STAT 440Q – FORECASTING
Spring Semester 2026

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Email is the best way to contact me. I check email frequently during the workday (and much less frequently evenings and weekends).
Office hours: Mondays 1:30 – 3:30 p.m.
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Course objectives:
Forecasting techniques are used in a wide variety of fields. This course focuses on quantitative and statistical procedures, primarily on correlation and regression analysis. The emphasis is on the application of procedures, although some conceptual and theoretical understanding of the material is included.

Methods of instruction:
This course will operate primarily as a traditional face-to-face lecture class. Class time will be devoted to lecture, as well as to directed activities applying the analytic techniques covered in the lectures and readings. Students are *strongly* encouraged to bring laptop computers to every class session. In addition to standard reading assignments, homework problems, and tests ("knowledge festivals"), students will complete one extensive course project of their own choosing.

Textbook: *The Signal and the Noise*, by Nate Silver
This is a well-written, best-selling popular-press book on the uses (and misuses) of quantitative forecasting tools. Nate Silver is noted for his work on forecasting elections and (much more importantly) on modeling baseball and other (lesser) sports. We will read the entire book.

Equipment: I recommend that you have the following tools for this course.
A calculator, capable of handling exponents and logarithms. This could be a standard scientific calculator or perhaps your cell phone with an appropriate app. You should bring your calculator to class each day.
A laptop computer, capable of running Microsoft Excel. Ideally, you will have your own laptop, and will bring it to class regularly. If this isn't feasible, then be prepared to do computer work outside the classroom. Unless you are really comfortable using the trackpad on your laptop, investing in an external mouse for the laptop might be a wise idea.
A loose-leaf notebook. I *strongly* encourage you to obtain a loose-leaf notebook (*not* spiral-bound) for use in this class. You will be getting a *lot* of handouts in this class, and this is the best way to keep course materials organized.
A stapler. If you don't already own a stapler, then buy one. You will get more long-term value out of a stapler than you will out of many textbooks you buy for other (lesser) classes. I expect that multi-page assignments will be stapled together. (And no, dog-earing the pages together does *not* count. Professionalism matters.)

Why Should You Take This Class?

Your answer *should* be more than simply "four credits, to fulfill a graduation requirement."

I'll begin my answer to the question by quoting the noted philosopher (and baseball player) Yogi Berra: "Prediction is hard. Especially about the future."

Yes, prediction is hard. But just because it's hard doesn't mean that it can't be done, and done with at least some success. We'll look at some quantitative tools helpful in making predictions, and in modeling relationships between variables generally. These are widely used in a variety of fields – for example, financiers seeking to explain stock market movement, economists desiring to understand economic phenomena, wildlife biologists and ecologists modeling population dynamics, sports analytics gurus aiming for World Series glories on limited budgets.

And to be a bit more precise: Prediction is hard … to do right. It's very easy to go about making predictions in the wrong way, or to draw inappropriate conclusions from analyses. We'll also look at the wrong way of doing things, so we can avoid making these mistakes and can identify when others are in error. And these errors can be quite prominent … and costly. (We'll consider some prominent 'bad examples' ranging from nearly-universally-held but still quite unfounded fears about global overpopulation to recent faulty investigations into the causes of terrorism.)

This is one of two courses the department offers that focus on quantitative forecasting techniques. One (BSAN 465, Predictive Analytics, taught Fall Semesters by Dr. Woodside) covers a wide range of procedures, with a focus on breadth. This course offers a complementary approach. Here we will focus on one particular technique (regression analysis, arguably the most widely used and most flexible) and cover it in depth. They're both good courses.

How Will This Class Operate?

This is primarily a lecture class. Accordingly, <u>on-time in-person attendance is expected</u>. I recognize that there will upon occasion be valid reasons to miss a class. However, unexcused absences will be severely penalized. An absence is "excused" if you let me know in advance, *no matter what the reason*. If you don't let me know in advance, then I'm going to make a judgment call based upon circumstances and time of notification. (Example: you overslept. Sheepish apologies *received* when you wake up are probably excused; waiting until next class to tell me probably isn't.)

But simply occupying space in the classroom won't magically cause the knowledge to appear in your brain. Accordingly, <u>following most classes there will be a short review assignment</u>, to reinforce knowledge of the day's material. This assignment will normally be due at the beginning of the following class. It will not be graded, but will simply be checked for reasonable effort. Late assignments will be accepted at a penalty grade. Remember: the material in this course is highly cumulative, and the review assignments are to keep you current in the course.

<u>Mature, professional behavior is expected of all in the class</u>. This includes regular, on-time class attendance, active and non-disruptive participation in class discussion and activities, and respectful behavior toward members of the class. Moreover, should we see a reprise of the coronavirus pandemic (or the zombie apocalypse, or whatever), all are expected to follow established health norms and university policy (face masks, social distancing, whatever) while attending class. Violation of these norms is warrant for a failing grade in the course.

How Will We Achieve Course Objectives?

You learn from what you do, far more than from what you hear. Accordingly, assignments are structured to aid your mastery of course material.

Homework:
Following most classes, a short "lecture review" assignment will be made, to reinforce learning of the day's material. These assignments are due the following class period; late work is accepted at a reduced grade. In addition, there will be a small number of larger homework assignments.

Reading assignment:
We will read the entirety of the course textbook, Nate Silver's *The Signal and the Noise*, over the course of the semester. This book discusses insightfully many real-world applications of forecasting techniques. You are asked to write a short reflection paper on each week's reading.

Course project:
You will complete one extended project assignment, on a forecasting topic of your choosing, over the course of the semester. The project should represent a major effort on your part, and various intermediate assignments related to the project will be made over the course of the semester. Information on the project will be distributed separately.

Exams:
Four regular exams (or, as I prefer to call them, "knowledge festivals") are planned. These are designed to reinforce your knowledge of course concepts and computations, so that your achievements in learning may be applauded and deficiencies in knowledge may be remedied in a timely manner. All "knowledge festivals" are cumulative. They allow the use of reference materials (open book, open notes), but do not allow collaboration. Tentative dates are given in the accompanying course schedule.

Makeup exams:
Students missing a regular "knowledge festival" *for any reason* are simply excused from it, with other exam (er, "festival") grades counting proportionately more. Makeup exams are not generally given.

Final exam:
No final exam (er, "ultimate knowledge festival") is scheduled for this course. Instead, we will use the scheduled "festival" period for a cumulative in-class group activity. This will be assessed as part of your homework grade. The scheduled "festival" period is Saturday, May 3, from 5:00 to 7:00 p.m.

Studying for exams:
Understand that the instructor does not believe in "studying for exams." There are two reasons for this. One has to do with motivation: The purpose of a class is not to pass a test. Rather, it is to learn and master a body of material. If you learn the material, you'll do fine on the test. The converse is not necessarily the case, however. The second reason has to do with process. Too often "study for an exam" means a frantic cram the night beforehand, which just leads to short term memory and long term forgetting. The purpose of the daily review assignments is to give you structured review so that you are in fact studying the material – but you are doing so in a manner that is far more effective in the long run.

Why (and How) is this a Writing-Enhanced Class?

Stetson's Writing Program:
Being able to write well is an exceedingly important and useful skill. And Stetson has adopted a noteworthy approach to fostering development of that skill. We, like most schools, used to require separate "English Composition" classes. And we found that approach didn't work particularly well. In fact, it wasn't working very well at all. Students tended to see it as "just another meaningless requirement" and grudgingly went through the (perceived) ordeal … and then promptly ignored the teachings of that class when it came to writing in any other context … because (of course) what happens in one class can't possibly be relevant to what happens in any other class, and of course classes don't have any connection with the real world at all. </sarcasm>

What we've done instead is embedded writing throughout the curriculum. All students must take at least four classes designated as "writing enhanced." Two of these will be the FSEM and JSEM, which use extensive writing as a way of learning the subject matter of the seminar. Typically, one of the classes will be satisfied in General Education. (In the Business School, this is done with the Professional Communications course). And the plan was that the fourth class would be an advanced class related to the student's area of study, to provide some training in discipline-related modes of writing.

That's the idea behind designating this course as "writing enhanced." We won't be teaching writing *per se*. But we will be using writing as one way of better understanding course concepts. (After all, one very good way of mastering a topic is to explain it to someone else.) And along the way of doing a lot of writing, you'll wind up becoming a better writer as well.

Writing in this course:
We will be doing three levels of writing in this course:

1) Low-stakes writing. Informal writing that is used primarily as a way to understand and retain basic concepts, and which has negligible impact upon the course grade. The daily review assignments fall into this category. You won't just be computing stuff, you'll also be explaining terms, interpreting results, etc., in a sentence or three.
2) Medium-stakes writing. Structured assignments involving less formal prose, where the writing has moderate impact upon the course grade. The weekly assignments related to reading *The Signal and the Noise* fall into this category. These are short reflective essays. They ask you to speak in your own voice, to reflect upon (and interact with) ideas presented in the text.
3) High-staked writing. Formal prose that conforms to models for professional writing, and which has a heavy weight in grade determination. Your course project is the primary exemplar of this, although some homework assignments involve significant writing as well.

On the use of generative AI:
Generative AI (ChatGPT or similar) can be a marvelous tool when used appropriately. And it can be utterly contrary to the teaching/learning process when used inappropriately. Assignments will indicate when and why generative AI can/cannot be use (and will explain why). But the short version: When writing is integral to the learning process (reading reaction papers, concept questions on daily review, etc.) then you may NOT use GenAI. When writing is auxiliary to the learning process (brainstorming project ideas, first drafts of a research paper, etc.) then use of GenAI is allowed.

Other Issues

These things need to be said, but just don't quite fit on the other pages. So I put them here.

Collaborative work and academic integrity:
You are allowed, and encouraged, to confer with others on homework assignments in this class. However, the write-up should be your own (in your own words). Rule of thumb: if I can tell at a glance whom you worked with, then you have gone beyond the bounds of acceptable collaboration. On written work, appropriate standards of academic citation are expected (including to any generative AI used); failure to do so is plagiarism. Apparent violations of norms for academic integrity will be referred to the student-run Honor System Council. I will normally follow their recommendations for academic sanctions.

If you're lost and falling behind in the course:
The easy solution is to ignore the problem and just hope it goes away. That's also the absolutely least effective solution.

Your regular attendance, and your regular completion of the review assignments, should be our first check on whether things are going OK in this class. Some early warning signs: If you regularly feel "too sick" to come to class when it's really 'statistics-itis' or even some general low-level depression. Or you're swamped with work in other (lesser) classes or with something happening in real-life and so put off a daily review until 'later' … and then put off the next one … and then the next one … and the next thing you know, you're *really really* lost. The actual reason doesn't matter much. I'm not particularly interested in issues of "whose fault this is" and I'm far more inclined to focus on "what we need to do, to make things right."

I'll try to intervene when I notice something going awry. But I don't always catch things. And yes the course has some really negative consequences (like a failing grade) for things like attendance and lecture review issues. And I'll use them if I have to. But I don't want to have to. I'd much rather take the time to figure out what we need to do, to make things work.

So talk to me. I'm only half as evil as everyone says.

Accessibility:

> "If you anticipate barriers related to the format or requirements of a course, you should meet with the course instructor to discuss ways to ensure full participation. If disability-related accommodations are necessary, you must register with Academic Success through the Accessibility Services Center located at 209 E. Bert Fish Dr. (386-822-7127; Academic Success Webage) and notify the course instructor of your eligibility for reasonable accommodations. The student, course instructor and Academic Success will plan how best to coordinate accommodations."

That's the university's standard boilerplate, pulled from the university website. A couple things to note: One is that the office has been moved; it is now part of the Academic Success Center on the second floor of the library. Second, let me underscore that I'm more than understanding that sometimes individuals need individualized provision for their particular circumstances. Whatever the situation (more time on ~~exams~~, er, "knowledge festivals," separate testing, *whatever*) then work with Accessibility Services and me, and we'll aim to make it happen.

Caveat:
I reserve the right to make minor modifications in the course schedule and mechanics, as the situation warrants. I will announce such changes to the class. (I don't anticipate any problems, but in today's litigation-filled world you often have to say explicitly what a reasonable person would normally assume implicitly.)

How Will You Be Evaluated in this Class?

I'm very much of the opinion that grades are over-emphasized in contemporary academic practice. (There's a reason that this section comes at the end of the syllabus, rather than at the beginning.) I like the following quote (which I stumbled across in a professional journal):

> It is not difficult to understand why students might come to the conclusion that instructors overly stress grade orientation and give only short shrift to learning orientation. Almost every syllabus contains descriptions of how grades are calculated; few address the need to find excitement in course material. Colleges regularly establish remedial classes for students receiving poor grades; they rarely, if ever, offer remedial instruction for students unable to find excitement in English literature or physics. Grades are a required part of every class, but instructors are not obliged to stimulate interest in course content. In fact, it is possible for someone to teach for an entire career and not excite interest in his or her discipline; any instructor who failed to assign grades would be dismissed after only a short tenure.
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> Howard R. Pollio and Hall P. Beck, "When the Tail Wags the Dog"
> *Journal of Higher Education*, vol. 71, no. 1 (Jan/Feb 2000), p. 93

I will grade you fairly and objectively. I will not inflate grades. I will make every effort to provide prompt feedback. And I will maintain a focus that the grade is a *means* (to identify strengths in learning that can be celebrated, and deficiencies in learning that can be remedied), rather than an *end*.

Interpretation of grades:
Course grades represent the instructor's assessment of the student's demonstrated mastery of the course material. Grades are assigned according to the following interpretative framework:

A – An "A" indicates that the student has demonstrated outstanding mastery of the subject material. S/he shows a deep understanding of the material's concepts, implications, and applications.

B – A "B" indicates that the student has demonstrated a solid competence in the mechanics of the subject matter, but is weak in understanding of the underlying motivations of the material.

C – A "C" indicates that the student has demonstrated basic ability in course concepts as reflected by foundational capability in calculation, but has marginal capabilities with material beyond these fundamentals.

Grades of "D" and "F" represent unacceptably low levels of course mastery, and will be assigned as required.

Computation of grades:
Assessment of student mastery of course material will be based on the following:

Four regular exams ("knowledge festivals")	40%
Course project	30%
Reading assignments	15%
Participation (attendance, lecture reviews, homework)	15%

A scale of 90/80/70 will be used. All course assignments and "knowledge festivals" will be written and graded in the context of the interpretive framework and scale given above. Grades are NOT posted on Canvas. This is a course in data analysis; you should be able to analyze your data.