Course Requirements for Undergraduates in Actuarial Science

1. ***Actuarial Science Major Course Requirements***.

* The required courses are: Act Sci 303, Math 331 (or equivalent), Gen Bus 317 (or equivalent), Act Sci 650, Act Sci 652, Act Sci 300 and Act Sci 301.
* We recommend Math 331 to satisfy your probability course requirement, however Stat 309 or Math 431 also meet this requirement. Math 222 is a prerequisite for Math 331. Math 234 is a prerequisite for Math 431 and Stat 309 but can be taken concurrently.
* We recommend Gen Bus 317 to satisfy your statistics course requirement after you have met your probability requirement, however Stat 310 also meets this requirement. **Do not take Gen Bus 306 or 307.**
* You must take **one** of either Act Sci 651 or Act Sci 653. (You can take both courses, but only one counts for satisfying the major requirement.)
* Finally, you must take **one** of Act Sci 654, Act Sci 655 or Gen Bus 656. (You can take more than one of these courses, but only one counts for satisfying the major requirement.)

2. ***Actuarial Science Course Sequencing***

* Consider taking Act Sci 365 as early as your first semester pursuing actuarial science, provided you have already completed Math 221 or equivalent.
* We recommend Act Sci 303 as early as your second semester freshman year. You need to have completed Math 222 **prior to** taking this class (it cannot be taken concurrently). Act Sci 301 is a one-credit review class for Act Sci 303 and can be taken concurrently. Act Sci 303 and 301 together cover the material for the Financial Mathematics (FM/2) professional actuarial exam. Act Sci 303 is approved for University Earned Credit by the Society of Actuaries (SOA), meaning if you earn a score of 85% for this course you will receive credit for the FM/2 exam from the SOA.
* We recommend that you take Math 331 and Act Sci 300 together in the same semester to meet the probability requirement for the major. Stat 309 or Math 431 can be taken in place of Math 331, though they require Math 234 as a prerequisite and for both courses and Act Sci 300 should be taken the semester after completion of one of these courses.
* Once you have completed Act Sci 303 and Math 331, register for the Act Sci 650 and Act Sci 652 courses, likely in your junior year. We recommend taking these courses in back to back semesters though it is possible to take these courses in the same semester (it may just be a challenging semester). If you are pursuing credentials through the SOA, together these courses cover the material corresponding to the Fundamentals of Actuarial Mathematics (FAM) professional actuarial exam. These two courses are approved for University Earned Credit, meaning if you earn a score of 85% or better in both of these courses you will receive credit for the FAM exam. If you are pursuing credentials through the Casualty Actuarial Society (CAS), the MAS-1 exam would be the next exam to consider – you may want to take Act Sci 654 before sitting for MAS-1
* You can take either Act Sci 651 or Act Sci 653 after you have completed Act Sci 650 and Act Sci 652. You only need to take one of these courses for the Actuarial Science major. If you are pursuing credentials through the CAS, Act Sci 653 would be the obvious choice of these two courses. For the SOA, there is a professional exam that corresponds to each or these two courses, however you are only required to pass one of the Advanced Long-term Actuarial Mathematics (ALTAM) OR Advanced Short-term Actuarial Mathematics (ASTAM) exams as part of the credentialing requirements of the SOA. Act Sci 651 is approved for University Earned Credit by the Society of Actuaries (SOA), meaning if you earn a score of 85% for this course you will receive credit for the ALTAM exam from the SOA. Act Sci 652 is approved for University Earned Credit by the Society of Actuaries (SOA), meaning if you earn a score of 85% for this course you will receive credit for the ASTAM exam from the SOA.
* You can take Act Sci 654, Act Sci 655, Gen Bus 656 after you have completed either Stat 310 or Stat 312 in your junior or senior year.
* If you are interested in advanced analytics and/or have a focus on Property/Casualty insurance, you can take Gen Bus 657 after you have completed one of Act Sci 654, Act Sci 655 or Gen Bus 656.

3. ***Actuarial Science Other Recommendations***

* Taking a computer programming course can be extremely valuable for actuarial science students. Consider Comp Sci 220 (Data Programming I - Python), or one or more of the Statistics 303/304/305 one credit courses (R for Statistics I/II/III) which can all be taken sequentially in the same semester.
* It is strongly recommended to take RMI 300 your freshman or sophomore year. This course satisfies a breadth requirement and is very useful for actuaries.
* Math, statistics and actuarial science courses can be challenging. Try not to overload your schedule in any semester. Be especially aware in your first semester at the UW-Madison, as your transition to a new environment can bring its own challenges and opportunities.
* The potential schedules below include the math, statistics, actuarial courses needed for the major, along with those classes needed to satisfy the VEE requirements (see below), and RMI 300. Fill in the rest of your schedule with required pre-business, business, and liberal studies requirements for the degree.

Sample Four-Year Plans

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| --- | --- | --- | --- | --- |
|  | Potential Schedule I (With AB High school calculus) | | Potential Schedule II (No high school calculus) | |
|  | **Fall** | **Spring** | **Fall** | **Spring** |
| Freshman | Math 222 (4) Econ 101(4) | Act Sci 303 (3) Act Sci 301 (1) Act Sci 365 (3) Econ 102 (4) | Math 221 (5) Econ 101 (4) | Math 222 (4) Econ 102 (4) Act Sci 365 (3) |
| **Sophomore** | Math 331 (3) Act Sci 300 (1) RMI 300 (3) Acct 100 (3) | Gen Bus 317 (3) Fin 300 (3) | Act Sci 303(3) Act Sci 301(1) Acct 100 (3) | Math 331 (3) Act Sci 300 (1) RMI 300 (3) Fin 300 (3) |
| **Junior** | Act Sci 652 (3) | Act Sci 650 (3) | Gen Bus 317 (3) Act Sci 652 (3) | Act Sci 650 (3) |
| **Senior** | Act Sci 651 or Act Sci 653 (3) Act Sci 654 or Act Sci 655 or Gen Bus 656 (3) | Gen Bus 657 (3) | Act Sci 651 or Act Sci 653 (3) | Act Sci 654 or Act Sci 655 or Gen Bus 656 (3) |

UW Actuarial Science Program

Quick Reference

**Actuarial Major Courses and Pre-requisites**

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| --- | --- | --- | --- |
| **Class** | **Required for Major** | **Pre-requisites** | **Other** |
| Act Sci 300 | Two credits of either Act Sci 300 or 301\* | Concurrent with Math 331, the semester following either Math 431 or Stat 309 | Offered both Fall and Spring semesters and Summer |
| Act Sci 301 | Two credits of either Act Sci 300 or 301\* | Concurrent with Act Sci 303 | Offered both Fall and Spring semesters |
| Act Sci 365 | No | Math 221 (or equivalent) | Offered Spring semester |
| Math 331 (or Stat 309 or Math 431) | Yes | Math 222 for Math 331 Math 234 or concurrent (for Stat 309 or Math 431) | Offered both Fall and Spring semesters |
| Act Sci 303 | Yes | Math 222 | Offered both Fall and Spring semesters |
| Gen Bus 317 (or Stat 310 or 312) | Yes | Math 331 or Math 431 or Stat 311 | Offered both Fall and Spring semesters |
| Act Sci 652 | Yes | Gen Bus 317 or Stat 310 | Offered both Fall and Spring semesters |
| Act Sci 650 | Yes | Act Sci 303 and either Math 331, Math 431, or Stat 309 | Offered both Fall and Spring semesters |
| Act Sci 653 | Either Act Sci 651 or 653 required | Act Sci 652 | Offered both Fall and Spring semesters |
| Act Sci 651 | Either Act Sci 651 or 653 required | Act Sci 650 | Offered both Fall and Spring semesters |
| Act Sci 654 | One of Act Sci 654, Act Sci 655, or GB 656 required | Gen Bus 317 or Stat 310 | Offered in Fall and Spring semesters |
| Act Sci 655 | One of Act Sci 654, Act Sci 655, or GB 656 required | Gen Bus 317 or Stat 310 | Usually offered once a year |
| Gen Bus 656 | One of Act Sci 654, Act Sci 655, or GB 656 required | Gen Bus 317 or Stat 310 | Usually offered once a year |
| Gen Bus 657 | No | One of Act Sci 654, Act Sci 655 or GB 656 | Usually offered once a year |

\*You may take Act Sci 300 or 301 as many times as you would like, but you can get at most 2 credits per course number.

**UW Courses Related to Society of Actuaries (SOA) Requirements**Effective Spring 2022

|  |  |
| --- | --- |
| Actuarial Exam or Requirement | UW-Madison Course |
| Exam FM 1  (Financial Mathematics) | Act Sci 303 AND Act Sci 301 |
| Exam P  (Probability) | Math 331 OR Math 431 OR Stat 309  AND Act Sci 300 |
| Exam FAM 2 (Fundamentals of Actuarial Mathematics) | Act Sci 650 AND Act Sci 652 |
| Exam SRM (Statistics for Risk Modeling; Predictive Analytics) | Act Sci 654, Act Sci 655, Gen Bus 656, Gen Bus 657 |
| Exam ALTAM 3 (One of)  (Advanced Long-term Actuarial Mathematics) | Act Sci 651 |
| Exam ASTAM 4 (One of) (Advanced Short-term Actuarial Mathematics) | Act Sci 653 |
| Economics VEE | Econ 101 AND Econ 102 OR Econ 111 |
| Accounting and Finance VEE | Acct 100 AND Fin 300 |
| Statistics VEE | Gen Bus 317 or Stat 310 |

1 Credit for exam FM can be earned through the University Earned Credit program by scoring 85% or better in Act Sci 303

2 Credit for exam FAM can be earned through the University Earned Credit program by scoring 85% or better in BOTH Act Sci 650 and Act Sci 652

3 Credit for exam ALTAM can be earned through the University Earned Credit program by scoring 85% or better in Act Sci 651

4 Credit for exam ASTAM can be earned through the University Earned Credit program by scoring 85% or better in Act Sci 653

**UW Courses Related to Casualty Actuarial Society (CAS) Requirements**Effective Spring 2018

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| --- | --- |
| Actuarial Exam or Requirement | UW-Madison Course |
| Exam P/1  (Probability) | Stat 309 OR Stat 311 OR Math 431 AND Act Sci 300 |
| Exam FM/2  (Financial Mathematics) | Act Sci 303 AND Act Sci 301 |
| Exam MAS-1 (Modern Actuarial Statistics - 1) | Act Sci 650  AND Act Sci 652  AND Act Sci 654  AND Math/Stat 632 |
| Exam MAS-2 (Modern Actuarial Statistics – 2) | Act Sci 653  AND Gen Bus 656  AND Other topics |
| Economics VEE | Econ 101 AND Econ 102 OR Econ 111 |
| Accounting and Finance VEE | Acct 100 AND Fin 300 |