

Advice for mathematics majors enrolled in or considering
the *actuarial science concentration* and for any LSU
students considering being actuaries

Actuary is consistently rated as one of the best jobs in America. In almost every category, such as work environment, employment outlook, job security, growth opportunity, and salary, a career as an actuary is hard to beat.

- paraphrased from www.beanactuary.org

The profession.

Actuaries analyze the costs of risk and uncertainty. They need to learn mathematics, statistics, and finance. It is a small profession—there are about 24,600 jobs for actuaries. This is small compared to some of the more familiar professions: There are 778,700 lawyers, 2,751,000 registered nurses, and 708,300 physicians. There is a good outlook for growth in the decade 2014-2024 with 18% growth predicted (average growth is predicted at 7%).¹

Considering being an actuary?

Being an actuary can be a great profession to enter, but it has to suit your personality, temperament, and work habits. It requires that you are willing to devote many hours to self-study in order to pass a series of rigorous exams. ***By preparing for and taking Exam P/1 early in your program, you can find if you have the temperament to prepare for a long series of exams.*** See #3 and #4 below.

More information on the exam requirements and the profession is available at www.beanactuary.org.

For any LSU student—regardless of their major—who wants to prepare to be an actuary, there is a basic stripped-down core of courses that is the minimum to get started. It consists of 30 hours of mathematics (1550, 1552, 2057, 2085, 3355, 4056, 4058, 4050), 4 hours of experimental statistics (3201), 3 hours of finance (3715), and 3 hours of economics (2030); but many courses in the list have prerequisites.

Advice about the program of study.

Two important new notes:

- New requirements for credentials from the Society of Actuaries (SOA) will take effect in July 1, 2018. The SOA's information page is <https://www.soa.org/Education/General-Info/2016-transition-rules-asa-candidated.aspx>
- Students on the 2016-2017 catalog will have 28 hours of free electives

¹ *Actuaries* : *Occupational Outlook Handbook*, U.S. Bureau of Labor Statistics, US Department of Labor.

1. I highly recommend that students on older catalog see a college counselor and consider changing to the 2016-2017 catalog for their degree requirements.
2. I highly recommend that students attempt to complete (with a B or better) both MATH 4056 and EXST 3201 *prior to by May 2018. If you do so, then you will receive automatic credit for the to-be-added exam Statistics for Risk Modeling (Exam SRM).* Otherwise you will have to take this additional exam as part of gaining credentials.
3. Take MATH 3355 (Probability) at the earliest opportunity. Take MATH 3355 *immediately* after completing MATH 2057. It should be a higher priority than taking any of the gateway courses (MATH 2020, 2025, or 2030), and, in fact, any other course. You should complete MATH 3355 before the end of your 2nd year and earlier if you enter with advanced placement in Calculus.
4. Take Exam P at the first opportunity after completing MATH 3355. Assuming that your MATH 3355 instructor covered the entire syllabus, you will need to study and practice intensely for two weeks before taking Exam P. I recommend taking it at the first opportunity, which is usually within a few weeks of completing MATH 3355. If you attempt Exam P and fail it, it does not matter. You only lost the fee. There is no stigma associated with failing an exam.
Passing Exam P is substantially harder than getting an A in MATH 3355, so you should devote some time to study for Exam P while completing MATH 3355 it will help you get an A in probability too.
5. Take MATH 4050 Interest Theory the fall after MATH 3355 or in your 3rd year. Take Exam FM/2 at the first opportunity after completing MATH 4050. This will likely be in December or February.
6. Do *not* take MATH 4020 for your capstone requirement. Try to obtain an internship for the summer after your 3rd year. Use the internship as your capstone course. See the information at <https://www.math.lsu.edu/~smolinsk/Actuarial%20capstone%20credit.pdf> You will likely need to have an exam behind you to have a good application for a summer internship. You may be able to get an internship earlier too.

If you cannot obtain an internship then EXST 4087 will serve as a capstone and contribute your background, knowledge, and possibly an applied statistics minor (see #10 below). If EXST 4087 is not offered then the Associate Chair of Mathematics has allowed EXST 4025 as a substitute.

7. MATH 4058 is necessary for the Exam MFE and Exam C. In addition to MATH 4058, Exam MFE requires approximately the equivalent of a 3-credit course of self-study. It is possible to prepare for MFE and possibly pass it, before you graduate. Take MATH 4058 in your 3rd year rather than wait until your 4th year. You can prepare for and take Exam MFE. See # 9.

8. ECON 2030, FIN 3715, and EXST 3201, and MATH 4056 are part of the credentialing process by the Society of Actuaries (SOA) called *Validation through Educational Experience* (VEE). You must receive a B or better in each italicized class below to receive VEE credit from the SOA. The VEE requirements have prerequisites outside of mathematics and are met at LSU in the following sequences:

- ✓ *ECON 2030*
- ✓ *ACCT 2001* and *FIN 3715*
- ✓ *EXST 2201*, *EXST 3201*, and *MATH 4056*

You should complete them before you graduate, but you do not have to finish them early in your program. ECON 2030 is a prerequisite for FIN 3715, so you must take it first.

9. Use an elective to add a self-study course for exam MFE preparation in a *spring* semester to take the July exam. To register as a MATH 4999 in the spring with me, I require as prerequisites: (1) passed Exam P; (2) passed Exam FM or received an A in MATH 4050 in the fall immediately prior to MATH 4999 and registration for Exam FM; and (3) you have taken MATH 4058.

10. If you follow the instructions outlined above then you will have at least 28 hours for free electives (19 hours for students in older catalogs) in your 120-hour program. You can use them to take courses that interest you, improve your credentials, or improve your knowledge. Here are some suggestions.

- ✓ Many employers like to see more background in computer programming. You will already have SAS. C++ is something that may be beneficial on a resume even if it is not immediately applicable. It shows more experience and training in programming. CSC 1253 and CSC 1254 are the C++ courses and do not have prerequisites other than basic mathematics. Programming may help you land an internship so try to take some programming early in your program of study.
- ✓ BLAW 3201 Business Law and FIN 3440 Risk and Insurance. The Finance Department may waive the BLAW 3201 prerequisite for FIN 3440 upon request. FIN 3715 is the most valuable standard course that is not required in the concentration. I recommend FIN 3440 for those students who are seriously pursuing a career as an actuary. I recommend that you take FIN 3440 before you begin your job search.
- ✓ You may wish to get a minor in business administration: ISDS 1100, MGT 3200, MKT 3401. Nine hours required. Additional credentials are always helpful. It may be useful for those who do not ultimately pursue a career as an actuary but may consider a one-year masters program in business or analytics.
- ✓ Get a minor in applied statistics: EXST 4050 and two of EXST 4012, EXST 4025, or EXST 4087. Nine hours required. Again, additional credentials are always helpful. If you cannot obtain an internship for your capstone requirement, then take note that one of these courses may serve as your capstone requirement (see # 6). It may be useful for those who do not ultimately pursue a career as an actuary but may consider a one-year masters program in business or analytics or a master's degree in statistics.

11. Participate in the Actuarial Student Association, which is the student professional club. It is your connection to students who have found internships and passed exams and a chance to meet professionals (see the club's website: www.math.lsu.edu/asa).

12. Some knowledge of MS Excel is useful to have and to put on a resume. Students who want to get some excel training may take a free online course. Course information can be found by following the path starting on your MyLSU page and may require downloading software:

MyLSU > Computing Services > Microsoft IT Academy
and

<http://grok.lsu.edu> > Training > Microsoft IT Academy

The course is supposed to prepare you to take a certificate exam from Microsoft to get a MOS: Microsoft Office Excel Certificate. The exams do have a fee (but there may be an LSU discount). Exams are specified by an exam number, e.g., 602 for Excel 2007, 882 for Excel 2010, and 420 for Excel 2013.

A sample program of key courses is below.

Semester	Courses
1	MATH 1550
2	MATH 1552, EXST 2201, Computer programming (elective)
3	MATH 2057, ACCT 2001, ECON 2030, MATH 2020 Begin your search for a summer internship, but it may be difficult without an exam ¹
4	MATH 3355, FIN 3715, MATH 2025 or 2030, EXST 3201 ²
5	MATH 4050 ³ , MATH 4056 ^{3,4} Begin your search for a summer internship ¹
6	MATH 4058 ^{2,5} , BLAW 3201 (elective)
7	FIN 3440 (elective)
8	MATH 4153 ^{2,5}

¹ Summer internships are paid internships and will likely be out of state.

² Usually offered in spring only.

³ Usually offered in fall only.

⁴ If possible, complete before May 2018. Otherwise the course may be delayed.

⁵ May be delayed.

Other courses, college requirements, and general education requirements may be included around these. The program allows for Exam P in the summer following your sophomore year and Exam FM in your junior year. It also allows time to complete the options in item 10 and possibly pass a third exam.