**Actuarial Science Program**

**DEPARTMENT OF MATHEMATICS**

**UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN**

**Advising Notes for Master of Science - Actuarial Science Students**

**Academic Year 2020-2021**

**(1) Graduate degree requirements**:

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32 total credit hours (in general, grad courses are 4 credit hours each, so essentially 8 courses are required), chosen in accordance with the student's background and interests.

All the courses applying to the degree must be 400-500 level courses, with the exception of ASRM 401.

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b

$\geq 20$ of the 32 hours must be in Actuarial Science (5 courses should come from ASRM)

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$\leq 12$ credits in 400-500 level courses having significant relation to Actuarial Science and are subject to the approval of the advisor or the Director of the Actuarial Science program

c

$\geq 12$ credits from the 32 credits must be in

500-level courses

8 of which must come from:

ASRM 510, 552, 561, 569, 575, MATH 563 or an approved section of ASRM 595.

P.S. FIN 521 cannot be counted toward this requirement however it counts towards the 32-credit hour requirement

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Students are required to register for ASRM 598 (Actuarial Science Seminar) for **two semesters** and are expected to attend **at least each semester 80% of all seminars**, and more than 4 seminars. All seminars hosted by the Actuarial Science Program count towards this requirement.

**(2) Program length**: From two to four semesters, depending upon preparation, working or assistantships, etc.

**(3) Link between UIUC courses and professional actuarial exams**:

Although not part of formal degree requirements, graduate students who are planning to undertake an actuarial career are strongly recommended to prepare for actuarial professional exams. We offer the following courses covering at least 80% of the syllabus for SOA/CAS exams:

| Exam | Course Number | Course Name | Comments |
|---|---|---|---|
| Exam 1/P | ASRM 401 | Actuarial Statistics I | Does not count towards Masters |
| Exam 2/FM | ASRM 210 | Theory of Interest | Does not count towards Masters |
| Exam LTAM | ASRM 575 | Life Insurance and Pension Mathematics | Prepares also for the Individual Life and Annuities Track (FSA) |
| Exam 3F/IFM | ASRM 410 | Investment and Financial Markets | Caution: Credit cannot be given to both ASRM 410 and ASRM 510<br>* ASRM 510: prepares for the Quantitative Finance and Investment Track (FSA) |
| | ASRM 510 | Financial Mathematics * | |
| Exam MAS-II/STAM | ASRM 561 | Loss Data Analytics and Credibility | |
| CAS Exam 5 | ASRM 569 | Extreme Value Theory and Catastrophe Modeling | |
| Exam MAS-II/SRM | ASRM 450 | Methods of Applied Statistics | |
| | ASRM 451 | Basics of Statistical Learning | (undergrad level) |
| | ASRM 551 | Statistical Learning | (grad level) |
| Exam PA | ASRM 552 | Predictive Analytics | |
| Exam MAS-I | ASRM 402 | Actuarial Statistics II | |
| | ASRM 409 | Stochastic Processes for Finance and Insurance | |
| | ASRM 450 | Methods of Applied Statistics | |
| Exam MAS-II | ASRM 453 | Applied Bayesian Analysis | |

In addition, we offer multiple sections of ASRM 392: Actuarial Problem Solving as exam prep sessions. They are typically offered once per week in the evenings. Please note that these courses do not count towards the graduation requirements.

| Course | Section | SOA/CAS Exam | Available (Recently) |
|---|---|---|---|
| ASRM 392 | P | 1/P | Fall and Spring |
| | FM | 2/FM | Fall and Spring |
| | IFM | 3F/IFM | Fall |
| | LTAM | LTAM | Spring |

**(4) Typical offering frequency for core actuarial courses**

| Course Number | Course Name | Availability Recently | |
|---|---|---|---|
| | | Fall | Spring |
| ASRM 402 | Actuarial Statistics II* | ✓ | |
| ASRM 409 | Stochastic Processes | | ✓ |
| ASRM 410 | Investment and Financial Markets | | ✓ |
| ASRM 450 | Methods of Applied Statistics (Section GR) | ✓ | ✓ |
| ASRM 551 | Statistical Learning** | ✓ | ✓ |
| ASRM 510 | Financial Mathematics | ✓ | |
| ASRM 561 | Loss Data Analytics and Credibility*** | ✓ | ✓ |
| Math 563 | Risk Modeling and Analysis | ✓ | |
| ASRM 569 | Extreme Value Theory and Cat. Modeling*** | ✓ | |
| ASRM 575 | Life Insurance and Pension Math | ✓ | ✓ |
| ASRM 552 | Predictive Analytics (PA) | | ✓ |
| ASRM 533 | Risk Management Practices and Regulation (RM) | ✓ | |
| STAT 430 | Topics in Applied Statistics | ✓ | ✓ |

* This course earns credits from the Society of Actuaries for Validation through education experience (VEE) Statistics.

** There are only limited seats offered on a first-come-first-serve basis for ASRM 551 and STAT 430. Students should contact ASRM-advising@illinois.edu in order to register for these courses. Students intended to take ASRM 551 should have taken ASRM 450 (Methods of Applied Statistics) or its equivalent in other universities.

*** ASRM 561, 569 and often 595 are cross-taught with undergraduate courses. Graduate students must register for the 500-level course. The graduate course will include additional material and/or assignments at a graduate level.

**(5) Thesis Option**

A thesis option is available for students intended to pursue a doctoral program at the University of Illinois. Students wishing to pursue this option and upon approval, they should register for 4 credit hours of ASRM 599 for one semester during their second or third semester. The thesis is written on a research project offered by the Illinois Risk Lab. The student should find a thesis adviser and apply for the thesis option electronically through the following link: https://forms.illinois.edu/sec/1944364570. Admission to the thesis option is decided by the Director of Actuarial Science, who will be responsible for the suitability of the material chosen and the approval of the thesis. Completion of a thesis option does not

guarantee admission into the doctoral program in actuarial science and risk analytics. However, favorable consideration will be given to students with high quality research work.

**(6) Other possible courses of interest**

- Accy: 200*** (do not count towards master's credit)
- Fin: 431, 432, 434 571, 572, 521***
- Econ: 102****, 103**** (do not count towards master's credit)
- Stat: 425, 426, 427, 428, 429, 430, 440, 448

**(7) Sample schedules**

| | First Year | | Second Year | |
|---|---|---|---|---|
| | Fall | Spring | Fall | Spring |
| Two Semesters | ASRM 402 | ASRM 410 | | |
| | ASRM 471/ 575 | ASRM 561 | | |
| | ASRM 510 | ASRM 552 | | |
| | ASRM 450 | ASRM 551 | | |
| Three Semesters | ASRM 402 | ASRM 409 | ASRM 510 | |
| | ASRM 471/ 575 | ASRM 561 | MAT 563 | |
| | ASRM 569 | ASRM 552 | ASRM 533 | |
| Four Semesters | ASRM 402 | ASRM 409 | ASRM 510 | ASRM 453 |
| | ASRM 471/ 575 | ASRM 561 | MAT 563 | ASRM 551 |
| | ASRM 569 | ASRM 552 | ASRM 533 | |

**(8) Note for international students**

Dependent on your visa status, if you obtain an internship during your studies, you must register for ASRM 398, Actuarial Internship. There may also be limits on the number of online courses you can count towards a full course of study. International students on F-1 visa should maintain a full-time student status, which is defined as 12 credit hours every semester. If you wish to enroll for a reduced course load, you must seek the approval from the International Student and Scholar Services (ISSS) by filling out the appropriate form on the ISSS website. Please see ISSS website for more information: (http://isss.illinois.edu/students)