Natural Sciences Center:** Send your tutoring requests to [biotutor@up.edu](mailto:biotutor@up.edu), [chemtutor@up.edu](mailto:chemtutor@up.edu), or [physicstutor@up.edu](mailto:physicstutor@up.edu).

**Speech & Presentation Lab:** Improve your presentations by requesting an appointment at [speech@up.edu](mailto:speech@up.edu).

**Group Work Lab:** Make an appointment for your group project at [groupwork@up.edu](mailto:groupwork@up.edu).

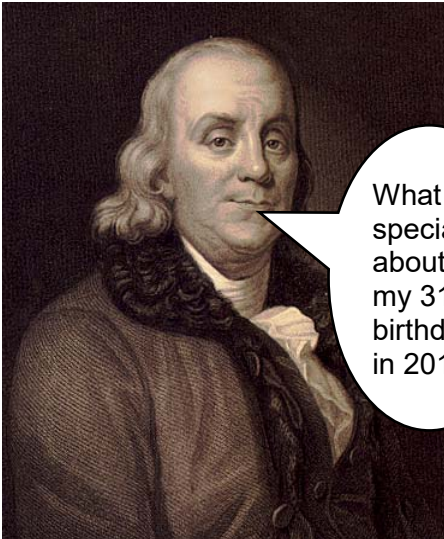
**Nursing Tutoring:** Our peer tutors for pathophysiology will begin providing peer support in BC 163 during the first week of classes to help you start the semester on the right path. Tutoring is available on a walk-in or appointment basis. Up-to-date schedule information is at [www.up.edu/learningcommons/nursing](http://www.up.edu/learningcommons/nursing).

**Economics and Business Tutoring:** For support in economics, OTM, finance, accounting, and business law courses, send requests for appointments to your discipline's tutor email hotline: [econtutor@up.edu](mailto:econtutor@up.edu), [otmtutor@up.edu](mailto:otmtutor@up.edu), [financetutor@up.edu](mailto:financetutor@up.edu), [accountingtutor@up.edu](mailto:accountingtutor@up.edu), or [bizlaw@up.edu](mailto:bizlaw@up.edu).

**Learning Assistance Counselor:** Learning assistance counseling is also available in BC 163. The counselor teaches learning strategies and skills that enable students to become more successful in their studies and future professions. The counselor provides strategies to assist students with reading and comprehension, note-taking and study, time management, test-taking, and learning and remembering. Appointments can be made in the on-line scheduler available to all students in Moodle or during posted drop-in hours.

**Access University of Portland's Lab Statement:** Shop access is only allowed with appropriate training from shop technicians and with instructor permission. If students require card access to a laboratory, they must receive training from a technician. No food or beverages (including water bottles) are allowed in the computer classrooms, shop, or labs.

Just for fun: Thursday, January 17, 2019 marks Benjamin Franklin's 313<sup>th</sup> birthday.



What is special about my 313<sup>th</sup> birthday in 2019?

Answer: 313 is a palindrome age! ☺ Please express 313 in binary number system and see what you find out. Also, note that if 2019 is split as 20 and 19, 3 times the sum of 20 and 19 yields 117, that is, my birth date, January 17 (1/17).