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](http://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 21,700 jobs for actuaries. This is small compared to some of the more familiar professions: There are 728,200 lawyers, 2,737,400 registered nurses, and 691,000 physicians. There is a good outlook for growth in the decade 2010-2020 with 27% growth predicted (average growth is predicted at 14%).

**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 #1 and #2 below.

More information on the exam requirements and the profession is available at [www.beanactuary.org](http://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 29 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.**
1. 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.

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2. Take Exam P/1 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/1. I recommend taking it at the first opportunity, which is usually within a few weeks of completing MATH 3355. If you attempt Exam P/1 and fail it, it does not matter. You only lost the fee. *Passing Exam P/1 is substantially harder than getting an A in MATH 3355, so you should devote some time to study for Exam P/1 while it will help you get an A in probability too.*

3. 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.

4. 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 [www.math.lsu.edu/~smolinsk/Actuarial%20capstone%20credit.pdf](http://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.

5. Request a substitution for MATH 2060 from the Associate Chair of Mathematics. EXST 3201 has a 2-hour SAS lab that meets the technology requirements. It may change in future catalogs, but for now, you have to request it.

6. Request a substitution for “General Education course - Social Sciences (2000-level) (3)” for any course that is not a requirement from the Associate Chair of Mathematics. The course can be in any discipline and does not need to be a social science. It may change in future catalogs, but for now, you have to request it.

This substitution is possible because ECON 2030 satisfies the requirement of “General Education course - Social Sciences (2000-level),” and ECON 2030 is required for actuarial students (see # 8).

7. MATH 4058 is necessary for the Exam MFE/3f and Exam C/4. In addition to MATH 4058, Exam MFE/3f requires approximately the equivalent of a 3-credit course of self-study. It is possible to prepare for MFE/3f 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/3f. 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/3f 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/1; (2) passed exam FM/2 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 16 hours of free electives 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.

- **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.

  or

- Get a minor in business administration: ISDS 1100, MGT 3200, MKT 3401. Nine hours required. Additional credentials are always helpful.

  or

- 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 # 4).

- 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.

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 [www.math.lsu.edu/asa](http://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
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 for an entering freshman is below.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Math 1550</td>
</tr>
<tr>
<td>2</td>
<td>Math 1552</td>
</tr>
<tr>
<td>3</td>
<td>Math 2057, Acct 2001, Econ 2030</td>
</tr>
<tr>
<td>4</td>
<td>Math 3355, Fin 3715, Math 2020 or 2025 or 2030, Exst 2201</td>
</tr>
<tr>
<td>5</td>
<td>Math 4050, Math 2020 or 2025 or 2030, Exst 3201</td>
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<tr>
<td>6</td>
<td>Math 4058</td>
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<tr>
<td>7</td>
<td>Math 4056</td>
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Other courses may be included around these. The program allows for Exam P/Exam 1 in the summer following your sophomore year and Exam FM/Exam 2 in your junior year. It also allows time to complete the options in item 10 and possibly pass a third exam.