How to be a Successful Actuarial Science Student

UCEN, SB Harbor Room
Friday, 10/21/16
3:00 - 4:30 pm

Doing well in your classes

Why it's important to do well:

- Most recruiters look for a 3.5+ GPA
- Understanding class material will help you pass Exams
- Learning how to study right will make you a quick learner
- Some of the material you learn will be applied in actuarial work

Whether you're struggling or comfortable with the material, it's not wrong to ask for help! Make use of your resources, not taking advantage of them is your loss.

General Class Advice

Balance your Classload:

- Know your limits- generally recommend 12-16 units per quarter
- When you're getting started, intersperse GEs with PSTAT classes
- Ask other Act Sci students about the difficulty of classes and their experiences with various professors

Richard's Example Schedule

(he recommends not to take so many units)

My Class Schedule

Course	EnrlCd	Grading	Units	Instructor(s)	Day(s)	Time(s)	Location(s)
CH ST 1C - INTRO CHICANO/A STD course info							Drop / Modify / Switch
	04820	P	4.0	CASILLAS D I	T R	2:00 PM-3:15 PM	IV THEA1
				GARCIA GONZAL	F	11:00 AM-11:50 AM	SH 1609
JAPAN 6 - SECND YR JAPANESE 3 course info							Drop / Modify / Switch
	26732	L	5.0	CANTRELL A M	MTWRF	10:00 AM-10:50 AM	HSSB 1206
PSTAT 120C - PROB & STATISTICS course info							Drop / Modify / Switch
	39792	L	4.0	NAVA M M	M W	11:00 AM-12:15 PM	NH 1006
				LUO YA	M	4:00 PM-4:50 PM	HSSB 1228
PSTAT 160B - STOCHASTIC PROCESS course info							Drop / Modify / Switch
	40014	L	4.0	ICHIBA T	M W	12:30 PM-1:45 PM	BUCHN 1930
				ZAPATA J	W	9:00 AM-9:50 AM	HSSB 1210
PSTAT 172B - ACTUARIAL STAT II course info							Drop / Modify / Switch
	52068	L	4.0	DUNCAN I	T R	11:00 AM-12:15 PM	PSYCH 1902
				HUYNH N T	F	8:00 AM-8:50 AM	HSSB 1206
PSTAT 195 - SPECIAL TOPICS course info							Drop / Modify / Switch
	65987	P	4.0	FELDMAN R	R	3:30 PM-5:30 PM	SH 5607F
Total Units: 25.0							

General Class Advice

Know the Material:

- Reiteration is the key to understanding: if available, look over the material before class
- Gain a deep understanding: sometimes people study to suit a professor's testing style, try to learn the content instead of focusing on the format
- Stay consistently organized and don't leave your study to the last minute
- Use all study material available: lecture notes, professor's notes, textbooks, online extra material, exams materials

General Class Advice

Homework:

General process

- Ideally, start hw when assigned
- Identify where you get lost, make concrete questions
- Go to office hours (TA and Professor)
- Work in small groups that you can meet with to solve problems regularly
- Complete on time and review within a few days after solutions posted

General Resources

Ask teachers: Stay after class, go to office hours, schedule individual meetings

Ask TAs: Every TA has a different teaching style, go to the section(s) that match your understanding

PSTAT and Undergrad Class Resources

PSTAT Class Study Sections

https://goo.gl/forms/SADl6FzQgZn1Z1642

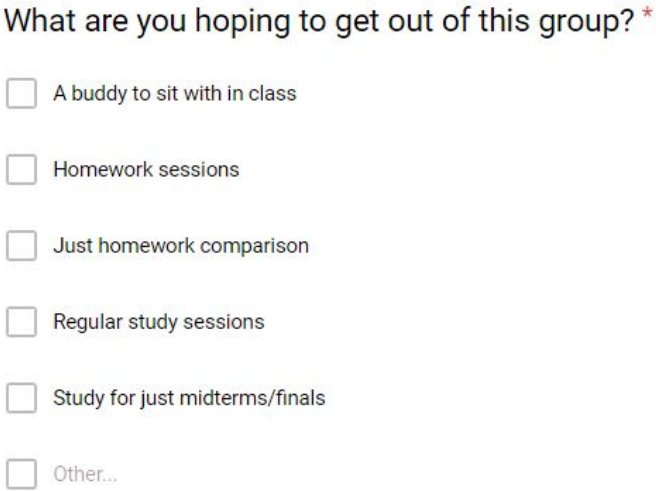
PSTAT Grad Student Tutors

email individually for rates

Economics and Math CLAS:

tutorials, drop-in

Math Lab



Recommended Schedule: Scheduling

- Advisors here today to answer questions:
  - Sarah Anderson, Richard Qian, Aimee Nelson

Plan ahead!

- Scheduling resource: http://www.pstat.ucsb.edu/instruction/actuary_science.htm
- Certain classes are only offered in certain quarters or certain years: http://www.pstat.ucsb.edu/instruction/CourseOfferings20160626.pdf
- Prerequisites: check on gold, or at https://my.sa.ucsb.edu/catalog/Current/CollegesDepartments/ls-intro/stats.aspx?DeptTab=Courses

Suggested Plan of Study B.S. Statistical Science - Actuarial Statistics

	Fall	Winter	Spring
Freshman Year	MATH 3A ECON 1 (VEE) Writing 2	MATH 3B CMPSC 8 ECON 2 (VEE)	MATH 4A CMPSC 16
Sophomore Year	MATH 6A MATH 4B or 8 ECON 10A	MATH 4B or 8 PSTAT 120A (P)	MATH 6B PSTAT 120B (P,C) *(ready for exam P in summer)*
Junior Year	PSTAT 171 (FM) PSTAT 174 (VEE)*	PSTAT 160A(MLC) PSTAT 172A (MLC)	PSTAT160B*(C,MLC) PSTAT 170 (FM/MFE) PSTAT 172B (MLC) *(ready for exam FM)*
Senior Year	PSTAT 130 (SAS)* ECON134A(VEE)*	PSTAT 173 (C)* WRITING 107B	PSTAT 120C (C) PSTAT 126 (VEE)

Accelerated track (student already took AP calculus, and many GEs)

	Fall	Winter	Spring
Freshman Year	MATH 4A ECON 1 (VEE) Writing 2	MATH 6A CMPSC 8 ECON 2 (VEE)	MATH 4B CMPSC 16 MATH 8
Sophomore Year	PSTAT 120A(P) MATH 6B ECON 10A	PSTAT 120B(P,C) WRITING 107B	PSTAT 120C (C) PSTAT 126 (VEE) *(ready for exam P)*
Junior Year	PSTAT 171 (FM) PSTAT 174 (VEE)* PSTAT 130 (SAS)*	PSTAT 172A(MLC) PSTAT 173 (C)* PSTAT 160A(MLC)	PSTAT 172B(MLC) PSTAT 170(FM/MFE) PSTAT160B*(C,MLC) *(ready for exam FM)*
Senior Year	ECON134A(VEE)* Grad courses, research	Grad courses, research	Grad courses, research

PSTAT 120B and the rest of UD PSTAT Courses:

Must receive a C or higher to meet upper-division pre-requisites

Recommended Schedule: Exam Classes

<u>UCSB PSTAT Classes that prepare you for Exams:</u>

P: 120A/B

FM: 171, 170

MLC: 160A/B, 172A/B

C: 120C, 173, 160B

MFE: 170

Use classes to introduce you to the terminology

Don’t take exams lightly

Possible to completely self-study

Generally 1-3 Exams before Fall Q of your Senior Year will put you in a good place

Recommended Schedule: VEE credits

Validation by Educational Experience (VEE) Requirements

There are three VEE topics:

- Economics
- Corporate Finance
- Applied Statistical Methods

The VEE topics are not prerequisites for the preliminary exams (Exams P, FM, MLC, MFE and C) and may be fulfilled independently of the exam process. However, you must pass two SOA or CAS actuarial exams before applying to have your VEE credit added to your record.

https://www.soa.org/education/exam-req/edu-vee.aspx

Note: Need to get a B- or higher in these classes

Directory to search for UCSB classes that will fulfill requirements:
https://www.soa.org/Education/Exam-Req/Instructions-for-VEE-Directory.aspx

Why do well in school?

Yes, the majority of the theoretical/applied material that you learn will not be applied when you are an actuary, but:

“It’s the development of the thought process.” - Alumni 1

“The classes that prepare you for exams help a lot!” - Alumni 2

“I know that our lead actuary digs online and through his college textbooks for statistical methods sometimes when something new appears and he has to creatively fit the situation to the client’s needs. That’s what makes him so good. The ability to innovate from prior knowledge is so important when you’re an actuary.” - Alumni 3

Relevance of PSTAT classes to Actuarial work

“I gained a SAS and R Proficiency in my classes that prepared me for my P&C work at X (company).” - Alumni 4 (PSTAT 126/130/174)

“I use a more difficult version of the claim reserve techniques I learned from PSTAT 194 everyday.” - Alumni 5 (PSTAT 183 now)

“how an annuity works”... “how there are many different ways to have the same value over different periods of time is very important in valuing pensions” - Alumni 6 (PSTAT 171)

“Understanding the ideas of probabilities, financial math, and random walks is pretty important to succeed in any statistical field” - Alumni 7 (PSTAT 120A/B/160A/B170)

Alumni 8- Health Consulting Example

I would say in general, I do not use the theoretical material that I learned in school. One obvious exception is that the theoretical material I learned at UCSB set me up to be successful at passing exams.

One example that I think kind of fits is a stop loss analysis. I'm not sure if you had exposure to this model during the course of your internship so I will give a quick background. In this model you input details regarding claims, plan design, and member demographics. The model then simulates 50,000 runs of aggregate claims experience. We can then simulate an empirical distribution of the claims. As you could probably guess, the distribution of claims experience ends up looking like a normal distribution. We then see how the shape of the distribution changes as we apply a stop loss deductible. When the deductible is applied, the variance of aggregate claims decreases. This means aggregate claims for the client will be more predictable. We then find the stop loss deductible level that best fits the client's needs. This will depend of the rates quoted at the different deductible levels and how much risk the client is willing to take on.

On a daily basis, you could survive knowing the math skills needed for most of your econ courses. For example

1. discounting payments
2. applying trend
3. taking averages
4. interpolating

Words from Andrew Mackenzie, ASA

UCSB Alumni, Class of 2013

Past president of the UCSB Actuarial Association

Currently a health actuary at SB Actuaries

Interned twice at Towers Watson in: Retirement and Health and Group Benefits (HGB)

Worked in HGB for 3 years as a senior actuarial analyst in Willis Towers Watson, Houston

Did a special 1 year research project on employee choice in healthcare that involved building predictive models, survey instrumentation, and writing white papers

Alumni 9- Health Consulting Example

Quite limited – especially in consulting. As a Consulting Health Actuary:

- IBNRs are very common
- Pricing models which involve frequency, severity, and trend
- Not common, but some actuaries might find themselves building predictive models/playing at data scientist if they so desire. For example, Santa Barbara Actuaries builds models to predict individuals with high risk of surgery so that our client can do proactive outreach to those identified individuals.
- ROI/cost/savings calculations which involves risk-adjustment and the time value of money. How do we assess costs on the correct basis and actuarially quantify costs/savings/etc…at a specific point in time?
- We use ASOP 23 pretty much every week. Are you familiar with the Actuarial Standards of Practice? You definitely will be when you start the FAP.
- Stop loss/reinsurance contracting/assessment. Is the reinsurance price fair? Where should we set our stop loss threshold? What is our projected cost avoidance compared to the cost of this contract?
- Reserving (similar to IBNR and pricing models)

If you are in banking, annuities, or ERM, you will probably be exposed to duration matching, hedging, and reinsurance.

Actuarial/Statistical Electives

2 PSTAT Electives

2 Electives that can be PSTAT or class from the list

Math 104A-B-C,108A-B, 117, 118A-B-C, 124A-B, 132A-B;
Econ 100B, 101, 134A-B, 141, 155, 170, 171

(Area D, E)

Actuarial Electives

PSTAT 105, PSTAT 122, PSTAT 123, PSTAT 127,

PSTAT 130, PSTAT 131, PSTAT 140, PSTAT 173,

PSTAT 174, PSTAT 175, PSTAT 183, PSAT 195

https://my.sa.ucsb.edu/catalog/Current/CollegesDepartments/ls-intro/stats.aspx?DeptTab=Courses

Go over descriptions of why these electives are interesting

Non Actuarial Electives

Take classes that interest you!

Be a well balanced candidate- recruiters like to see that you have other interests and can hold a conversation about other topics besides work.

Non-actuarial classes can build your communication and writing skills and help you build personality and cultural knowledge.

Why pursue more school?

A graduate degree can open doors for you in the future that might be closed to you if you only have a B.S.

A unique opportunity to do industry research and present your findings

Learn more complex statistical methods

More time to study and pass exams

Be a TA and get paid

If you would otherwise graduate early, it’s a great idea too

Panelists on Further Education (M.S., PhD)

Michael Ieputra (5-year joint BS/MS in Actuarial Science)
Richard Qian (5-year joint BS/MS in Actuarial Science)
Conor Shannon (Masters in Statistics)

Jimmy Risk (PhD in Statistics): risk@pstat.ucsb.edu
Katherine Ozorio (5-year joint BS/MS in ActSci): katherineozorio@umail.ucsb.edu
Raya Feldman: feldman@pstat.ucsb.edu

Why did you decide to pursue a Masters?
What was the process of applying?
What is your classload in comparison to your undergrad courses?
What are your research projects?
Are you a TA?

Coming Up

Sign up to join a PSTAT Class Study Section: good luck on midterms!

Sunday (10/23, 11:00 am) & Tuesday (10/25, 8:00 pm): Case Study Section

Friday (10/28): Actuarial Tracks