IE 1071 Statistical Testing and Regression
Spring 2019 Course Syllabus

Revised: 2019/2/21

Days/time	Thursday 1:50pm-2:35pm, 2:45pm-3:30pm, 3:40pm-4:25pm
Location	Room 4-212 SCUPI building
Instructor (contact information)	Zheng Yang 4-221 SCUPI building email: zhengyang2018@scu.edu.cn
Teaching assistant (TA)	Qiling Xie (谢奇伶) QQ/Wechat Group: email: 791076674@qq.com
Web page	https://learn.scupi.cn/ (PPT notes, data sets and analysis, projects, homework, exam materials)
Office hours	Monday through Friday: 2:00pm-5:00pm, or by appointment, Weekends by appointments
Course information	Statistical testing provides a mechanism for making quantitative decisions about a process or processes. The intent is to determine if there is evidence to reject a conjecture or hypothesis about the process. The purpose of statistical or regression modeling is to estimate the relationships between independent and dependent variables.
Course description	This course is designed for students majoring in industrial engineering. Topics include hypothesis testing, analysis of variance (ANOVA), linear regression, categorical data analysis (e.g, contingency tables, loglinear models, logistic regressions and goodness of fit), as well as an introduction to nonparametric statistics. We will cover most of Chapters 10, 11, 12, 13, 14 and 16.
Prerequisite	IE 1070 Probability and Statistics for Engineers 1 (Probability)
Textbook & readings	**Textbook**: Walpole, Myers, Myers and Ye (2004) *Probability and Statistics for Engineering and the Sciences, 9th Edition,* Pearson **Supplemental Readings (used in Fall 2018)*:*** ***Books*** *Statistics II for Dummies*, by Deborah J. Rumsey, Wiley Publishing, Inc. *Classical and Modern Regression with Applications,* by R.H. Myers, 2nd ed, Boston:Duxbury Press. 属性数据分析引论，史希来 编著，北京大学出版社 ***Papers*** Paul M. Fitts*, The information capacity of the human motor system in controlling the amplitude of movement,* Journal of Experimental Psychology, 1992, Vol.121, No.3, 262-269 Ping Li*, Loglinear models for the analysis of language acquisition data,* Journal of Cognitive Science 3: 27-41, 2002 P.Cortez, A.Cerdeira, F.Almeida,T.Matos, J.Reis, *Modeling wine preferences by data mining from physicochemical properties*, Decision Support Systems 47 (2009) 547-533
Software requirements	**MS PowerPoint** (for lectures, homework and projects), **Minitab** 17 (required and used extensively) (***other options***: SAS (outputs), **SPSS** (for some homework), and MS Excel)

Course objectives	Acquire knowledge of statistical concepts, experimental designs and their role in solving engineering problems. Apply appropriate statistics to solve engineering problems. Utilize proper statistical techniques to better determine how engineering processes "work". Analyze and solve "real life" problems utilizing statistical techniques through team based projects. Use statistical software.
Engineering criteria outcomes	An ability to apply knowledge of mathematics, science, and engineering. An ability to design and conduct experiments, as well as analyze and interpret data. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice issues.
Exams	Midterm & final. (Minitab 17 is required) If you must miss an exam, you should make alternative arrangements with the instructor before the exam is given. Missing an exam without prior notification will get "zero" score for that exam except under very unusual circumstances.
Projects	Groups of 4 or 5 students will be formed for each project. There are two projects. Each group is expected to deliver a 15-20 min. **PPT presentation** along with **a written report** for the final project**.** Rubric for grading will be provided in details separately.
Homework Policies:	Homework will be assigned weekly and due before Tuesday of the following week. No late homework unless get permission from the instructor in advance. Collaborate on homework problems is fine but each student must submit his/her own solutions. Do NOT copy homework! Show details of your solutions and explain your work.
Grading	Homework (20%), midterm (15%), final (20%), projects (30%), and others (quizzes, participation, group work) (15%). *A 90-100% A- 85-90% B+ 80-84% B 76-80% B- 73-76% C+ 70-73% C 66-70%* *C- 63-66% D+ 61-62% D 60% F below 60%*

Academic Misconduct:

All students in attendance at the SiChuan University are expected to be honorable and to observe standards of conduct appropriate to a community of scholars. The University expects from its students a higher standard of conduct than the minimum required to avoid discipline. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing or intentional help or attempt to help, or conspiracy to help, another student. These include, but are not limited to, cheating, plagiarism, fabrication of information, misrepresentation, and abetting any of the above. The Academic Misconduct Disciplinary Policy will be followed in the event that academic misconduct occurs. Students should refer to the Student Handbook.

Attendance policy:

I ask everyone, if without special requests and reasons, be on time (by 1:50pm) for attending every class. If you are late or skip a class, please explain to me why you have done so. Without any logical indication

from your misbehavior, I will reduce your obtained points from any of the graded components, such as homework, quiz, exams, and projects, depending on how badly you violate this agreement.

IE 1071, 2019S Schedule (in progress) revised 2019/2/21

Week	Date	Subjects	Assignments/Remarks
1	2/28	Review (Ch 8), Overview	Read Ch 1,8,9
2	3/7	Review (Ch 9), Hypothesis Tests (1)	Ch 9,10
3	3/14	Hypothesis Tests (2)	Ch 10
4	3/21	**Quiz 1** on *Hypothesis Tests*, ANOVA (1)	Ch 10, 13, 14
5	3/28	ANOVA (2)	Ch 13, 14, Email me and TA your group members for Project 1
		Group meeting (10-15min) for project 1	Sign up a time with TA
		Email me a short description of Project 1	
6	4/4	**Quiz 2** on *One-way ANOVA*, ANOVA (3) Experimental Design: general	Ch 14
7	4/11	Survey and Chi-Square Tests Regression Analysis (1) - Discussions/Questions/Review (Ch 10, 13, 14)	Ch 11 Project 1 in progress
	Midterm exam (Minitab required) Date/Location TBD		
8	4/18	Regression Analysis (2) - Logistic regression (Ch 12.12)	Ch11 PPT slides for Project 1 due
9	4/25	Regression Analysis (3) – Review Ch 11 Multiple linear regression (Ch 12)	
10	5/2	Regression Analysis (4) - Model selection (Ch 12) Model with categorical variables (Ch 12)	Ch 11, 12 **Project 1 report due**
11	5/9	Regression Analysis (5) - Nonlinear regression Basics of Nonparametrics	Ch 11, 12, 16
12	5/16	Nonparametric Statistics (1) Group discussions on project 1 reports **Quiz 3** on *Regression Analysis (Minitab)*	Ch 16, **Project 1 revised**
		Group meeting (10-15 min) for project 2	**Sign up a time with TA**
13	5/23	Nonparametric Statistics (2)	Ch 16
14	5/30	**Project Presentations**	Project 2 revised, prepared
15	6/6	**Project Presentations**	
16	6/13	Review of the course, discuss Project 2 reports	**Project 2 report due**

Week	Date	Subjects	Assignments/Remarks
		Miscellaneous topics **Quiz 4** on *Nonparametrics*	
17	6/20	**Quiz 5**	
		Final Exam (Minitab required) **Date/Location TBD**	