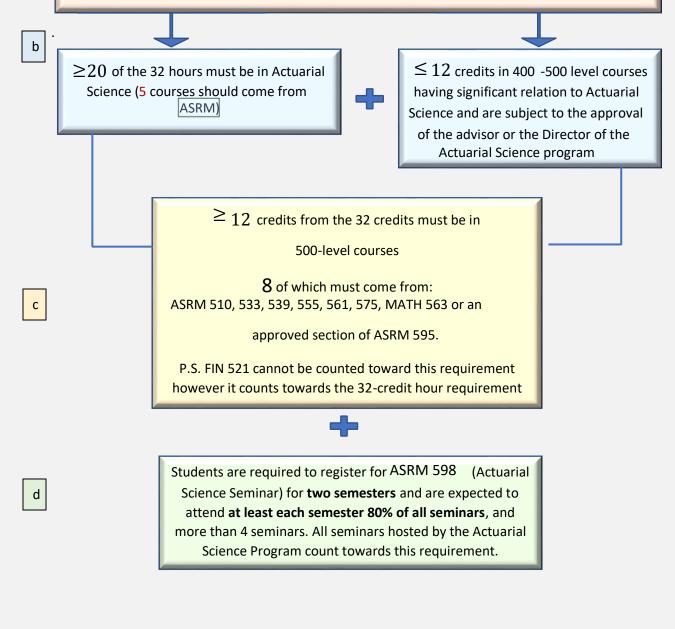Actuarial Science Program
DEPARTMENT OF MATHEMATICS, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
Advising Notes for Master of Science - Actuarial Science
Academic Year 2023-2024

(1) Graduate degree requirements:

a

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.

b

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

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≤ 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

≥ 12 credits from the 32 credits must be in

500-level courses

8 of which must come from:
ASRM 510, 533, 539, 555, 561, 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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d

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 earn of prepare for actuarial professional exams. We offer the following courses covering at least 80% of the syllabi of SOA/CAS exams.

Course Number	Exam	Course Name	Comments
ASRM 210 (3 undergrad credits)	Exam 2/FM	Theory of Interest	Does not count towards graduate credits, Grants eligibility for UEC credits for SOA Exam FM
ASRM 401 (4 undergrad credits)	Exam 1/P	Actuarial Statistics I	Does not count towards graduate credits. Prepares for CAS/SOA exam 1/P
ASRM 402 (4 undergrad credits, 4 grad credits)	Mathematical Statistics	Actuarial Statistics II	Grants eligibility for VEE credits for Mathematical Statistics
ASRM 409 (3 undergrad credits, 4 grad credits)	Exam MAS-I	Stochastic Processes for Finance and Insurance	Prepares for part of MAS - I
ASRM 410 (3 undergrad credits, 4 grad credits)	Exam 3F	Investment and Financial Markets	Prepares for CAS exam 3F
ASRM 441 (4 undergrad credits, 4 grad credits)	Exam SRM	Statistics for Risk Modeling I	Grants eligibility for UEC credits for SOA exam SRM (in combination with ASRM 442)
ASRM 442 (4 undergrad credits, 4 grad credits)	Exam SRM	Statistics for Risk Modeling II	Grants eligibility for UEC credits for SOA exam SRM (in combination with ASRM 441)
ASRM 453	NA	Applied Bayesian Analysis	Same as STAT 431
ASRM 454 (3 undergrad credits, 4 grad credits	CAS Exam 5	Generalized Linear Models	Prepares for part of CAS Exam 5
ASRM 455 (3 undergrad credits, 4 grad credits)	Exam PA	Predictive Analytics	Prepares for PA SOA exam and CAS MAS II
ASRM 461 (4 undergrad credits, 4 grad credits)	FAM	Loss Models	Grants eligibility for UEC credits for SOA exam FAM (in combination with ASRM 471)
ASRM 462 (4 undergrad credits, 4 grad credits)	ASTAM	Advanced Loss Models, Credibility and Ratemaking	Grants eligibility for UEC credits for SOA exam ASTAM

ASRM 469	CAS Exam 5	Casualty Actuarial Mathematics	Prepares for CAS Exam 5
ASRM 471(4 undergrad credits, 4 grad credits)	FAM	Life Contingencies I	Prepares for Exam FAM of the SOA (in combination with ASRM 461)
ASRM 472(3 undergrad credits, 4 grad credits)	ALTAM	Life Contingencies II	Grants eligibility for UEC credits for exam ALTAM of the SOA
ASRM 499 (4 undergrad credits, 4 grad credits)	NA	Topics in Actuarial Science	Covers various topics of interest related to insurance, risk or data science.
ASRM 510 (4 grad credits)	QFI Exam	Advanced Financial Mathematics *	Covers part of QFI exam of the SOA Quantitative Finance and Investment track
ASRM 533 (4 grad credits)	ERM Exam	Risk Management and Regulations	Covers part of the ERM exam of the SOA Corporate Finance and ERM FSA track.
ASRM 539 (2 grad credits)	NA	Risk Analytics and Decision Making	Project based course that prepares for internship type projects.
ASRM 551		Statistical Learning	Same as STAT 542
ASRM 555 (4 grad credits)	PA Exam	Advanced Predictive Analytics	Prepares for SOA Advanced topics in Predictive Analytics.
ASRM 561 (4 grad credits)	Exam ASTAM and MAS-II	Loss Data Analytics and Credibility	Grants eligibility for UEC credits for SOA Exam ASTAM
ASRM 569 (4 grad credits)	NA	Extreme Value Theory and CAT Modeling	
ASRM 575 (4 grad credits)	Exam ALTAM	Life Insurance and Pension Mathematics	Grants eligibility for UEC credits for exam ALTAM of the SOA
ASRM 595 (4 grad credits)	NA	Advanced Topics in Actuarial Science and Risk Analytics	Covers various topics of interest related to insurance, risk or data science.
ASRM 598 (0 credits)	NA	Literature Seminar	Must be taken twice before graduation.

In addition, we offer one section of ASRM 392: Actuarial Problem Solving as exam prep sessions for exam P. It is typically offered once per week in the evenings during the Spring semester. Please note that ASRM 392 does not count towards graduate requirements.

(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 441	Statistics for Risk Modeling I**	✓	✓
ASRM 442	Statistics for Risk Modeling II**		✓
ASRM 454	Generalized Linear Models		✓
ASRM 455	Predictive Analytics	✓	
ASRM 461	Loss Models**	✓	✓
ASRM 462	Advanced Loss Models, credibility and Ratemaking**	✓	
ASRM 469	Casualty Actuarial Mathematics		✓
ASRM 471	Life Contingencies I**	✓	✓
ASRM 472	Life Contingencies II**		✓
ASRM 499	Topics in Actuarial Science	✓	✓
ASRM 510	Financial Mathematics		✓
ASRM 533	Risk Management and Regulations	✓	
ASRM 539	Risk Analytics and Decision Making	✓	✓
ASRM 555	Advanced Predictive Analytics		✓
ASRM 561	Loss Data Analytics and Credibility**	✓	
Math 563	Risk Modeling and Analysis	✓	
ASRM 575	Life Insurance and Pension Math **		✓
ASRM 595	Advanced Topics in Actuarial Science and Risk Analytics	✓	✓
ASRM 598	Literature Seminar	✓	✓
* This course earns credits from the Society of Actuaries for Validation through education experience (VEE) Statistics.			
** Approved UEC course that grants eligibility for exemptions from SOA Actuarial Exams.			

(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***, Fin: 221*** (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 455 or ASRM 510	ASRM 555		
	ASRM 441	ASRM 442		
	ASRM 461	ASRM 575		
	ASRM 471	ASRM 533 or ASRM 595		
	ASRM 598	ASRM 598		
Three Semesters	ASRM 402 or ASRM 455 or ASRM 410	ASRM 442	ASRM 454 or ASRM 510 or ASRM 454	
	ASRM 441	ASRM 575	ASRM 561 or MAT 563	
	ASRM 461	ASRM 595 or ASRM 555	ASRM 598	
	ASRM 471	ASRM 598		
Four Semesters	ASRM 402 or ASRM 454 or ASRM 410	ASRM 409 or ASRM 469	ASRM 510 or ASRM 595	ASRM 469
	ASRM 441	ASRM 442	ASRM 561	ASRM 555
	ASRM 461	ASRM 575	ASRM 533	
	ASRM 471	ASRM 598	ASRM 598	

(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)

(9) Internships

International students who can secure summer internships after the completion of 2 full time semesters (total of 24 credits) at UIUC must apply for CPT/OPT through the ISSS office. Graduate students must register in ASRM 593 (Actuarial Internship) course for the duration of their internship. CPT is needed when the student is working full or part time during the internship before his/her graduation. OPT is when the student is working as intern after graduation.