UNIVERSITY AT ALBANY
State University of New York

Office of the Provost and Senior Vice President for Academic Affairs

January 31, 2023

Shadi Shahedipour-Sandvik, Ph.D.
Senior Vice Chancellor for Research, Innovation and Economic Development
And Interim Provost
State University of New York
System Administration
State University Plaza
Albany, NY 12246

Dear Dr. Shahedipour-Sandvik,

On behalf of the faculty at the University at Albany and College of Arts and Sciences, I am pleased to submit our proposal for an update to our Mathematics B.S. registration and the proposal for distance education approval for the same degree.

This proposal has been considered and approved through our campus governance system. Should there be a need for additional information or clarification to facilitate processing, please contact Kaitlyn Beachner at kbeachner@albany.edu.

Thank you for your consideration and assistance.

Sincerely,

Carol Kim, Ph.D.
Provost and Senior Vice President for Academic Affairs

Attachment

c. Dean Jeanette Altarriba, College of Arts and Sciences
Vice Provost & Dean JoAnne Malatesta, Undergraduate Education

Program Revision Proposal: Changes to an Existing Program

Form 3A

Version 2016-10-13

SUNY approval and SED registration are required for many changes to registered programs. To request a change to a registered program leading to an undergraduate degree, a graduate degree, or a certificate that does not involve the creation of a new program,[1] a Chief Executive or Chief Academic Officer must submit **a signed cover letter and this completed form** to the SUNY Provost at *program.review@suny.edu*.

Section 1. General Information		
a) Institutional Information	Institution's 6-digit SED Code:	**210500**
	Institution's Name:	University at Albany
	Address:	*1400 Washington Ave, Albany, NY 12222*
b) Program Locations	List each campus where the entire program will be offered (with each institutional or branch campus 6-digit SED Code): 210500	
	List the name and address of off-campus locations (i.e., extension sites or extension centers) where courses will offered, **or check here [X] if not applicable**:	
c) Registered Program to be Changed	Program Title:	Mathematics
	SED Program Code	03011, 89208, 28843, 82214
	Award(s) (e.g., A.A., B.S.):	B.S.
	Number of Required Credits:	Minimum [120] If tracks or options, largest minimum [ ]
	HEGIS Code:	1701
	CIP 2010 Code:	27.0101
	Effective Date of Change:	Fall 2023
	Effective Date of Completion[2]	Spring 2027
d) Campus Contact	Name and title: Kaitlyn Beachner, Staff Associate for Undergraduate Academic Programs Telephone and email: 518 – 442 – 3941; kbeachner@albany.edu	
e) Chief Executive or Chief Academic Officer Approval	**Signature affirms that the proposal has met all applicable campus administrative and shared governance procedures for consultation, and the institution's commitment to support the proposed program. *E-signatures are acceptable.*** Name and title: Carol Kim, Ph.D., Senior Vice President for Academic Affairs & Provost Signature and date:  1/31/2023	
	If the program will be registered jointly[3] with one or more other institutions, provide the following information for <u>each</u> institution:	
	Partner institution's name and 6-digit SED Code: Name, title, and signature of partner institution's CEO (or **append** a signed letter indicating approval of this proposal):	

[1] To propose changes that would create a new program, Form 3B, Creating a New Program from Existing Program(s), is required.

[2] If the current program(s) must remain registered until enrolled students have graduated, the anticipated effective date by which continuing students will have completed the current version of the program(s).

[3] If the partner institution is non-degree-granting, see SED's CEO Memo 94-04.

Section 2. Program Information

Section 2.1. Changes in Program Content

[ ] No changes in program content. *Proceed to Section 2.2.*

a) Check all that apply. Describe each proposed change and why it is proposed.

[X] Cumulative change from SED's last approval of the registered program of one-third or more of the minimum credits required for the award (e.g., 20 credits for associate degree programs, 40 credits for bachelor's degree programs)
[ ] Changes in a program's focus or design
[ ] Adding or eliminating one or more options, concentrations or tracks
[X] Eliminating a requirement for program completion (such as an internship, clinical placement, cooperative education, or other work or field-based experience). Adding such requirements must remain in compliance with SUNY credit cap limits.
[ ] Altering the liberal arts and science content in a way that changes the degree classification of an undergraduate program, as defined in Section 3.47(c)(1-4) of Regents Rules

Description:
We added foundational courses to the requirements, to ensure transparency in the required credits. Prerequisites to the 1990 required courses would have caused a student to take Calculus I and II, but now we made it part of the requirements. We also offered advanced options among these courses, to allow honors students to use honors courses towards the major. We also added Introduction to Proofs and Information Literacy for Mathematics and Statistics to provide more foundation to prepare students for upper division course work. We added an additional sequence option within the major, to offer students more choice. We expanded a few of the sequence options as well, to offer more courses that align with newer faculty expertise and provide students with options of different upper division course work. Lastly, there are 10 more credits required within the major to ensure more in-depth knowledge of Mathematics and prepare students planning on graduate work in Mathematics for graduate work.

b) Provide a side-by-side comparison of all the courses in the existing and proposed revised program that clearly indicates all new or significantly revised courses, and other changes. We added Introduction to Proofs and Information Literacy in mathematics, as more foundational course to assist students in being better prepared for upper division work within the major.

1990 Math B.S. Requirements:	**2023 Proposed Changes to Mathematics B.S. Requirements:**
Minimum of 36 credits numbered above 109, including:	*Minimum of 46 credits including:*
	6 required courses:
	Select one: AMAT 111 – Algebra and Calculus II (4)
	Select one: AMAT 112 - Calculus I (4)
	Select one: AMAT 118 - Honors Calculus I (4)
	Select one: AMAT 113 - Calculus II (4)
	Select one: AMAT 119 - Honors Calculus II (4)
MAT 214 – Calculus of Several Variables (4)	*Select one:* AMAT 214 – Calculus of Several Variables (4)
	Select one: AMAT 218 – Honors Calculus of Several Variables (4)
MAT 220 – Linear Algebra (3)	*Select one:* AMAT 220 - Linear Algebra (3)
	Select one: AMAT 222 - Honors Linear Algebra (3)
	AMAT 300 - Introduction to Proofs (3)
	UUNL 299 – Information Literacy in Mathematics and Statistics (1)
Select two of the following four sequence options:	***Select two of the following five sequence options:***
Option #1:	***Option #1***
MAT 326 – Classic Algebra (3)	*Select two:* AMAT 326 – Classic Algebra (3)
MAT 327 – Elementary Abstract Algebra (3)	*Select two:* AMAT 327 – Elementary Abstract Algebra (3)
	Select two: AMAT 328 – Introduction to Combinatorics (3)
Option #2: (pick one of the two sequences below)	***Option #2: (pick one of the two sequences below)***
Seq. 1 (select all): MAT 314 – Applied Analysis I (3)	*Seq. 1 (select all):* AMAT 314 – Analysis for Applications I (3)
Seq. 1 (select all): MAT 315 – Applied Analysis II (3)	*Seq. 1 (select all):* AMAT 315 – Analysis for Applications II (3)
Seq. 2 (select 2 courses): MAT 312 – Basic Analysis (3)	*Seq. 2 (select 2 courses):* AMAT 312 – Basic Analysis (3)
Seq. 2 (select 2 courses): MAT 412 – Complex Variables for Applications (3)	*Seq. 2 (select 2 courses):* AMAT 412 – Complex Variables for Applications (3)
Seq. 2 (select 2 courses): MAT 413 – Advanced Calculus I (3)	*Seq. 2 (select 2 courses):* AMAT 413 – Advanced Calculus I (3)
Seq. 2 (select 2 courses): MAT 414 – Advanced Calculus II (3)	*Seq. 2 (select 2 courses):* AMAT 414 – Advanced Calculus II (3)
Option #3:	***Option #3:***
	Select two: AMAT 331 – Transformation Geometry (3)
Select two: MAT 342 – Elementary Topology (3)	*Select two:* AMAT 342 – Elementary Topology (3)
	Select two: AMAT 432 – Foundations of Geometry (3)
Select two: MAT 441 – Introduction to Differential Geometry (3)	*Select two:* AMAT 441 – Introduction to Differential Geometry (3)
Select two: MAT 442 – Introduction to Algebraic Topology (3)	*Select two:* AMAT 442 – Introduction to Algebraic Topology (3)
Option #4:	
MAT 467 – Introduction to Theory of Statistics I (3)	*Represented in option below*
MAT 468 – Introduction to Theory of Statistics II (3)	*Represented in option below*
	Option #4: (pick one of the two sequences below)
	Seq. 1 (select two): AMAT 308 – Topics in Statistical Inference (3)
	Seq. 1 (select two): *Select one:* AMAT 362 – Probability for Statistics (3)
	Seq. 1 (select two): *Select one:* AMAT 367 – Discrete Probability (3)
	Seq. 1 (select two): AMAT 363 – Statistics (3)
	Seq. 1 (select two): AMAT 464 – Applied Stochastic Process (3)
	Seq. 1 (select two): AMAT 465/Z – Applied Statistics (3)
	Seq. 1 (select two): AMAT 467 – Continuous Probability and Mathematical Statistics (3)
	Seq. 1 (select two): AMAT 468 – Mathematical Statistics (3)

	Seq. 2 (AMAT 370 + one other course from list):	AMAT 370 – Probability and Statistics for Engineering and the Sciences (3)	
		Select one:	AMAT 367/Z – Discrete Probability (3)
			AMAT 369 – Statistics and Data Analysis (3)
			AMAT 464 – Applied Stochastic Process (3)
			AMAT 465/Z – Applied Statistics (3)
			AMAT 467 – Continuous Probability and Mathematical Statistics (3)
			AMAT 468 – Mathematical Statistics (3)
	Option #5:		
	AMAT 312/Z – Basic Analysis (3)		
	AMAT 424 – Advanced Linear Algebra (3)		
6 cr. in computer science selected from the following:	***6 cr. in computer science selected from the following:***		
CSI 201Y – Introduction to Computer Science (4)	CSI 201 Introduction to Computer Science (4)		
CSI 213 – Data Structures (3) (Was CSI 310)	CSI 213 – Data Structures (3)		
	CSI 431 – Data Mining (3)		
	MAT 502 – Modern Computing for Mathematicians (3)		
	BITM 215 - Information Technologies for Business (3)		
	BITM 330 – Improving Business Performance with Information Technologies (3)		
	Electives: 9 cr. in Mathematics at the 300 level or above (options listed below):		
	AMAT 301 – Theory of Interest (3)		
	AMAT 308 – Topics in Statistical Inference (3)		
Course listed above	AMAT 312/Z – Basic Analysis (3)		
Course listed above	AMAT 314 – Analysis for Applications I (3)		
Course listed above	AMAT 315 – Analysis for Applications II (3)		
Course listed above	AMAT 326/Z – Classic Algebra (3)		
Course listed above	AMAT 327/Z – Elementary Abstract Algebra (3)		
	AMAT 328 – Introduction to Combinatorics (3)		
	AMAT 331/Z – Transformation Geometry (3)		
Course listed above	AMAT 342/Z – Elementary Topology (3)		
	AMAT 362 – Probability for Statistics (3)		
	AMAT 363 – Statistics (3)		
	AMAT 367/Z – Discrete Probability (3)		
	AMAT 370 – Probability and Statistics for Engineering and the Sciences (3)		
	AMAT 403 – Life Contingencies I (3)		
	AMAT 404 – Life Contingencies II (3)		
	AMAT 409 – Vector Analysis (3)		
Course listed above	AMAT 412/Z – Complex Variables for Applications (3)		
Course listed above	AMAT 413/Z – Advanced Calculus I (3)		
Course listed above	AMAT 414 – Advanced Calculus II (3)		
	AMAT 416 – Partial Differential Equations (3)		
	AMAT 424 – Advanced Linear Algebra (3)		
	AMAT 425 – Number Theory (3)		
	AMAT 432 – Foundations of Geometry (3)		
Course listed above	AMAT 441 – Introduction to Differential Geometry (3)		
Course listed above	AMAT 442 – Introduction to Algebraic Topology (3)		
	AMAT 452/Z – History of Mathematics (3)		
	AMAT 464 – Applied Stochastic Process (3)		
	AMAT 465/Z – Applied Statistics (3)		
Course listed above	AMAT 467 – Continuous Probability and Mathematical Statistics (3)		
Course listed above	AMAT 468 – Mathematical Statistics (3)		

c) For each new or significantly revised course, **provide** a syllabus at the end of this form, and, on the ***SUNY Faculty Table*** provide the name, qualifications, and relevant experience of the faculty teaching each new or significantly revised course. NOTE: *Syllabi for all courses should be available upon request. Each syllabus should show that all work for credit is college level and of the appropriate rigor. Syllabi generally include a course description, prerequisites and corequisites, the number of lecture and/or other contact hours per week, credits allocated (consistent with SUNY policy on credit/contact hours), general course requirements, and expected student learning outcomes.*

AMAT 112 - Calculus I (4)

AMAT 113 - Calculus II (4)

AMAT 118 - Honors Calculus I (4)

AMAT 119 - Honors Calculus II (4)

AMAT 218 – Honors Calculus of Several Variables (4)

AMAT 222 - Honors Linear Algebra (3)

AMAT 299 (Renumbered AMAT 300) – Introduction to Proofs (3)

AMAT 301 – Theory of Interest (3)

AMAT 308 – Topics in Statistical Inference (3)

AMAT 328 – Introduction to Combinatorics (3)

AMAT 331 – Transformation Geometry (3)

AMAT 362 – Probability for Statistics (3)

AMAT 363 – Statistics (3)

AMAT 367 – Discrete Probability (3)

AMAT 370 – Probability and Statistics for Engineering and the Sciences (3)

AMAT 403 – Life Contingencies I (3)

AMAT 404 – Life Contingencies II (3)

AMAT 409 – Vector Analysis (3)

AMAT 416 – Partial Differential Equations (3)

AMAT 424 – Advanced Linear Algebra (3)

AMAT 425 – Number Theory (3)

AMAT 432 – Foundations of Geometry (3)

AMAT 452/Z – History of Mathematics (3)

AMAT 464 – Applied Stochastic Process (3)

AMAT 465/Z – Applied Statistics (3)

UUNL 299 – Information Literacy in Mathematics and Statistics (1)

As noted in the side by side comparison, course requirements have changed for the CSI component of the BS. Syllabi for those course are included in this submission:

ICSI 431 – Data Mining (3)
AMAT 502 – Modern Computing for Mathematicians (3)
BITM 215 – Information Technology for Business (3)
BITM 330 – Improving Business Performance with Information Technologies (3)

d) What are the additional costs of the change, if any? If there are no anticipated costs, explain why.

No additional costs. No faculty are being recruited at this time.

Section 2.2. Other Changes

Check all that apply. Describe each proposed change and why it is proposed.

[ ] Program title
[ ] Program award
[ ] Mode of delivery
NOTES: *(1) If the change in delivery enables students to complete 50% of more of the program via distance education, submit a Distance Education Format Proposal* as part of this proposal. *(2) If the change involves adding an accelerated version of the program that impacts financial aid eligibility or licensure qualification, SED may register the version as a separate program.*
[ ] Format change(s) (e.g., from full-time to part-time), based on SED definitions, for the **entire** program

1) State proposed format(s) and consider the consequences for financial aid
2) Describe availability of courses and any change in faculty, resources, or support services.

[ ] A change in the total number of credits in a certificate or advanced certificate program

[ ] Any change to a registered licensure-qualifying program, or the addition of licensure qualification to an existing program. **Exception:** Small changes in the required number of credits in a licensure-qualifying program that do not involve a course or courses that satisfy one of the required content areas in the profession.

Section 3. Program Schedule and Curriculum

a) For **undergraduate programs**, complete the ***SUNY Undergraduate Program Schedule*** to show the sequencing and scheduling of courses in the program. If the program has separate tracks or concentrations, complete a ***Program Schedule*** for each one.

NOTES: *The **Undergraduate Schedule** must show **all curricular requirements** and demonstrate that the program conforms to SUNY's and SED's policies.*

- *It must show how a student can complete all program requirements within SUNY credit limits, unless a longer period is selected as a format in Item 2.1(c): two years of full-time study (or the equivalent) and 64 credits for an associate degree, or four years of full-time study (or the equivalent) and 126 credits for a bachelor's degree. Bachelor's degree programs should have at least 45 credits of upper division study, with 24 in the major.*
- *It must show how students in A.A., A.S. and bachelor's programs can complete, within the first two years of full-time study (or 60 credits), no fewer than 30 credits in approved SUNY GER courses in the categories of Basic Communication and Mathematics, and in at least 5 of the following 8 categories: Natural Science, Social Science, American History, Western Civilization, Other World Civilizations, Humanities, the Arts and Foreign Languages*
- *It must show how students can complete Liberal Arts and Sciences (LAS) credits appropriate for the degree.*
- *When a SUNY Transfer Path applies to the program, it must show how students can complete the number of SUNY Transfer Path courses shown in the Transfer Path Requirement Summary within the first two years of full-time study (or 60 credits), consistent with SUNY's Student Seamless Transfer policy and MTP 2013-03.*
- *Requests for a program-level waiver of SUNY credit limits, SUNY GER and/or a SUNY Transfer Path require the campus to submit a Waiver Request –with compelling justification(s).*

EXAMPLE FOR ONE TERM: Undergraduate Program Schedule

Term 2: Fall 20xx	Credits per classification						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Prerequisite(s)**
ACC 101 Principles of Accounting	4			4	4		
MAT 111 College Mathematics	3	M	3	3			MAT 110
CMP 101 Introduction to Computers	3						
HUM 110 Speech	3	BC	3			X	
ENG 113 English 102	3	BC	3				
Term credit total:	16	6	9	7	4		

b) *For **graduate programs**, complete the **SUNY Graduate Program Schedule**. If the program has separate tracks or concentrations, complete a **Program Schedule** for each one.*

NOTE: *The **Graduate Schedule** must include all curriculum requirements and demonstrate that expectations from Part 52.2(c)(8) through (10) of the Regulations of the Commissioner of Education are met.*

SUNY Undergraduate Program Schedule (***OPTION: You can paste an Excel version of this schedule AFTER this line, and delete the rest of this page.)***

Program/Track Title and Award:____Mathematics B.S._____

a) Indicate **academic calendar type**: [x] Semester [ ] Quarter [ ] Trimester [ ] Other (describe):

b) **Label each term in sequence**, consistent with the institution's academic calendar (e.g., Fall 1, Spring 1, Fall 2)

c) **Name of SUNY Transfer Path, if one exists: _Mathematics_____ See Transfer Path Requirement Summary for details**

d) Use the table to show **how a typical student may progress through the program**; copy/expand the table as needed. **Complete all columns that apply to a course.**

Term 1:	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT 111 Algebra and Calculus II OR AMAT 112 Calculus I OR AMAT 118 Honors Calculus I	4	MS	4	4	X	X 112 & 118	3 years of High School Math
General Education: Natural Science	3	NS	3				
General Education: Social Science	3	SS	3				
Free Elective	3		3				
Free Elective	3		3				
Term credit totals:	16	10	16	4			

Term 2:	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT 113 Calculus II OR AMAT 119 Honors Calculus II	4	MS	4	4	X	X	AMAT 111 or 112 or 118
General Education: Humanities	3	HU	3				
General Education: American History	3	AH	3				
UUNI 110 Writing and Critical Inquiry	3	BC	3				
Free Elective	3						
Term credit totals:	16	12	13	4			

Term 3:	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT 214 Calculus of Several Variables OR AMAT 218 Honors Calculus of Several Variables	4		4	4	X	X 218	AMAT 113 or 119
AMAT 300 Intro to Proofs	3		3	3			AMAT 113
UUNL 299 Info Literacy in Math/Sci	1		1	1			Coreq: AMAT 300
General Education: International Perspectives	3	WC	3				
General Education: Foreign Language	3	FL	3				
Term credit totals:	14	6	14	8			

Term 4:	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT 220 Linear Algebra OR AMAT 222 Honors Linear Algebra	3		3	3	X	X 222	AMAT 113 or 214
General Education: Art	3	AR					
Free Elective	3						
Local General Education: Challenges of the 21st Century	3		3				
Free Elective (Upper Level)	3						
Term credit totals:	15	3	6	3			

Term 5:	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT Options Course (1 of 4) *Upper Division	3		3	3			
AMAT Options Course (2 of 4) *Upper Division	3		3	3			
Free Elective	3						
Computer Science Elective (1 of 2)	3			3			
Free Elective (Upper Level)	3						
Term credit totals:	15		6	9			

Term 6:	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT Options Course (3 of 4) *Upper Division	3		3	3			
AMAT Options Course (4 of 4) *Upper Division	3		3	3			
Free Elective	3						
Computer Science Elective (1 of 2)	3			3			
Free Elective (Upper Level)	3						
Term credit totals:	15		6	9			

Term 7:	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT Upper Division Elective (1 of 3)	3		3	3			

Term 8:	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
Elective, Upper Level	3						

AMAT Upper Division Elective (2 of 3)	3		3	3					AMAT Upper Division Elective (3 of 3)	3		3	3			
Free Elective (Upper Level)	3								Free Elective	3						
Free Elective	3								Free Elective (Upper Level)	3						
Free Elective (Upper Level)	3								Free Elective	3						
Term credit totals:	15		6	6					Term credit totals:	15		3	3			

Program Totals (in credits):	Total Credits: 121	SUNY GER: 31	LAS: 70	Major: 46	Elective &Other: 48	Upper Division: 46	Upper Division Major: 24	Number of SUNY GER Categories: 9

KEY Cr: credits **GER:** SUNY General Education Requirement (Enter Category Abbreviation) **LAS:** Liberal Arts & Sciences (Enter credits) **Maj:** Major requirement (Enter credits) **TPath:** SUNY Transfer Path Courses (Enter credits) **New:** new course (Enter X) **Co/Prerequisite(s):** list co/prerequisite(s) for the noted courses **Upper Division:** Courses intended primarily for juniors and seniors **SUNY GER Category Abbreviations:** American History (AH), Basic Communication (BC), Foreign Language (FL), Humanities (H), Math (M), Natural Sciences (NS), Other World Civilizations (OW), Social Science (SS), The Arts (AR), Western Civilization (WC)

SUNY Graduate Program Schedule ***OPTION:*** ***You can insert an Excel version of this schedule AFTER this line, and delete the rest of this page.)***

Program/Track Title and Award:_____

a) Indicate **academic calendar** type: [ ] Semester [ ] Quarter [ ] Trimester [ ] Other (describe):

b) **Label each term in sequence**, consistent with the institution's academic calendar (e.g., Fall 1, Spring 1, Fall 2)

c) Use the table to show **how a typical student may progress through the program**; copy/expand the table as needed.

d) Complete the last row to show program totals and comprehensive, culminating elements. **Complete all columns that apply to a course.**

Term 1:			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**
Term credit total:			

Term 2:			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**
Term credit total:			

Term 3:			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**
Term credit total:			

Term 4:			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**
Term credit total:			

Term 5:			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**
Term credit total:			

Term 6:			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**
Term credit total:			

Term 7:			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**
Term credit total:			

Term 8:			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites)**
Term credit total:			

Program Total:	**Total Credits:**	**Identify the required comprehensive, culminating element(s), such as a thesis or examination, including course number(s), if applicable:**

New: X if new course **Prerequisite(s)**: list prerequisite(s) for the listed courses

Section 4. SUNY Faculty Table

a) If applicable, provide information on faculty members who will be teaching new or significantly revised courses in the program. Expand the table as needed.

b) **Append** at the end of this document position descriptions or announcements for each to-be-hired faculty member

(a)	(b)	(c)	(d)	(e)	(f)
Faculty Member Name and Title and/or Rank at the Institution (Include and identify Program Director.)	**% of Time Dedicated to This Program**	**Program Courses Which May Be Taught (Number and Title)**	**Highest and Other Applicable Earned Degrees (include College or University)**	**Discipline(s) of Highest and Other Applicable Earned Degrees**	**Additional Qualifications: List related certifications and licenses and professional experience in field.**
PART 1. Full-Time Faculty					
Shaghayegh Sahebi, Assistant Professor	25%	ICSI 431, Data Mining	PhD, University of Pittsburgh	Intelligent Systems	
Justin Curry, Assistant Professor	100%	AMAT 362, Probability for Stats; AMAT 502, Modern Computing for Mathematicians	PhD, University of Pennsylvania	Mathematics	
Ethan Sprissler, Lecturer	50%	BITM 215, Information Technology for Business; BITM 330, Improving Business Performance with Information Technologies	MS, University at Albany	Information Science	
Steven Plotnick, Associate Professor	100%	AMAT 118; Honors Calc I, AMAT 119, Honors Calc II; T/AMAT 218, Calc of Several Variables; AMAT 300, Intro to Proofs	PhD, University of Michigan	Mathematics	
Matthew Zaremsky, Assistant Professor	100%	AMAT 222, Honors Linear Algebra	PhD, University of Virginia	Mathematics	
Joshua Isralowitz, Associate Professor	100%	AMAT 301, Theory of Interest	PhD, SUNY Buffalo	Mathematics	
Karen Reinhold, Assistant Professor	100%	AMAT 308, Topics in Statistical Inference; AMAT 403, Life Contingencies I;	PhD, Ohio State University	Mathematics	

(a)	(b)	(c)	(d)	(e)	(f)
Faculty Member Name and Title and/or Rank at the Institution (Include and identify Program Director.)	**% of Time Dedicated to This Program**	**Program Courses Which May Be Taught (Number and Title)**	**Highest and Other Applicable Earned Degrees (include College or University)**	**Discipline(s) of Highest and Other Applicable Earned Degrees**	**Additional Qualifications: List related certifications and licenses and professional experience in field.**
		AMAT 404, Life Contingencies II; AMAT 464, Stochastic Processes; AMAT 465, Applied Statistics			
Cristian Lenart, Professor and Chair	100%	AMAT 328, Combinatorics, AMAT 331, Transformation Geometry; AMAT 432, Foundations of Geometry	PhD, University of Cambridge	Mathematics	
Dr. Martin Hildebrand, Professor	100%	AMAT 404, Life Contingencies II, AMAT 467, Continuous Probability and Mathematical Statistics AMAT 468, Mathematical Stats	PhD, Harvard University	Mathematics	
Hyun-Kyoung Kwon, Assistant Professor	100%	AMAT 362, Probability for Statistics	PhD, Brown University	Mathematics	
Yunlong Feng, Assistant Professor	100%	AMAT 363 Statistics	PhD, Univ. of Science & Tech. of China	Mathematics	
Jesse Corradino, Lecturer	100%	AMAT 367, Discrete Probability; AMAT 370 Prob & Stats for Engineering & the Sciences	PhD, University at Albany	Mathematics	
Rongwei Yang, Professor	100%	AMAT 312Z, Basic Analysis AMAT 409, Vector Analysis	PhD, Stony Brook University, SUNY	Mathematics	
Ivana Alexandrova, Associate Professor	100%	AMAT 416, Partial Differential Equations	PhD, University of California, Berkeley	Mathematics	

(a)	(b)	(c)	(d)	(e)	(f)
Faculty Member Name and Title and/or Rank at the Institution (Include and identify Program Director.)	**% of Time Dedicated to This Program**	**Program Courses Which May Be Taught (Number and Title)**	**Highest and Other Applicable Earned Degrees (include College or University)**	**Discipline(s) of Highest and Other Applicable Earned Degrees**	**Additional Qualifications: List related certifications and licenses and professional experience in field.**
Antun Milas, Professor	100%	AMAT 425, Number Theory	PhD, Rutgers University	Mathematics	
Anupam Srivastav, Associate Professor	100%	AMAT 252, Intro to Great Theorems; AMAT 452, History of Mathematics	PhD, University of Illinois, Urbana-Champagne	Mathematics	
Irina Holden, Information Literacy and Science Outreach Librarian	50%	UUNL 299, Information Literacy in Mathematics	MISI, University at Albany	Library and Information Sciences	
Changlong Zhong, Associate Professor	100%	AMAT 424 Advanced Linear Algebra	Ph.D., University of Southern California	Pure Math	
Pranay Jinna, Assistant Professor	25%	BITM 215 Information Technology for Business	Ph.D., Emory University	Information Systems	
Giri Tayi, Professor	25%	BITM 215 Information Technology for Business	Ph.D., Carnegie-Mellon	Information Systems	
Eliot Rich, Assistant Professor	25%	BITM 215 Information Technology for Business	Ph.D., University at Albany	Information Science	
Saggi Nevo, Associate Professor	25%	BITM 330 Improving Business Performance with Information Technologies	Ph.D, York University (Canada)	Information Systems	
Jakov Crnkovic, Clinical Professor of Management and Information Systems	25%	BITM 330 Improving Business Performance with Information Technologies	Ph.D., University at Belgrade	Quantitative Analysis of Systems	
Part 2. Part-Time Faculty					
Kate Howell, Teaching Assistant	25%	AMAT 112, Calc I	MA, University at Albany	Mathematics	
Robert Spahn, Lecturer	50%	AMAT 113, Calc II	PhD, University at Albany	Mathematics	
Scott Sidoli, Lecturer	100%	AMAT 111 Algebra and Calculus I	Ph.D., University at Albany	Mathematics	

(a)	(b)	(c)	(d)	(e)	(f)
Faculty Member Name and Title and/or Rank at the Institution (Include and identify Program Director.)	**% of Time Dedicated to This Program**	**Program Courses Which May Be Taught (Number and Title)**	**Highest and Other Applicable Earned Degrees (include College or University)**	**Discipline(s) of Highest and Other Applicable Earned Degrees**	**Additional Qualifications: List related certifications and licenses and professional experience in field.**
Adam Schultze, Lecturer	100%	AMAT 112 Calculus I	Ph.D., University at Albany	Mathematics	
Part 3. To-Be-Hired Faculty (List as TBH1, TBH2, etc., and provide expected hiring date instead of name.)					
N/A					

Mathematics BS Syllabi

AMAT 111 – Algebra and Calculus II (4)

AMAT 112 - Calculus I (4)

AMAT 113 - Calculus II (4)

AMAT 118 - Honors Calculus I (4)

AMAT 119 - Honors Calculus II (4)

AMAT 218 – Honors Calculus of Several Variables (4)

AMAT 222 - Honors Linear Algebra (3)

AMAT 300 (Formerly AMAT 299) – Introduction to Proofs (3)

AMAT 301 – Theory of Interest (3)

AMAT 308 – Topics in Statistical Inference (3)

AMAT 312 – Basic Analysis (3)

AMAT 328 – Introduction to Combinatorics (3)

AMAT 331 – Transformation Geometry (3)

AMAT 362 – Probability for Statistics (3)

AMAT 363 – Statistics (3)

AMAT 367 – Discrete Probability (3)

AMAT 370 – Probability and Statistics for Engineering and the Sciences (3)

AMAT 403 – Life Contingencies I (3)

AMAT 404 – Life Contingencies II (3)

AMAT 409 – Vector Analysis (3)

AMAT 416 – Partial Differential Equations (3)

AMAT 424 – Advanced Linear Algebra (3)

AMAT 425 – Number Theory (3)

AMAT 432 – Foundations of Geometry (3)

AMAT 452/Z – History of Mathematics (3)

AMAT 464 – Applied Stochastic Process (3)

AMAT 465/Z – Applied Statistics (3)

AMAT 467 – Continuous Probability and Mathematical Statistics (3)

AMAT 468 – Mathematical Statistics (3)

UUNL 299 – Information Literacy in Mathematics and Statistics (1)

ICSI 431 – Data Mining (3)

AMAT 502 – Modern Computing for Mathematicians (3)

BITM 215 – Information Technology for Business (3)

BITM 330 – Improving Business Performance with Information Technologies (3)

AMAT 111: Algebra and Calculus II (4 credits)
Class number: 1958
Fall 2018

Instructor: Dr. Scott Sidoli, PhD Office: ES213
Email: ssidoli@albany.edu Phone: (518) 442-4600
Meeting Time and Place: TuTh 2:45pm – 4:05pm, ES 140; We 2:45pm – 3:40pm
Office Hours: Tu 4:15pm – 6:15pm; We 1:30pm – 2:30pm

Textbook: Stewart, James. Calculus: Early Transcendentals, 8th edition.

Course Description: The second semester of an integrated approach to pre-calculus and calculus. Serves as a prerequisite to AMAT 113. Topics include techniques of differentiation, applications of differentiation, the definite integral, antiderivatives, the fundamental theorem of calculus, techniques of integration. **Prerequisite(s):** AMAT 101.

Course Objectives: To develop an understanding of elementary functions from the calculus perspective. We wish to develop the skills of differentiation and to see how these apply to real world problems including problems involving instantaneous rates of change, natural growth and decay, related rates, curve sketching, optimization, and net change. Perhaps more importantly, we wish to develop critical thinking and problem solving skills.

Attendance: Attendance will be taken at the beginning of each class and you are expected to attend all classes.

Absences: You are responsible for any material that is covered and any announcements that are made. If you are absent on an exam day, a doctor's note is required to make up the exam.

Homework: Homework will be assigned via Webassign each Thursday and must be submitted by 11:59pm on the following Thursday. A few homework assignments may be due in class. To use Webassign, you must have an internet connection, class key (I give you that), and an access code (comes with purchase of the book or by itself). Steps for signing up on WebAssign are given on the reverse.

Quizzes: There will be a weekly quiz given each Thursday with problems similar to the homework set which is due that day. The lowest quiz grade will be dropped.

Exams: There will be three in-class exams and a final. The final is scheduled for

Tuesday, December 18th from 1:00pm – 3:00pm.

If you are unable to attend an exam, prior notification or a doctor's note is required to make up the exam.

Grading: Homework is 15%, quizzes are 15%, the in-class exams are 15% each, and the final is 25%.

A	93-100	**B-**	80-82	**D+**	67-69
A-	90-92	**C+**	77-79	**D**	63-66
B+	87-89	**C**	73-76	**D-**	60-62
B	83-86	**C-**	70-72	**E**	Below 60

Cheating: If you are caught cheating you will receive a failing grade for the course and I am required to report it to the dean. This may result in expulsion from the university. http://www.albany.edu/undergraduate_bulletin/regulations.html

Registering for WebAssign: You need three things: a class key (I give you that), an access code (you buy that with the book, or by itself), and an internet connection. Getting on to WebAssign is as easy as the following steps:

1) Go to www.webassign.net
2) Click the gray box in the upper right corner entitled "Enter Class Key"
3) You will see three boxes. The class key for this course is **albany 2054 8873** (the **albany** goes in the first box, **2054** goes in the second box, etc.). Verify that this is, in fact, the correct section!
4) Create a WebAssign account if you need to, or simply use your old one. If you purchased lifetime access previously, then you must use your old account. If you are creating an account, this will be where you determine your username and password.
5) You must then input your **access code** (if you did not already obtain access for the lifetime of the edition). You already have the access code if you purchased a hard copy of the book. If you have not purchased the hard copy, you can purchase the access code online through WebAssign or at the bookstore.

You have free access to WebAssign until **Monday, September 10th**. Failure to obtain an access code by this date will result in you getting locked out of WebAssign. You will be unable to view the E-book or any other resource that is provided by Webassign. You will also be unable to complete the homework. **Good luck!**

Topics include: techniques of differentiation, applications of differentiation, the definite integral, antiderivatives, the fundamental theorem of calculus, techniques of integration.

AMAT 112 - Calculus I
4 credits
Dr. Adam Schultze
Office Hours: Wed 3:00-4:00pm
Prerequisite(s): A MAT 100 or precalculus at the high school or college level. Students without precalculus should elect A MAT 100.

Grading:
The class will use the university's A-E grading scheme.
25%: Homework and Quizzes
20%: Midterm I
20%: Midterm II
35%: Final

Course Description:
Calculus of one variable. Limits, continuity, differentiation of algebraic functions, applications of differentiation, anti-derivatives, the definite integral, transcendental functions.

Grade Scale (%)	Grade Conversion	Grade Definition
93-100	A	Superior
90-92	A-	
87-89	B+	Good
83-86	B	
80-82	B-	
77-79	C+	Satisfactory
73-76	C	
70-72	C-	
67-69	D+	Poor
63-66	D	
60-62	D-	
< 60	E	Failure

Based on ***Single Variables Calculus, Early Transcendentals***, **8th ed., by James Stewart**

The number of classes devoted to each chapter is an estimate of the minimum time required, and assumes a 55 minutes class length, with the class meeting four times per week. Adjustments need to be made for classes meeting three times per week (TU, TH, plus add. day). This syllabus leaves additional class meetings for review, further emphasis, exams, etc. Since academic calendars vary in length, check the official university calendar for the particular semester as you map out your class.

Diagnostics, Appendices A and B, Chapter 1: Functions and Models (7 classes)

You may wish to give a diagnostic test made up from the diagnostic tests in the text on the second class meeting, after telling students on the first day to review these problems. Based on the results, you may advise some students to take MAT 101 instead of 112. The material in Appendices A and B is basic, and students should be familiar with it, so review it briefly. Section 1.4 should be covered very briefly in class, but students should be encouraged to read it. Because of the importance of exponential and logarithmic functions for calculus and applications, sections 1.5 and 1.6 should be covered thoroughly, although most people prefer to postpone the discussion of inverse trig functions until 3.5 (implicit differentiation), when you can calculate their derivatives.

Chapter 2: Limits and Derivatives (8 classes)

Limits should be well understood at an intuitive level, with lots of examples. Skip 2.4, the technical definition of limit. The limit laws (2.3) and continuity (2.5) are important. Cover sections 2.7 and 2.8 carefully, so that students get a solid understanding of derivatives (as limits and functions) before getting involved in the mechanics of computing them.

Chapter 3: Differentiation Rules (13 classes)

Note that exponential functions are treated immediately after polynomials. Keep emphasizing the different differentiation rules early on, as these are easily confused by students. Mix problems with power functions and exponential functions to reinforce the differences. You may want to cover parts of 3.8 (exponential growth and decay) right after 3.1. Section 3.11 may be skipped.

Chapter 4: Applications of Differentiation (10 classes)

Go easy with the mean value theorem, focus on the geometric meaning. As far as graphing of functions, section 4.3 is fundamental and should be covered thoroughly. Focus on simple examples to reinforce the ideas, don't spend much time on overly complicated graphs - graphing calculators are here to stay. Much of 4.6 could be assigned as reading project. Don't get involved in complicated optimization problems; it's more important to cover a few computationally simple examples thoroughly. Inclusion of antiderivatives (4.9) in this chapter helps to separate and distinguish this concept from (definite) integrals. Newton's method (4.8) can be skipped if time is running short.

Chapter 5: Integrals (5 classes)

It is important to emphasize that the definite integral is a number calculated (in principle) by limits of Riemann sums. It helps to include a few other applications (say volumes, from Chapter 6) early on to show other situations where such limits arise. The Fundamental Theorem of Calculus (5.3) is of course the high point of the chapter, and you should make sure that both versions (construction of antiderivatives and evaluation of integrals by antiderivatives) are understood well. A more thorough discussion of applications (Chapter 6) is left for MAT 113.

Revised to adjust for changes in Early Transcendentals, 6th ed., August 2007, by M. Range, June 2009 S. Plotnick

Learning Objectives

- Construct proofs using techniques from logic such as proof by contradiction and/or specific techniques such as the principle of induction.
- Analyze and check correctness of mathematical arguments, and read mathematical text independently.
- Apply an advanced abstract mathematical idea to a concrete real-world problem (e.g., application of differential equations, or linear programming, or RSA or error correction codes).
- Write effectively using language appropriate for mathematical discourse.
- Use calculus to analyze and evaluate properties of real valued functions.
- Successfully complete two sequences of two advanced courses in different areas of mathematics, establishing depth required, for example, for further graduate studies in mathematics and natural sciences.

AMAT 113 Calculus II Syllabus

Course number: AMAT 113
Class no: 3937 / 3934 – 0030/0026
Credit Hours: 4
Lecture times: (0030) Wednesday 4:30-5:50 PM
(0030) Tuesday 4:30-5:25 PM
(0026) Monday 6:00-7:20 PM
(0026) Tuesday 6:00-6:55 PM
Lecture location: Via Zoom http://bit.ly/AMAT113Zoomlink Password: MathIsFun

Instructor: Dr. Robert Spahn Ph.D.
E-mail: rspahn@albany.edu
Office: ES210

Office Hours: Via Zoom - Monday 4:30-5:30 PM, Tuesday & Friday 1:00-2:00 PM, Wednesday 6:00-7:00 PM, and by appointment http://bit.ly/AMAT113ZoomOH Password: MathIsFun

Pre-requisites: AMAT111 or AMAT112

Course Description: From the math department's course catalog: Techniques of integration, applications of the definite integral, conics, polar coordinates, improper integrals, infinite series. AMAT119 is the honors version of AMAT113 and substitutes for AMAT113 toward the prerequisite in any course. Only one of AMAT113, AMAT119 and TMAT119 may be taken for credit.

Learning Objectives: A student who has passed Calculus II course will be able to:

1. Explain (or describe) the development of calculus as the solution to questions about rate and area and the role of calculus in science. (History)
2. Describe the properties of and perform computations involving the concepts of limit, derivativeand integral. (Knowledge)
3. Be able to read, write and speak the language of advanced mathematics. (Communication)
4. Deduce complicated problems in mathematics, the physical and life sciences and other disciplinesto simple rules and procedures by applying the major concepts and theorems of calculus. (Modeling)
5. Use deductive reasoning in mathematics and be able to produce arguments involving several steps. (Proofs)

General Education Goals

The material to be taught for this course satisfies the four general education objectives for mathematics in many and various self-evident ways. These objectives are:

2. The ability to decipher, interpret, and draw conclusions from formal or mathematical models such as formulas, graphs, and/or truth tables, and an understanding of the concepts used in such models

3. The ability to formulate and/or represent problems in manners appropriate to mathematical, statistical, or logical analysis
4. The ability to employ appropriate mathematical computations, statistical techniques, or logical methods to solve problems and/or draw conclusions from data
5. The ability to evaluate results and recognize the limits of methods and/or models within the context of the discipline, as appropriate

Course requirements

1. **Textbook:** Calculus Early 'Transcendentals 9^{th} edition by Stewart, Clegg, Watson with WebAssign

2. **Course Topics:**
   Throughout this course, we will cover parts of five chapters:
   - Ch. 6: Applications of Integration, Sections 6.1-6.3, 6.5
   - Ch. 7: Techniques of IntegrationSections: 7.1-7.5, 7.8
   - Ch. 8: Further Applications of Integration, Sections: 8.1-8.2
   - Ch. 10: Parametric Equations and Polar Coordinates, Sections: 10.1-10.4
   - Ch. 11: Sequences, Series, and Power Series, Sections: 11.1-11.10

3. **Assignments and Exams:**
   - *Lecture Assignments* will involve reading the textbook and listening to video lectures, which will be followed up with an answering the corresponding questions during and after the videos for each section, and due the day assigned according to the schedule. Please submit these answers via Blackboard.
   - *Homework assignments* will be assigned after every section. The assignments will be due via WebAssign by 11:59 PM on the following after the lecture according to the included schedule. Extensions for homework assignments will be allowed with an automatic penalty of 20% per day of the extension with sufficient reasoning.
   - ***Group assignments*** will consist of a problem set which you will do individually and post your solution set toa Blackboard discussion group. Once you post your solution(s) you will analyze at least one of your classmates' solutions and respond to them thoughtfully. When responding to someone else's solution, you are expected to provide respectful and detailed feedback, such as pointing out a mistakeor explaining how their approach helped you understand how to work on the problem better. Both the initial post and at least one response to a peer's post will be due on the day listed on the schedule by 11:59 PM. You are welcome to continue the conversation beyond these deadlines. An example of how this will work will be provided as well as a rubric.
   - You are expected to take all scheduled exams at time announced and to obey the academic integrity policy. There will be four exams:
     - Exam 1 - Review of Calculus 1 and Chapter 6
     - Exam 2 - Chapters 7 and 8
     - Exam 3 - Chapters 10 and 11
     - Final exam - cumulative (details of which will be announced before end of classes in April).

- Some, possibly all, exams will have a diagnostic assignment to be done before it. This should not be taken as a representation of the exam, but rather a compilation of questions that will assist you in focusing your studies for the examinations. I suggest doing exam wrappers, which are explained later in this document, after each exam. These will be to assist. you in immediately reflecting upon what. went right in your preparation for the examination as well as what you need to work on.

4. Textbook and WebAssign:

- WebAssign is an online homework platform where homework will be assigned and submitted. Additionally, you'll have access to an online version of the textbook. To purchase WebAssign access, here'sa direct link with a few main options that I'll explain below. *http: //www.cengagebrain.com/coursc/4082121*
- There are three options for WebAssign:
  - **Cengage Unlimited** (4 months)
  - **Cengage Unlimited** (12 months)
  - **WebAssign Instant Access for Stewart's Calculus**
- Options 1 and 2 are identical except for the duration, so 1 would be best if you are taking another course that uses a something through Cengage online and 2 would be best if you are taking a course next semester that uses something through Cengage such as Calculus 3. Option 3 will give you access to WebAssign, and *only* WebAssign, for the semester. For further assistance please call tech support at 800-354-9706.
- Please note that I have integrated WebAssign with our Blackboard, so a "Class Key" will not be provided. This will provide you with a single sign on and be able to get to WebAssign through the Blackboard course. In the event that you call technology support at the information above, please explain this to them as LMS integration is still new to WebAssign.
- If you're looking at the textbook, we'll be going through material from chapters 6-8,10, and 11. Additionally, you'll be expected to know the basic material from Calculus I (namely, elementary material regarding limits, derivatives, integrals).

Grading policy:

- Grades will be maintained in the WebAssign course gradebook. Students are responsible for tracking their progress by referring to the online gradebook.
- This course will be graded using the standard A-E grading scheme. Grades in the **C** range represent performance that **meets expectations;** Grades in the **B** range represent performance that is **substantially better** than the expectations; Grades in the **A** range represent work that is excellent. A more detailed distribution can be found below.
- **Grade Distribution:**

Assignments	15%
Exam 1	20%
Exam 2	20%
Exam 3	20%
Final Exam	25%

- The conversion from number to letter grades (with pluses and minuses distributed evenly) is as follows:

Letter grade distribution:			
93	A	73-76.99	C
90-92.99	A-	70-72.99	C-
87-89.99	B+	67-69.99	D+
83-86.99	B	63-66.99	D
80-82.99	B-	60-62.99	D-
77-79.99	C+	< 59.99	E

Other Information:

1. **Class Expectations, Participation and Rules:**
   - I expect you to work very hard, to approach your studies as a serious scholar, and to be respectful of everyone in the class, including me, your classmates, and yourself. I encourage you to participate and learn from each other to get the most out of this course. If you are confused on a topic there may be others confused as well so it never hurts to ask. The more active you are in class, the more you will get out of the class.
   - Remember, you must **show all your work!** Showing your work helps me understand your thinking and articulate feedback appropriately. It also allows me to award you as much partial credit as possible, however, no work shown will result in no credit.
   - While this is an online course, I welcome you to join me for Zoom Office Hours as well as request appointments via Zoom. If you would like to set up a recurring appointment for yourself or a group, please speak to me separately. On all Zoom calls, please be respectful of me and others by coming prepared with questions and keeping your video on when speaking if possible.

2. **Academic Integrity:** Academic honesty is an expectation of this course and this university. You are expected to follow the University's Standards of Academic Integrity below. *https://www.albany.edu/undergraduate_bulletin/regulations.html*

3. **Technology policy:** As a department policy calculators and other technology arc prohibited on exams.

4. **Medical Excuse Policies:**
   https://www.albany.edu/health-center/meclicalexcuses.html

5. Please be aware that there is a Disability Resource Center at UAlbany (CC130, or virtually: *https: //www.UAlbany.edu/disability/)* which provides support programs and advocacy services to studentswith disabilities. If you need additional support because of a disability, please let me know!

6. **A brief note on online learning:** It should be a goal for every student to be able to keep pace with the material throughout the semester. Due to circumstances out of anybody's control, there are going to be instances in which this will he either difficult or impossible. Moreover, the switch from in-person

learningto online learning will impact different people in different ways. Therefore, I'd like you all to communicate with me as soon as possible if at any point during the semester you begin to feel overwhelmed or in need of help.

7. **Attendance policy:** It is important for you as a student and for the class as a whole for there to be a sufficient amount of people attending class. With this in mind, you are required to attend at least half the official class sessions (so at least one a week) otherwise I reserve the right to apply a penalty. If you attend fewer than half of the class sessions without an excuse your final grade will be dropped a full letter **grade** without exception.

Psychological Health During COVID-19:

It is normal to experience some psychological distress and a range of emotional reactions to an evolving global health situation, such as COVID-19. Some signs of distress may include:

- Difficulty concentrating
- Increased fear, anxiety, worry, or feeling paralyzed or overwhelmed
- Trouble sleeping
- Changes in appetite or eating habits
- Increase in alcohol or other drug use, and/or concerns about your use by friends or family
- Crying, sadness, loss of interest/pleasure
- Feeling hopeless and/or helpless

If your distress is interfering with your relationships, academic, work or daily life, confidential support is available to you. Contact Counseling and Psychological Services (CAPS) at 518-442-5800or consultation@albany.edu to schedule an appointment with a psychologist. Virtual counseling services are available. The CAPS website also contains self-help resources and other valuable information.

Thank you for your cooperation with these expectations and helping saves lives. It is only with your help and support that we will be able to take effective steps to address the critical consequences of the COVID-19 global pandemic. Together we can make a difference, one person at a time.

Some Important Strategies for Success in this Course

The assignments in this course are substantial and they will require you to think strategically about how best to use your time and the resources that are available to you. Below are some strategies that I recommend to ensure your success.

- Use the course schedule to pace your workload. Don't try to get an entire weeks worth of work done in a single day. The schedule outlined in the syllabus should help you manage the workload, which should allow you to succeed overall.
- Read and listen to the lectures critically and with care. Make sure that you are taking time to think, ask questions, make connections and interpret as you listen. An important way to do this is to take notes both on what you understand and what you find unclear so that you can focus on the lecture better.
- Review assignments and exams after completing them. A good way of doing this is going through what is called an "exam wrapper" which consists of the following:
    - How long did I spend preparing for the quiz/exam? Was that enough? Do I need to spend more time preparing for the next quiz/exam?

  - What did I do while I prepared/studies'! Did I:
    - Read/watch to find the big ideas in the text. (as opposed to small details)?
    - stop frequently to see if I knew whether I understood what I was reading/watching!
    - take notes?
    - summarize key concepts in my own words?
    - try to explain ideas; from the reading to someone else?
    - test myself to see if I could restate the big ideas?
  - What are two new strategies (from the list above or others) that I will try when I prepare for the nextquiz/exam?
- Work together! This can be done in a number of ways. While I have outlined the assignments for the semester, you are encouraged to do more! If there is something, you have a question on ask it in your discussion group or in the general Blackboard forum. The best way to ensure you have a mastery of the material is to explain it to someone else, and if there is something you have trouble explaining that is an indicator of what you need to work on yourself!
- Use me, the instructor, as a resource. I want you to be successful! Please don't hesitate to reach out to meif you find yourself in need of support as you navigate the requirements of the course. If you want to meet individually or as a group outside of the designated class time, please feel free to ask me and I can reserve a classroom.
- Take risks and have fun with the assignments. Dou 't be afraid to think in new ways and to question standard approaches - and don't be afraid of being "wrong." That's what we're here for! The key is to learn from it.

Class Schedule:

The following is a tentative schedule for the semester. It lists the week/day of the class, which lecture assignments (denoted by L followed by section #) I will be expecting yon to have completed, to have questions on and when the homework assignments (denoted by HW followed by section#) will be due for each section, when the group assignments are due, and when the exams are tentatively scheduled.

Week	Date	Sunday	Monday	Tuesday	Wednesday	Thursday
Wl	1/31 - 2/6				WebAssign/Mindset	
W2	2/7 - 2/13		16.1 - 6.3	GIA		
W3	2/14 - 2/20	HW6.1 - 6.3	L6.5, L7.1-7.2	GIB		
W4	2/21 - 2/27	HW6.5, HW7.l - 7.2	Review	G2A		Exam 1
W5	2/28 - 3/6			G2B	Break	
W6	3/7 - 3/13		17.3 - 7.5	G3A		
W7	3/14 - 3/20	HW7.3- 7.5	L7.8, 18.1 - 8.2	G3B		
W8	3/21 - 3/27	HW7.8, HW8.1 - 8.2	Review	G4A		Exam 2
W9	3/28 - 4/3		Ll0.1 - 10.2	G413		
WlO	4/4 - 4/10	HW10.1 - 10.2	L10.3 - 10.4	Break		
WU	4/11 - 4/17	HW10.3 - 10.4	L11.1 - 11.3	G5A		
W12	4/18 - 4/24	HWll.1 - 11.3	Lll.4 - 11.6	G5B		
Wl3	4/25 - 5/1	HWll.4 - 11.6	Review	G6A		Exam 3
Wl4	5/2 - 5/8		111.7 - 11.10	G6B		
Wl5	5/9 - 5/15	HWll.7 - 11.10		Last day		

- **Example Key:**
  - 16.1 is a video assignment to be submitted via Blackboard to the best of your ability by 12:00p.m. 011
    Monday, 2/8.
  - HW6.l is a section assignment to be completed on WebAssign that will be available after 16.1 and clue by 11:59p.m. on the day according to the schedule.
  - GIA is the day your initial response is due in your 13lackboard group for the group assignment.
  - Gll3 is the day your classmate response is due in your Blackboard group for the group assignment.
  - Exam 1 indicates the day the Exam 1 is tentatively scheduled.

TMAT 118/AMAT118: Honors Calculus 1 Fall 2022

4 Credit Hours

Instructor: Steven Plotnick **Email:** splotnick@albany.edu

Class Meeting Time/Place: M/W/Th 4:30 - 5:45pm
Office Hours: ES 123B M/W/F 11:30-12:55 and by appointment

Course Materials: Calculus Early Transcendentals 9th edition with WebAssign Access by James Stewart ISPN: 9780357531273. Access to WebAssign includes access to an electronic version of the textbook.

Prerequisite(s): Honors College Approval

Description: Calculus of one variable: Limits, continuity, differentiation, applications of differentiation, anti-derivatives, the definite integral, transcendental functions
This course has the same topics as AMAT112, but some topics are covered in greater depth. This course is for students with more than average ability and more than average interest in mathematics.

GE Category: Satisfies the MATH GE.

Use of Technology: Unless approved and officially documented by the University as an essential piece of assistive technology, the use of cell phones/tablets/laptops/headphones/smart watches during lecture and exams is prohibited. Calculators will not be allowed on any quiz or exam. Plan accordingly.

Homework (15%): Homework will be assigned regularly and must be completed on the WebAssign website. Typically, homework will be due Mondays and Thursdays by 11:59pm. Make-ups/Extensions will not be given. As such, your lowest three homework assignments will be dropped.

Quizzes (20%): There will be weekly quizzes given at the beginning of class. Quiz questions will be based on suggested blackboard problems from the textbook and homework problems. Your two lowest quiz scores will be dropped. Make-up quizzes will not be given.

Tests (40%): There will be a test in October and a test in November. Test dates will be announced at least one week in advance. Make-up tests will only be considered with documentation from the Office of the Vice Provost for Undergraduate Education located in Lecture Center 30.

Final Exam (25%): Friday December 9th from 3:30pm – 5:30pm in ES146. Make-up exams will only be considered with documentation from the Office of the Vice Provost for Undergraduate Education located in Lecture Center 30.

For all course assessments, you must show your work neatly and detailed, in the style of the course lectures for full credit. Using alternate techniques from other classes or the internet may not award credit. Plan accordingly.

Office Hours: Office hours are available for you to see me when you're having trouble understanding the material or would like to discuss course concepts. The material will accumulate quickly; do not wait to stop by office hours. I will be far more helpful if you can demonstrate that you're putting forth significant effort. Show me your detailed work and exactly where you are stuck in a problem. *If you are absent from class, it is your responsibility to get the notes from a classmate, read the textbook, and seek out available resources. I do not reteach full lectures in office hours. Plan accordingly.*

Academic Calendar: http://www.albany.edu/registrar/academic_calendar.php

Learning Objective: Students who complete this course will be able to complete and understand calculus of one variable: Limits, continuity, differentiation, applications of differentiation, antiderivatives, the definite integral, transcendental functions.

Students with Disabilities: Reasonable accommodations will be provided for students with documented physical, sensory, systemic, medical, cognitive, learning, and mental health (psychiatric) disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Disability Access and Inclusion Student Services (DAISS) (daiss@albany.edu). Upon verification and after the registration process is complete, the DAISS will provide you with a letter that informs me that you are a student with a disability registered with the DAISS and lists the recommended reasonable accommodations.

Remark on Grades: Please do not contact me requesting an unjustified higher grade. The grade that you earn, according to the rules of the syllabus, is the grade that I report.

Grade distribution:

A	**93 - 100%**
A-	**90 - 92%**
B+	**87 - 89%**
B	**83 - 86%**
B-	**80 - 82%**
C+	**77 - 79%**
C	**73 - 76 %**
C-	**70 - 72%**
D+	**67 - 69%**
D	**63- 66%**
D-	**60 - 62%**
E	**0 - 59%**

Academic Dishonesty of any kind will not be tolerated. If you are caught cheating once on any quiz or exam you will earn a zero on that quiz or exam, lose the right to have your lowest quiz scores dropped and lowest homework scores dropped, your final grade will be dropped one letter grade, and a Violation of Academic Integrity will be filed. If you are caught cheating more than once, you will fail the course. The following list, while not exhaustive, gives examples of what would be considered cheating: working with any other person on a quiz or exam, using "tutoring" websites to obtain solutions, using math apps/code to obtain solutions, using communication apps/texts/discord/groupme/whatsapp etc, to discuss quiz or exam problems, going to the bathroom to use your cell phone to look up answers, etc. You are bound by the university's academic integrity policy.
https://www.albany.edu/undergraduateeducation/academic_integrity.php

New York State Education Law (Section 224-A) requires campuses to excuse, without penalty, individual students absent because of religious beliefs, and to provide equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences. I will work directly with you to accommodate religious observances, provided that you notify me in a timely manner.

I reserve the right to adjust the course syllabus if there is a change in course mode (ie. if we are forced to switch from in-person instruction to online asynchronous or synchronous instruction).

Topics to be Taught:
- Limits
- Continuity
- Differentiation
- Applications of differentiation
- Antiderivatives
- The definite integral
- Transcendental functions

AMAT/TMAT 119 Honors Calculus II
Spring 2020, Class Number 8544/8545 (4 credits)
MWF 11:30-12:25, W 12:35-1:30 BB 209

Professor: Steven Plotnick (splotnick@albany.edu)
Office: ES 123B (442-4615)
Office Hours: MWF 9:20-10:15 and by appointment

Text: **Calculus of a Single Variable**, 8th ed., James Stewart
Prerequisite(s): A MAT 118, a grade of A in A MAT 112, or permission of instructor.

Course Description: This course continues the study of calculus, one of the great intellectual achievements of the 17th century. We pick up where Math 112/118 leaves off. (Prerequisites: Math 112 or 118, or a sufficiently high grade on the AP exam) After a short review, we will discuss applications of the definite integral to geometry, physics, and probability, along with specific techniques for finding integrals. We will learn about polar coordinates and parametric curves, and we will spend a good deal of time on infinite sequences and series. We will cover chapters 6, 7, 8, 10, and 11.

Learning Objectives: The student who successfully completes this course will understand a variety of applications of calculus to geometry and the physical sciences, and will know how to carry out these calculations. He/she will also understand how and why we attempt to represent functions by 'infinite' polynomials, and will begin to develop an appreciation for how their calculator determines certain functions.

This course satisfies the Mathematics requirement of the General Education program. The specific learning objectives for general education courses in mathematics are:

1) *the ability to decipher, interpret, and draw conclusions from formal or mathematical models such as formulas, graphs, and/or truth tables, and an understanding of the concepts used in such models*
2) *the ability to formulate and/or represent problems in manners appropriate to mathematical, statistical, or logical analysis*
3) *the ability to employ appropriate mathematical computations, statistical techniques, or logical methods to solve problems and/or draw conclusions from data*
4) *the ability to evaluate results and recognize the limits of methods and/or models within the context of the discipline, as appropriate*

This is an honors class, so we will do more than just cover the standard material (as in Math 113). We will present more proofs, try to develop an appreciation for the theoretical underpinnings of calculus, and look at interesting/challenging applications.

There will be two in-class tests, a final, and numerous quizzes. Dates for the tests will be announced in class, at least a week in advance. Needless to say, it is expected that you take the exams at the scheduled time except in (documented) cases of family emergencies or serious illness. If there is a reason why you cannot take a test, you are expected to contact me **in advance** of the test. Quizzes will be given about once a week, generally on Friday, and will be announced in advance. There are no make-up quizzes, but I will drop your lowest two quizzes. Students who take the homework seriously should do well on quizzes.

Homework will be assigned on webassign.net. This will require an access code. If you bought a new book, it should have come with an access code. If not, these can be purchased online. We will start using this system almost immediately, once I give you the information you need to get started on this website. Beside the fact that it is being graded, you will find that doing the homework is essential to learning this material. Trust me: Nobody learns mathematics at any level without spending a lot of time doing problems.

Homework will count 10% towards your grade. The two in-class exams will each count 20%, as will the quizzes. The final will count 30%.

Course Grade Scale: **A** 93-100%, **A-** 90-92%, **B+** 87-89%, **B** 83-86%, **B-** 80-82%, **C+** 77-79%, **C** 73-76%, **C-** 70-72%, **D+** 67-69%, **D** 63-66%, **D-** 60-62%, **E** 0-59%

For additional help, the mathematics department maintains a Tutoring Room, ES 138, which is available to all students in 100-level courses on a first-come, first-served basis. Students should feel free to use the Tutoring Room for assistance in coursework and homework. Of course, I am available during office hours (or by appointment if you cannot meet me during office hours) for help. Please don't hesitate to come by

Students are, of course, expected to follow the University's policy on academic integrity. Go to http://www.albany.edu/undergraduate_bulletin/regulations.html. Also, look at the University's Medical Excuse Policy: http://www.albany.edu/health_center/medicalexcuse.shtml.

Out of respect for other students and the instructor, it is expected that students arrive on time, turn off cell phones, and refrain from emailing, texting, tweeting, facebooking, instagramming, snapchatting, etc. during class. This includes all social media techniques invented after this syllabus is written.

Topics to be Taught:
- Applications of the definite integral to geometry
- Physics, and probability, and specific techniques for finding integrals
- Polar coordinates
- Parametric curves
- Infinite sequences and series

AMAT/TMAT 218 Calculus of Several Variables
Spring 2014, Class Number 8698/8699
MWF 9:20-10:15 BA 212, Th 9:10-10:05 ES 146

Professor: Steven Plotnick (splotnick@albany.edu)
Office: ES 123B (442-4613)
Office Hours: MWF 1:40-2:35 or by appointment

Text: **Multivariable Calculus, Early Transcendentals,** 7th ed, James Stewart

Course Description: This course is concerned with the generalization of basic one-variable calculus to higher dimensions, mainly dimensions 2 and 3. We start by describing vectors and then move on to vector functions of various kinds, including curves in space and functions of more than one variable. We will learn about partial derivatives and multiple integrals; the culmination of the course is the theorems of Green, Gauss, and Stokes, which describe generalizations of the fundamental theorem of calculus to higher dimensions. We will encounter numerous applications along the way - mainly, but not exclusively, to physics. Prerequisites for this course are one year of calculus, for instance, Math 112-113/119. Some of you may be taking linear algebra (Math 220) concurrently. This is fine, and the two courses will reinforce each other for the first few weeks, but it is **not** necessary.

Course Objectives: Learn the basics of vectors in 2 and 3 dimensions. Develop an appreciation for functions of more than one variable, partial derivatives, and their uses. Learn how to calculate multiple integrals and some of their applications. Finally, develop an appreciation for the theorems of vector calculus, and in particular their applications in physics.

We will cover chapters 12-16. There will be two in-class tests, a final, and numerous quizzes. Dates for the tests will be announced in class, well in advance. Needless to say, it is expected that you take the exams at the scheduled time except in (documented) cases of family emergencies or serious illness. If there is a reason why you cannot take a test, you are expected to contact me in advance of the test. Quizzes will be given about once a week, generally on Friday, and will be announced in advance. There are no make-up quizzes, but I will drop your lowest two quizzes. Students who take the homework seriously should do well on quizzes.

Exam	Material
Test 1	12, 13
Test 2	14, 15 (1st half)
Final	12-16

Homework will be assigned on webassign.net. This will require an access code. If you bought a new book, it should have come with an access code. If not, these can be purchased online. We will start using this system almost immediately, once I give you the information you need to get started on this website. Beside the fact that it is being graded, you will find that doing the homework is essential to learning this material. Trust me: Nobody learns mathematics at any level without spending a lot of time doing problems.

Homework will count 10% towards your grade. The two in-class exams will each count 20%, as will the quizzes. The final will count 30%.

Students need to be aware of the university's policy on academic integrity. Go to http://www.albany.edu/undergraduate_bulletin/regulations.html

Out of respect for other students and the instructor, it is expected that students arrive on time, turn off cell phones, and refrain from emailing, texting, tweeting, facebooking, instagramming, etc. during class. This includes all social media techniques invented after this syllabus is written.

Grade	Percent
A	>93
A-	90-02
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
E	<60

AMAT/TMAT 222: HONORS LINEAR ALGEBRA
SYLLABUS - FALL 2018

Instructor: Prof. Matt Zaremsky
Course meets: MWF 11:30–12:25am in ES-143
Course Website: `http://www.albany.edu/~mz498674/teaching.html`

Office: ES-136A
Email: mzaremsky at albany dot edu
Office hours: MWF 10:25–11:20am and by appointment, in my office.

1. Textbook

David C. Lay, with Steven R. Lay and Judi J. McDonald, Linear Algebra and Its Applications, fifth edition, Pearson, 2016.

You have the option to buy the textbook together with access to MyMathLab – the online homework and grading system used for this course – or to buy only the access to MyMathLab. Access to MyMathLab includes access to an electronic version of the textbook. See link here.

2. Course description

"Honors version of linear algebra. Same topics as AMAT 220, but topics are covered in more depth and with more emphasis on theory. This course is for students with more than average ability and more than average interest in mathematics."

3. Course objectives

Master row reduction of matrices and become proficient in using it for various applications; develop a strong understanding of vector spaces and linear transformations, and their connection to matrices.

4. Prerequisites

A grade of A in AMAT 113 or AMAT 214 together with permission of the instructor, or a grade of B+ in AMAT/TMAT 119 or AMAT/TMAT 218.

5. Homework

Homework will be done online, with the MyMathLab program. You'll need to get access (see link above). Assignments will be due every Wednesday at 11:20am, so ten minutes before class (any deviations from this will be announced ahead of time). No homework is due during the first week of class. The lowest homework will be dropped. In order to enroll in our course in MyMathLab you will need the course ID, which is

zaremsky49953

Instructions on how to register are here.

6. Quizzes

There will be weekly quizzes every Wednesday during class (any deviations from this will be announced ahead of time). On weeks with an exam there will be no quiz. Also, the lowest quiz score will be dropped. In general a given Wednesday's quiz will cover the material that was on the homework due that day. The quiz during the first week of class will be "diagnostic".

7. Exams

There will be a midterm exam and a final exam. The midterm will be on a Wednesday, during class, on a date TBD. The final exam is TBD.

8. Grading policy

Homework: 15%, Quizzes: 25%, Midterm 1: 25%, Final Exam: 35%.

9. Make-up policy

There will be no late homework accepted for any reason (it will be posted so far in advance that this will not be an issue, and I'll drop the lowest one). There will be no make-up quizzes whatsoever (too much of a logistical headache) but this is why I will drop the lowest quiz score (so if you miss one it's not a big deal). If you know in advance you will need a make-up exam (and you have a legitimate reason: see here) let me know as soon as possible and we'll work something out. This also holds if you unexpectedly miss an exam due to an emergency. If you unexpectedly miss an exam and don't have an acceptable excuse then there's nothing I can do.

10. Academic integrity

See here for information about academic integrity. I should draw your attention to the part that says, "student claims of ignorance, unintentional error, or personal or academic pressures cannot be excuses for violation of academic integrity."

11. Topics

- Row reduction of matrices and using it for various applications
- Vector spaces
- Linear transformations
- Connections to matrices.

12: Course Grading Scale

93-100 A
90-92 A-
87-89 B+
83- 86 B
80-82 B-
77-79 C+
73- 76 C
70-72 C-
67-69 D+
63- 66 D
60-62 D-

AMAT 300 INTRODUCTION TO PROOFS

FALL 2020 (Class # 6504)
MWF 10:35-11:30 via Zoom

Professor: Steven Plotnick (splotnick@albany.edu)
Office: ES114 442-4615
Office Hours: By Appointment

Text: Book of Proof, 3rd Edition, by Richard Hammack. Available as a **FREE** pdf download at: http://www.people.vcu.edu/~rhammack/BookOfProof/ If you wish, you can buy a physical copy of the text online. For example you can buy one on Amazon for $20-30, depending on whether you want hard cover/paperback, new/used, etc..

Prerequisites: This course is restricted to math majors, so you should have received a C or better (hopefully, better) in Calculus 2 or 3. Normally, students will take this course concurrently with Calculus 3 (AMAT214) or linear algebra (AMAT220), or both, and also with UUNL299, the information literacy course for math majors.

Course Description: from the course catalogue: Introduction to the methods of higher mathematics, with emphasis on how to read, understand, discover, and write proofs. This course will require a significant amount of written and oral presentation.

Topics: Basic logic, sets, functions, relations, mathematical induction, countable and uncountable sets, and elementary number theory.

Course Objectives: A student who successfully completes this course will be prepared for higher level, more theoretic mathematics courses. They will understand how to read, understand, and write simple proofs. In addition, they will learn the basics of counting, functions and relations, and the concepts of cardinality.

Grading:

Writing Assignments:	25%
Oral Presentations	10%
Quizzes	15%
Midterm	25%
Final	25%

Course Grade:

	94-100 A	90-93 A-
87-89 B+	83-86 B	80-82 B-
77-79 C+	73-76 C	70-72 C-
67-69 D+	63-66 D	60-62 D-

There will be (almost) daily writing assignments. The goal is to learn to write (correct!) mathematics in an organized fashion. As the semester progresses, assignments will tend to be longer and more challenging. Assignments will be evaluated for both correctness and style, and will need to be revised, based on written feedback, until satisfactory. There will also be short quizzes on (most) Fridays, based on assigned homework. Homework problems will be assigned daily, some of which will be collected as writing assignments, others will be discussed in class, and homework problems will often find their way onto quizzes.

After the first few weeks of the semester, students will start to give oral presentations. There may be some technological difficulties with this, but hopefully we will figure it out. Presentations will be approximately 10 minutes, after which the speaker will answer questions from the audience. Presentations will be evaluated on mathematical validity, speaking style, clarity, and interaction with the audience. Students will receive feedback from the instructor.

My hope is to make this ONLINE course feel as much like a 'regular' course as possible. Lectures will be given via zoom, MWF 10:35-11:30, and will be recorded. So, while it is not absolutely essential that you come to every class, I am hoping that most of you will come to all the lectures, so that you don't miss the

back-and-forth, Q & A, of in-person classes. Course content will be on blackboard, as will homework and exams.

Students are, of course, expected to follow the University's Standards of Academic Integrity (http://www.albany.edu/undergraduate_bulletin/regulations.html) and Medical Excuse Policy (http://www.albany.edu/health_center/medicalexcuse.shtml).

Syllabus for AMAT 301/AECO 351
Theory of Interest
Class number 7118/7119
Spring 2022

Prerequisites:

Calculus 2 (AMAT 113)

Course Description:
The basic measures of interest, annuities, sinking funds, amortization schedules, bonds, and installment loans.

Lecture:

MWF 8:25 - 9:20 AM, Earth Sciences 245. Powerpoints will be provided under "Course Materials". Lectures will go over these powerpoints, and go over powerpoint examples in full detail. Occasionally further examples will be provided via youtube lecture videos.

Lecturer: Dr. Joshua Isralowitz

Email:	jisralowitz@albany.edu
Office Hours and Room:	MWF 11:30 AM - 12:30 PM and by appointment, Earth Sciences 136C

Text:

Samuel Broverman, *Mathematics of Investment and Credit*

Homework:

There will be both collected and uncollected HW. Uncollected HW will be posted on blackboard and full solutions will be provided. Collected HW asignments will usually consist of 3 or 4 problem and will be similar to lecture examples or uncollected HW. Collected HW will be due every Friday (starting in the second week), with some exceptions.

Exams:

There will be three exams and no final. The third exam will be during the scheduled date/time of Saturday May 7, 10 : 30 AM.

Content:

Topics include: Compound and simple interest, force of interest, present/future value, general annuities, present/future value of special annuities, general loans, amortization tables, sinking funds, bond pricing, amortization of bonds, yield rates, measures of an investment (IRR, NPV, PI, etc.), treasury yield curves. This roughly corresponds to chapters 1 - 5, and the beginning of chapter 6 of Broverman.

Grading: The grading scheme will be the following

HW: 45 %
Three exams: 55 %

The numerical grade to letter grade will follow the following scheme:

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Score	93+	90 - 92	87 - 89	83 - 86	80- 82	77 - 79	73 - 76	70 - 72	67 - 69	63 - 66	60 - 62	59-

Financial Calculator:

Roughly half way into the course we will start using a financial calculator. I suggest the TI BA-II plus. We will go over in full detail how to use this calculator.

Exam FM:

This course will cover roughly 75% of the Exam FM content. More often than not, the problems assigned and on HW/tests will be easier than those on Exam FM.

Medical Excuses for HW and Exams:

Please see the following regarding the university's Medical Excuse Policy: Medical Excuse Policy

Academic Integrity:

Please see the following regarding the University's Standards of Academic Integrity: Standards of Academic Integrity

Learning Outcome: Students will demonstrate an understanding of basic measures of interest, annuities, sinking funds, amortization schedules, bonds, and installment loans.

I. Course: Math 308 Topics in Statistical Inference

II. Time and location: Time: TuTh 11:45AM-1:05PM, Room: ES143

III. Instructor: Professor: Karin Reinhold

Office: ES 132D

Office Hours: TuTh 1:10-2:10 Additional time by appointment or by chance (if I am in my office and willing).

Email: reinhold@albany.edu; phone: 442-4641 (email is better)

IV. Prerequisites: MAT 108 or High School statistics

V. Course description:

This course is a continuation to an introduction to fundamental ideas and techniques behind statistical modeling. It assumes you have taken Mat108 or a course in statistics in high school. The course has an emphasis on the analysis of real data sets from a variety of fields using a statistical program called R. R is free and very powerful. We will learn how to use is as we study topics in statistics. Topics include: introduction to R, basic commands for inference and graphic displays. The distribution of sample statistics, the central limit theorem, hypothesis testing and estimation, simple linear regression, multiple linear regression, one way ANOVA, two way ANOVA, Chi-square tests, logistic regression and non-parametric tests it time allows.

VI. Course Objectives:

- Estimation with intervals using either traditional methods or modern resampling methods.
- Testing for significance using either traditional
- Perform a variety of different statistical procedures using technology: R.
- Be able to discern which statistical methods to use in a variety of situations.
- Interpret results effectively and in context.
- Lose the fear of statistics and develop a playful attitude towards learning from data.
- Work in teams effectively.

VII. Instructional Materials:

A. Statistical Software R:

- R Project Homepage: http://www.r-project.org/

B. Statistics Books:

- Learning statistics with R: http://health.adelaide.edu.au/psychology/ccs/teaching/lsr/
- Simple R: https://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf
- http://zoonek2.free.fr/UNIX/48_R/all.html, a nice webpage with topics in statistics and data analysis.

VIII. *The approach:* people learn best from concrete experience: practicing skills, collaborating with others, putting to use what they learn in the texts or readings. As a

result, this course is designed under the Team Based Learning model (TBL). The course is divided into learning units, each focused on a theme. You will work individually and in your designed team all throughout the semester. Your interactions and performance in your team will be crucial to your semester success in this course. In each unit we will:

- read Unit material on your own on that section at the beginning of the unit of study.
- As the Unit progresses you will continue reading through the unit's material and will engage in in-class activities designed to gain insight into the statistical methods.
- You will be assigned individual on-line activities.
- Each unit will end with a Unit's project report.

IX: Instructor Goals for Students: In addition to mastering the mathematical content as described in section V: Course Description, I hope that students 1) be positive contributors in class, 2) are honest with self and others, 3) take responsibility for learning the course content, 4) improve self, and 5) master the material well enough to be proficient to run and interpret statistical tests.

1. Behavior that I wish to encourage: honesty (with self, peers, me), learning/understanding (e.g. defining variables, you are the audience), discovering and challenging self and peers (names, strengths, weaknesses), helping class, modeling productive behavior, exceeding expectations, participation, communication, and taking responsibility (no excuses).
2. Behavior that I wish to discourage: dishonesty (claim understand in class and while doing homework, but not on exams), memorizing formulas, looking at solutions prior to attempting yourself, abusing solutions manuals, use of words "very, like, it, this, that, they, but", ignorance, wasting the time of your classmates, excuses, complaining, whining, and crying.

X. Instructor Specific Course Policies:

A. Make-up work: Make-up work is a rare event. It is your responsibility to be aware of what was covered in class on a day that you had to miss a class. Be advised that there is no makeup for activities missed on a day that you did not come to class.

If you must miss a scheduled exam, you must make alternative accommodations with me (typically taking the exam before it is scheduled).
University's Medical Excuse Policy:
http://www.albany.edu/health_center/medicalexcuse.shtml.

B. Cheating: It is bad, do not do it. Cheating during an examination will result in a letter grade of F.

C. Class Distractions: You will make the necessary arrangements so that cell phones, watch alarms, mechanical erasers and the like do not disturb class.

D. Learning Situations Outside of Class: Following presentations in class is a good start to understanding, being able to complete problems on your own shows a higher level of awareness, and being able to explain solutions to others demonstrates exceptional

insight. Therefore, you are encouraged to form study groups. I am available during class, during scheduled office hours, and by appointment. I hope that you feel comfortable receiving help from me in a timely manner. I look forward to helping those motivated students who have attempted their homework. Bring your work into class and or office hour to discuss your confusion.

E. Extra Credit: None. Extra work is not a substitute to learning the material in a timely fashion. It is inappropriate for you to request extra credit work.

F. Professionalism: Students are expected to maintain appropriate behavior in the classroom and other activities that reflect the actuarial program and university.

XI: University Policies and Services

A. Honor Code: The core values of the University at Albany are learning, discovery, freedom, leadership, individual opportunity and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, fairness, and respect toward peers and community.

University's Standards of Academic Integrity:
http://www.albany.edu/undergraduate_bulletin/regulations.html.

B. Students with Disabilities:

The University at Albany provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, students with disabilities should contact the Disability Resource Center: 442-5490
http://www.albany.edu/disability/

C. Policy on Academic Dishonesty: Students who violate university rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failing in the course and/or dismissal from the University. For clarification and interpretation of the regulations, students should contact the Office of the Vice Provost for Undergraduate Education, Lecture Center 30.

E. UAlbany Division of Student Success:
http://www.albany.edu/undergraduate_bulletin/student_affairs.html

F. UAlbany Counseling Center:
Suite 104 400 Patroon Creek Blvd Albany,
PHONE (518) 442-5800
Email consultation@albany.edu, or visit the website at
www.albany.edu/counseling_center/

The **Middle Earth Café** website is a non-commercial, non-profit service of the Middle Earth Peer Assistance Program, an agency staffed by undergraduate students and supervised by professional psychologists at the University at Albany Counseling Center. The site aims to provide quality information about mental health and behavioral issues affecting college students in order to support our students. We also wanted to provide an alternative to the Middle Earth telephone hotline (518-442-5800) for students who prefer to communicate with us online.

XII. Delivery System: This is your class. The responsibility of learning the course objectives and attaining your learning outcomes is entirely your responsibility. I will model various teaching techniques including lecturing, group projects, examinations, teamwork, self-inquiry, and student presentations.

XIII: Grading Information

A. Definition of Letter Grades: The following scale will be used to assign grades at the end of the term. Be careful using this scale on any individually scored work. Some examinations are easier (most students score substantially higher) than other examinations. It is your job to maximize your total points. A student's final class average is the product of their multiplication factor ρ, and their raw average score based upon graded work.

[90%,100%] A/A- Achievement of distinction with an unusual degree of intellectual initiative
[75%,90%) B+/B/B- Superior work
[60%,75%) C+/C/C- Average knowledge attainment
[50%,60%) D+/D/D- Unsatisfactory, but passing
[0%,50%) F Failing

B. Assessment During the Term: From the teacher - students will receive feedback on their projects, while working in groups, during question and answer periods, during office hours, and during competency examinations; From other students – during study sessions and projects; From oneself – while working on homework problems, in-class examinations, while discussing these concepts with others, and on the comprehensive final examination.

C. Homework: My goal is expose topics of statistics to UAlbany students. I trust our goals include demonstrating content proficiency by obtaining a passing score on Projects and Exams as well as improved communication skills. We consider the prompt and accurate completion of homework to be the single most important factor in student learning.

It is my expectation that students study for this class as a model for future study. You may want to keep a folder with some notes, other exercises, sample examinations, projects, this syllabus, and etcetera with the study aid.

Assigned Problems: One of your goals should be to attempt and solve all appropriate homework problems. If specific exercises will be collected, they will be announced in class and/or Blackboard.

Scoring Rubric: Your homework notebook *may* be collected and graded at random times throughout the term.

D. Personal Project: Each student is required to submit a report describing contributions to the class. The report should include a description of your contributions and any related documentation. Project grade will be based upon:

a) the written report, b) the scope/scale of your contributions, c) the quality of your work, d) the value your work added to the class.

Examples of what you could contribute: Organizing and conducting study groups, presenting a solution in class, writing sample exam questions, working in a group to create a master answer key to problems, creating online content, and many other activities that you think would be useful.
Note: This project is your responsibility. I will not give suggestions on what you choose to do, but I am available to discuss your work before you present to class.

E. Typical Point Scale and Examination Dates:
Exam 1, 2, 3 & 4: 100 points each (400 pts total)
Projects, assignments, quizzes, other: 100 pts
Penalties:
Syllabus Understanding **-25** points for failure to understand this contract.
Late Work 25% if complete within one day, 50% complete within a week, but after a day 100% if complete after one week.
Cheating on an Examination Course grade is F.

XIV. Syllabus: This syllabus is subject to modification. Topics covered may change according to the amount of material we are able to cover and practice during class time. Any changes to exams will be announced in class.

Week 1: (Jan 21 - 26)

Unit 1 - Getting familiar with R: Introduction to working with R, using it to display data and probability models. Review of descriptive statistics and basic probability distributions. Unit 1 Project.

Week 2 – 4: (Jan 28 – Feb 9)

Unit 2: Categorical Variables

1. Displaying one categorical variable. The Binomial. The Binomial and the Normal distribution. Confidence interval for one proportion. Review of tests of hypothesis. Test of hypothesis for one proportion.
2. Displaying two or more categorical variables. Confidence intervals and Chi-square tests.
3. Unit 3 Project

Week 5 – 7: (Feb 23 – Mar 10)

Unit 3: Continuous random variables

1. Displaying continuous random variables. Histograms & boxplots.
2. The normal random variable. Sampling distributions. The Central Limit Theorem and its applications to inference. Testing for normality. Shapiro Wilks test.
3. Confidence intervals and tests of hypothesis for one mean. Type I & II errors.
4. Confidence intervals and tests of hypothesis for comparing two group means. Independent groups, paired groups.
5. What to do when assumptions fail: non-parametric tests.
6. Unit 3 project(s).

Spring Break: Mar 12-16

Week 8-11: (Mar 15 – Apr 7)

Unit 4: Comparing multiple groups, ANOVA: Identify when to use ANOVA tests. One and two factor models. Graphical displays of multiple data. Interpret results in context. Unit 4 project.

Week 12-15: (Apr 12 – May 4)

Unit 5: Correlated variables: Correlation and Regression. We will learn the basic features of developing linear models and interpreting their meaning. We will use the model to predict the possible values of a response variable, conduct diagnostic measures, perform graphical displays and interpret the graphs. Unit 5 project.

Unit 6: Logistic regression: When to use logistic regression. Notions of different models. Perform a logistic regression model and interpret the results. Perform graphical display of data and diagnostic measure and interpret the graphs. Unit 6 project.

Exam 4: May 4

Tentative Exam dates:

Exam 1: Feb 11
Exam 2: Mar 10
Exam 3: Apr 12
Exam 4: May 4

AMAT312(Z) Basic Analysis(Fall 2022)- 3 Credits
Text: Analysis with an introduction to proof, by Steven R. Lay (5e)
Instructor: Ron Yang,
Lecture: MW 1:10-2:30pm at Physics 123.
Contact: phone: 2-4640; email: ryang@albany.edu
Office Hours: MTuW 12–1pm, CK337

Course Description: Theoretical aspects of calculus including construction of the real numbers, differentiation and integration of functions in one variable, continuity, convergence, sequences and series of functions. A MAT 312Z is the writing intensive version of A MAT 312; only one may be taken for credit. Prerequisite(s): A MAT 214 and A MAT 299.

Course objectives: This course is a deeper study of some fundamental elements in Calculus such as Real Numbers, Continuity, Differentiation and Integration. Students are required to remember and understand most theo-rems as well as their proofs. Proving theorems and constructing examples will be an important part of training. The best learning strategy is PREVIEW, LISTEN, REVIEW and HW. Lecture is conducted mostly at Blackboard where lecture notes and assignments will be posted weekly. Video lectures will be given occasionally at Zoom hours.

Homework: Homework is assigned at each class and will be collected for grading on each Monday. Note that I may grade a random selection of prob-lems.

Test: There will be a midterm exam and a final exam. Exam problems will be similar to that in the HW. Midterm will take place in the middle of October. The exact date will be announced a week in advance. The final exam time is according to the official schedule.

Percentage: HW 30%, midterm exam30%, final exam 40%.

Grading: A: 90-100, B:80-89, C:70-79, D: 60-69, E: 0-59.

Academic integrity: Copying from each other or from an online source are not allowed during quizzes and exams. Cheating is strictly forbidden. Please read academic integrity regulations at http://www.albany.edu/undergraduate bulletin/regulations.html.

Introduction to Combinatorics. AMAT 328
Fall 2019

Credit hours: 3.

Course description. Combinatorics is a subject of increasing importance, owing to its links with other parts of pure and applied mathematics, as well as computer science. Combinatorial structures arise both in abstract areas such as group theory and geometry, and applied areas such as optimization, networks, and statistics. Thus, they have applications to both calculations in pure mathematics and to solving real-life problems. Due to the advent of computers, which are ideally suited to manipulating combinatorial structures, this subject has become one of the fastest growing areas of mathematics. This course is a broad introduction to combinatorics, with emphasis on both the theory (the enumeration of various structures and their properties) and its applications, including algorithms.

Objectives upon completion of the course. The students will learn about: the main discrete structures, methods of enumeration (recurrence relations, generating functions, inclusion-exclusion), the fundamentals of graph theory, various important combinatorial algorithms, and their applications. They will be able to use these structures and algorithms to solve related problems, including real-life problems. They will also be able to program some of the algorithms.

Prerequisites. AMAT 221 or AMAT 299.

Instructor. Dr. Cristian Lenart, Office - ES-116A, Phone - 442-4635, `clenart@albany.edu`,

Class meets TTh 11:45 am – 1:05 pm, ES-139.

Textbook. Richard A. Brualdi, Introductory Combinatorics (5th Edition), Pearson, 2009, ISBN-10: 0136020402, ISBN-13: 978-0136020400.

Syllabus. The pigeonhole principle. Basic discrete structures and their enumeration: permuta-tions, combinations, partitions, Catalan numbers. Generalizations of the binomial theorem. The principle of inclusion-exclusion. Recurrence relations and generating functions. Introduction to graph theory: Eulerian walks, Hamiltonian cycles, trees, network flows, matchings, coloring maps. *Note:* Not all the material in the mentioned texbook will be covered.

Homework. Homework is an essential part of this class. Homework assigned during one week will be collected at the end of the following week. Late homework is considered for half credit. Homework will be posted on the following website.

`https://www.albany.edu/~lenart/teach/amat328-5.html`

Exams. There will be two tests, on October 1 and November 5. The final exam will be on December 17, 1:00 pm – 3:00 pm, in ES-139; it will be cumulative. There will be revision classes before the tests and the final exam.

Grading. Full A-E grading. Your grade in this course is based on the final exam (30%), the two tests (35%), and the homework (35%). The overall score will be curved based on the class performance.

Academic integrity. Plagiarism during the tests or the final exam will result in failing the class; this includes the situation when two virtually identical papers are identified. Such violations may be also subject to penalties both outside the course. See

`http://www.albany.edu/undergraduate_bulletin/regulations.html`

for more information on the University's Standards of Academic Integrity and Attendance.

Absences. Attendance is required as part of your grade; you may miss 3 classes with no effect on your grade, but any absence after that will make your grade drop by a "notch" (for instance, from B to B−). Students will not be excused from a class or an examination or completion of an assignment by the stated deadline except for emergencies or other comparable situations; a proof is required. See also the University's Medical Excuse Policy, link below.

`https://www.albany.edu/health_center/medicalexcuse.shtml`

Absence due to religious observance. These are excused, and opportunities will be made available for make-up examinations, study, or work requirements missed because of such absences; see New York State Education Law (Section 224-A). Students should notify the instructor in a timely manner.

Office hours. The office hours are in ES-116 as follows: on Tuesday and Thursday between 10:10 am − 11:10 am, and on Tuesday between 1:10 pm − 2:10 pm. Meetings outside these times can be arranged by appointment. You need to make reasonable attempts at the homework problems before asking for any hints.

Tutoring. Beside the tutoring services available in the University, see the websites below; the first one contains a link (at the bottom of the page) to a tutoring service offered by the publisher.

`https://www.chegg.com/textbooks/introductory-combinatorics-5th-edition-9780136020400-0136020402`
`https://www.24houranswers.com/subjects/Mathematics/Combinatorics`

Important. You typically will have to spend twice as much time or more on studying outside of class than you spend class. In particular, it is very important to work regularly on exercises in order to test your understanding and in order to master the required techniques. Reading the book is considered part of the homework. The assigned homework represents a bare minimum amount of work needed, so you are strongly advised to work on other problems in the book. Those of you having difficulty are urged to contact the instructor as soon as possible (not just before the tests and exam), and to come to office hours. You are also strongly encouraged to actively participate in class and exchange ideas with the instructor and your colleagues.

Out of consideration for your fellow students' efforts to learn, and your instructor's efforts to teach, you are required to arrive on time for class and to remain seated (barring an emergency) until the class is finished. For the same reasons, **please turn off cell phones, do not send or receive text messages,** play video games, read material unrelated to class, sing, or otherwise goof off and distract other people in the room. Loud eating or drinking, repeated talking while the instructor or other students are talking, or ringing cell-phones or pagers are not allowed during the class. Repeated violations of any of the above rules shall be grounds for sanction or dismissal from the class.

Weekly topics.

Week	Sections Covered
Week 1	1.1-1.3,2.1
Week 2	2.2-3.2
Week 3	3.3-3.6
Week 4	4.1-4.2, 5.1-5.2
Week 5	5.3, Test 1

Week 6	5.4-5.6
Week 7	6.1-6.3
Week 8	6.4, 7.1-7.3
Week 9	7.4, 8.1-8.2
Week 10	Test 2, 8.3
Week 11	9.1-9.3
Week 12	11.1-11.3
Week 13	11.5, 12.1-12.2
Week 14	Review

Course Grade:

Grading Scale

A = 93-100%; A- = 90-<93%; B+ = 87-<90%; B = 83-<87%; B- = 80-<83%; C+ = 77-<80%; C = 73-<77%; C- = 70-<73%; D+ = 67-<70%; D = 63-<67%; D- = 60-<63%; E = <60%.

AMAT 331 - Transformation Geometry (Spring 2021)

Class: AMAT 331-0001 (1775). Meets Tuesday and Thursday between 1:30 pm – 2:50 pm. All classes are online, except for those on March 18, 30; April 13, 22; May 4, 11; the latter are in LC 6, with synchronous simulcast. Students have the option to register for the synchronous simulcast section of this class if they cannot attend in person: AMAT 331-0002 (10486). All the material for the class is posted on Blackboard, and the online lectures are in Zoom, with the recordings made available.

Instructor: Cristian Lenart, ES-116A, 518-442-4635, clenart@albany.edu.

Course Description: The course introduces the main results of Euclidean geometry using transformations which preserve distance (isometries). We focus on 2-space and 3-space. As the author of the first textbook (see below) describes it, this is a "stretch along the royal road to geometry", that is, a modern approach based on bringing together geometry and algebra.

The transformations of the plane to be discussed in the course include: translations, halfturns, rotations, and reflections. We will also investigate how these transformations can be composed to obtain more general transformations. On the other hand, we will use them to obtain some basic results in Euclidean geometry, such as properties of the triangle. We will then study isometries of 3-space and see how these results generalize to n-space.

Topics: Basic Euclidean geometry. Linear isometries in n-space. Isometries of the plane (classification, group structure, equations). Frieze groups. Similarities. The classical results of Euclidean geometry. Isometries in 3-space. Platonic solids.

Objectives upon completion of the course. The students will be able to apply basic concepts in linear algebra (learned in AMAT 220) to Euclidean geometry. The focus is on isometries and similarities in general, with more detail for these transformations in 2- and 3-space. The students will be able to approach the classical results in Euclidean geometry (related to triangles, circles, etc.) using the modern perspective of transformations. They will also become familiar with the planar symmetry groups and the Platonic solids. This background will be useful for teaching high-school geometry, and also for other fields, such as engineering and computer graphics.

Prerequisite. AMAT 220.

Texts:

1. George E. Martin, Transformation Geometry. An Introduction to Symmetry, Springer, 1982, ISBN 0-387-90636-3, 3-540-90636-3.
2. Mark Steinberger, A course in low-dimensional geometry, Lecture notes made available electronically.
3. Keith Conrad, http://www.math.uconn.edu/~kconrad/blurbs/grouptheory/isometryRn.pdf

Evaluation: Full A-E grading. Your grade in this course is based on the final exam (30%), the two tests (35%), and the homework (35%). The final exam is cumulative. The overall score will be curved based on the class performance.

GRADING SCALE
A = 100-93 | A- = 92-90 | B+ = 89-87 | B = 86-83 | B- = 82-80 |C+ = 79-77 | C = 76-73 | C- = 72-70 | D = 69-65 | E = Below 65 points

Dates of exams. There will be two tests, on March 9 and April 15. The final exam will be on Saturday, May 15, between 10:30 am – 12:30 pm. There will be revision classes before the tests and the final exam.

Homework. Homework is an essential part of this class. All problems assigned during one week (via Blackboard) are due at the end of the following week. Late homework is accepted for half credit. You are welcome to ask for help (during office hours, or in class in case of short questions) after you made some attempts at the problems.

Office hours: online, via Zoom, on Tuesday and Thursday 1:00 pm – 1:25 pm and 3:20 pm – 4:00 pm.

Absences. Attendance (via Zoom or in person) is required as part of your grade. Every absence starting with the fourth will lower your overall score by 5%. Students will not be excused from a class or an examination or completion of an assignment by the stated deadline except for emergencies or other comparable situations; a proof is required. See also the University's Medical Excuse Policy, link below.

https://www.albany.edu/health_center/medicalexcuse.shtml

Absence due to religious observance: These are excused, and opportunities will be made available for make-up examinations, study, or work requirements missed because of such absences; see New York State Education Law (Section 224-A). Students should notify the instructor in a timely manner.

Academic integrity. Plagiarism during the tests or the final exam will result in failing the class; this includes the situation when two virtually identical papers are identified. Such violations may be also subject to penalties outside the course. See

http://www.albany.edu/undergraduate_bulletin/regulations.html;

for more information on the University's Standards of Academic Integrity and Attendance.

Important: You typically have to spend twice as much time or more on studying outside of class than you spend in class. In particular, it is very important to work regularly on exercises in order to test your understanding and in order to master the required techniques. Reading the textbook is considered part of the homework. The assigned homework represents a bare minimum amount of work needed, so you are strongly advised to work on other problems in the book. Those having difficulty are urged to contact the instructor as soon as possible (not just before the tests and exam), and to come to office hours. You are also strongly encouraged to actively participate in class and exchange ideas with the instructor and your colleagues.

Out of consideration for your fellow students' efforts to learn, and your instructor's efforts to teach, you are required to be on time for class. For the same reasons, please turn off cell phones, do not surf the internet, play video games, read etc. Repeated talking while the instructor or other students are talking, as well as other disruptions are not allowed during the class. Repeated violations of any of the above rules shall be grounds for sanction or dismissal from the class.

Classroom health and safety. It is only with your help and support that we will be able to take effective steps to address the critical consequences of the COVID-19 global pandemic. Together we can make a difference, one person at a time. Thank you for your cooperation with these expectations and for helping us save lives.

One of my most important jobs as your instructor is to ensure that our classroom is a safe place, and I will need your help to do that job. The practices described here are based on the current information we have about reducing the risk of transmission of the coronavirus.

- First, please be sure that you enter the classroom wearing your mask and keep it on for the entire class period. I will do the same.

- Second, it is important to always follow the physical distancing markers, including as you enter and exit the classroom. I will structure our classroom schedule and activities to ensure that this is possible.

- Finally, please follow the posted classroom cleaning protocols as you enter and exit the classroom.

During the first week of class, we will work together to create our own set of expectations for how we will all work together to keep each other safe, including how we will share concerns with each other when they arise.

If you have not already, I recommend that you familiarize yourself with the University's rules for keeping us all safe during the pandemic.

Your psychological health during COVID-19. It is normal to experience some psychological distress and a range of emotional reactions to an evolving global health situation, such as COVID-19. Some signs of distress may include:

- Difficulty concentrating
- Increased fear, anxiety, worry, or feeling paralyzed or overwhelmed
- Trouble sleeping
- Changes in appetite or eating habits
- Increase in alcohol or other drug use, and/or concerns about your use by friends or family
- Crying, sadness, loss of interest/pleasure
- Feeling hopeless and/or helpless.

If your distress is interfering with your relationships, academic, work or daily life, confidential support is available to you.

Contact Counseling and Psychological Services (CAPS) at 518-442-5800 or consultation@albany.edu to schedule a virtual appointment. The CAPS website also contains self-help resources and other valuable information.

AMAT 362 - Probability for Statistics

Fall 2021

1. Instructor: Dr. Hyun Kwon (hkwon6@albany.edu)
2. Class time and location: Mondays & Wednesdays 1:10-2:30 in ES 146
3. Office hours: Tuesdays 1:00-4:00
4. Course description: covers basic probability, discrete random variables, continuous random variables, expected value, variance, and the Central Limit Theorem
5. Course objectives
   1. Broad objectives:
      - 1.1 Learn the basic concepts of probability
      - 1.2 Develop a mathematical understanding of probability
   2. Upon the successful completion of the course, students should be able to:
      - 2.1 State the mathematical definition of probability and discuss its properties.
      - 2.2 Determine whether a random variable is discrete or continuous.

2.3 Calculate the probability, expected value, variance, and the moment generating function of a random variable.

2.4 Recognize some important distributions.

2.5 State the Central Limit Theorem and use it for problem solving.

6. Prerequisite: Multivariable Calculus (AMAT 214) and Introduction to Proofs (AMAT 299)

7. Text (recommended, not required): *Modern Mathematical Statistics with Applications*, J. Devore and K. Berk, 2nd ed., Springer

8. Homework: Homework assignments and quizzes will be regularly given. Not all homework assignments will be collected and graded. You can discuss the homework with each other but should not copy each other's answers. Late homework will not be accepted.

9. Exams:

   1. Feb. 25, 1:10-2:30
   2. April 1, 1:10-2:30
   3. May 11, 10:30-12:30

10. Grading Scheme: Letter grade scales A-E
A 93-100 A- 90-92 B+ 87-89 B 83-86 B- 80-82 C+ 77-79 C 73-76 C- 70-72 D+ 67-69 D 63-66 D- 60-62 E<60

   1. Homework and Quizzes 40%
   2. Midterms 15% $\times$ 2
   3. Final 30%

11. Policy on missed exams: Proper documentation is needed for a make-up exam. A make-up will be given only in case of emergency, sickness, or religious observance. Notify me in advance during the first week of classes of any unavoidable conflicts.

12. Technology Assistance: ITS Service Desk askIT@albany.edu
13. Academic Integrity:
https://www.albany.edu/undergraduate_bulletin/regulations.html
*Your course grade will be lowered as a result of academic dishonesty.

STATISTICS

AMAT 363 - 0001, Spring 2022
Credits: 3

Instructor:	Yunlong Feng	**Time:**	TuTh 9:00 am-10:20 am
Email:	ylfeng@albany.edu	**Class Location:**	ES 144
Office Hours:	TuTh 3:00 pm-4:30 pm	**Office Location:**	ES 128D

Course Description
A calculus-based introduction to statistics. Topics covered in this course include statistics, sampling distributions, point estimation through the method of moments and through maximum likelihood estimation, confidence intervals and hypothesis tests for common population parameters such as population mean, population proportion, standard deviation, differences of means and ratios of variances. Additional topics may include introductions to simple linear regression, goodness of fit tests, or analysis of variance.

Course Objectives
The broad objectives of this course include the following:

- Learn the language and core concepts of statistics
- Understand principles and procedures of statistical inference
- Become an informed consumer of statistical information

Students successfully completing the course should be able to:

- Understand the basic concepts of sampling distributions
- Construct point estimators, and derive their properties
- Form confidence interval estimates for common population parameters
- Perform hypothesis testing and interpret the results of a hypothesis test
- Conduct regression analysis on real data by using a simple linear regression model

Prerequisites
AMAT 362 is required to take this course.

Course Materials

- (Optional) *Modern Mathematical Statistics with Applications, 2nd Edition*, by *Jay L. Devore* and *Kenneth N. Berk*, ISBN10: 1461403901

Course Content

- Topic 1 ..... Statistics and Sampling Distributions
- Topic 2 ..... Point Estimation
- Topic 3 ..... Interval Estimation
- Topic 4 ..... Hypothesis Testing
- Topic 5 ..... Regression Analysis

Class and Course Policy

- According to the university policy, everyone is required to wear a mask in classrooms regardless of vaccination status.

- Have all mobile devices, and/or music players turned off or in silent mode. No text messaging. No computer note taking.
- No food or drink in class.
- The course content may be subject to change. We will not strictly follow the above-mentioned textbook.

Grading Policy

- Homework 30%
- Midterm Exam 35%
- Final Exam 35%

Letter Grade Scale

Final letter grades are assigned based on the following scale:

letter grade	point range	letter grade	point range	letter grade	point range
A	93-100	A-	90-92	B+	87-89
B	83-86	B-	80-82	C+	77-79
C	73-76	C-	70-72	D+	67-69
D	63-66	D-	60-62	E	< 60

Homework

There will be four to five homework assignments for this course throughout the semester. These assignments and their due dates will be announced in Blackboard. You are expected to work on your homework independently.

Exams

This course will consist of a midterm exam and a departmental final exam, both of which are take-home and open-book exams. The midterm exam will be on Thursday, March 10, 2022, and the final exam will be on May 10, 2022.

A Note on Classroom Safety

One of my most important jobs as your instructor is to ensure that our classroom is a safe place, and I will need your help to do that job. The practices described here are based on the current information we have about reducing the risk of transmission of the coronavirus. Please be sure that you enter the classroom wearing your face covering, and keep it on for the entire class period. I will do the same. Also, to ensure that everyone is wearing their mask throughout class, the University has prohibited eating and drinking in classrooms this semester.

Absence Due to Religious Observance

According to New York State Education Law (Section 224-A), campuses are required to excuse, without penalty, individual students absent because of religious beliefs, and to provide equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences. Students should notify the instructor of record in a

timely manner.

Students with Disabilities
Reasonable accommodations will be provided for students with documented physical, sensory, systemic, medical, cognitive, learning and mental health (psychiatric) disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Disability Resource Center (518- 442-5490; drc@albany.edu). Upon verification and after the registration process is complete, the DRC will provide you with a letter that informs the course instructor that you are a student with a disability registered with the DRC and list the recommended reasonable accommodations.

Academic Integrity:
See `https://www.albany.edu/undergraduate_bulletin/regulations.html`.

AMAT 367 - Discrete Probability - 3 Credits

Instructor Information: Jesse Corradino; office in Earth Science building room 132B; office hours Monday and Wednesday, 10:00-11:30 AM; instructor email address is jcorradino@albany.edu

Office hours by appointment

Course Objectives The objectives of this course are to familiarize studentswith the basics of discrete probability theory insofar as they are used to derivethe major discrete distributions of applied science and Markov chains from firstprinciples. In particular, to do this, the student is expected to become conversantwith discrete probability spaces, the law of total probability, Baye'stheorem, the foundations of discrete random variables, famous parametric families,such as the binomial random variable, Poisson etc, and Markov chains asexamples of stochastic processes. As these concepts will rely upon set theoryand combinatorics to derive, the student is also expected to gain proficiency inthese topics as they study in the course.

Class Modality and Schedule: The course modality shall be in-person with lectures on Tuesdays and Thursdays, at 10:30 AM -11:50 AM in the Earth Science building, room 147. Student participation and attendance is mandatory.

Suggested Textbook: *Discrete Probability* Hugh Gordon published by Springer Undergraduate Texts in Mathematics. I shall also use Casella and Berger *Statistical Inference* as a personal reference.

I must stress here that although I have written Gordon's textbook under the "suggested textbook" heading that I will hardly use this book at all beside as a source for some questions and its outline of topics. As such, I do not actually require you to purchase it and so you may decide to purchase it at your own discretion. The "true textbook" will be the notes given in class, so observance of the recorded lectures is necessary in order to have a complete record of the topics covered for homework and exams. Lastly, my course notes, *Discrete Probability Theory for Undergraduates.* I will provide this file to you freely through email, so no purchase is necessary.

Prerequisites: AMAT 113 or Calculus II plus 6 credits at the 200 level or above in either mathematics or computer science.

Course Description Part I: Introduction to discrete probability models (including the binomial, negative binomial, Poisson, and hypergeometric distributions, their means, variances and cumulative distribution functions). Other topics include probability axioms, equally likely sample spaces (combinatorics), conditional probability, the gamblers' ruin problem, finite state Markov chains, moment generating functions, joint distributions (including the multinomial distribution), marginal distributions, conditional distributions, covariance and correlation, the weak law of large numbers, and, if time permits, the Central Limit Theorem.

Course Description Part II: The first course description is taken from the university bulletin. This second description is meant to give you an idea of how the course will actually proceed. I divide this course into three parts. The first part covers elementary topics, such as set theory, axiomatics, counting techniques, and the basics of conditional probability. The second part covers discrete random variables and their associated statistics. We shall work out many of these statistics by using series techniques hopefully still familiar to you from calculus II. Moreover, the distributions associated to the random variables we introduce will be computed using the counting techniques from part I. The third part, which is perhaps the most interesting to computer science students, covers Markov Chains and takes random walks as a special case thereof. In particular, we shall study the Google PageRank algorithm as

(re: addition and multiplication of matrices, solving systems of equations), so we shall review these topics as they come up in part III in case they are unfamiliar.

Exam Policy: There shall be one exam after each part of the course mentioned in course description part II, above. The exams corresponding to parts I and II furnish the scores used to compute the in-class exam portion of your grade, below. The exam corresponding to part III of the course furnishes the grade used to compute the final exam portion of your grade, below-in other words, the part III exam is the final exam.

Homework Policy: We shall have six homework assignments in this course, although I reserve the right to amend this assertion as I see fit. Nonetheless, there shall be two homework assignments per course part mentioned above. These questions will inform the questions I decide to place on the exams, so they are important to complete. I will send you the homework assignments through email. I ask that you print these and answer the questions on the space provided. Please submit them to me stapled and with your name written upon them. I will have to hand grade these, which usually requires me about a week's time to complete. I will drop the lowest homework grade of the six you should have by the end of the semester. Since we have no online resource for this class, once homework has been submitted I will follow up your submissions with a solution manual you can use to both evaluate your grade and to prepare for the corresponding exam. As such, I cannot accept homework assignments any later than three days after the due date. Furthermore, to encourage timely submission, I shall impose a grading penalty on late assignments.

Excuse Policy: We adhere to the university guidelines for academic integrity pertaining to medical excuses etc.

Academic Integrity: Obviously cheating and dishonesty are forbidden in this class. More details on the university's academic integrity policy can be found at www.albany.edu/undergraduatebulletin/regulations.html

Disability Accommodations: Accommodations are provided to students with documented disabilities. If one has a documented disability that requires accommodations during in-class examinations or some other aspect of the course, please notify the disability resource center at dr@albany.edu. The DRC shall alert me that accommodations are required and they shall be provided in accordance with the university policy.

Religious Observances: Absence due to religous observances are permitted by New York State Law. One is allowed to be excused from class without penalty to observe their religious practices. Opportunities to make up work missed because of religious observances will be provided by the instructor. Any accommodations requested by the student of the instructor for religious observance shall be provided.

Classroom Behavior: Please do not have any cellphones out during class.

Grade Distribution:

- 25 % Homework
- 50 % In-Class Exams
- 25 % Final Exam

Grading Scale: A 94-100 %, A- 93-90 %, B+ 89-87 %, B 86-83 %, B- 82-80 %, C+ 79-77 %, C 76-73 %, C- 72-70 %, D+ 69-67 %, D 66-63 %, D- 62-60 %, E less than or equal to 59 %

Google Classroom: I will use Google classroom in lieu of Blackboard to post your homework and exam grades. You can join our classroom at https://classroom.google.com/c/MjMzNzI5MDM3MzAy?cjc=p5at2jx

Probability and Statistics for Engineering and the Sciences

AMAT 370
Fall 2020 Section 6590

3 Credits

Instructor Information: Jesse Corradino, office in Earth Science building room 132B, office hours online Monday, Wednesday, and Friday 12:00-1:00 PM email address jcorradino@albany.edu

Modality and Class Schedule: The course modality shall be asynchronous lectures recorded on Zoom whiteboard, but the recordings will be made live each week on Tuesdays and Thursdays at 12:00-1:30 PM. Students participation and attendance is encouraged. I shall provide the Zoom meeting ID through email before the semester begins.

Required Textbook: *Devore Probability and Statistics For Engineering and the Sciences Ninth edition* Either the physical or online textbook is acceptable. We shall use webassign as our online class resource, where one's grades shall be recorded and homework made available. One is also able to purchase an online edition of the textbook in conjunction with access to the online homework system. It is to this textbook that I refer to as the online textbook above.

Prerequisites: A MAT 367 or I CEN/I CSI 210

Course Description Part I: Basic probability, conditional probability and independence, families of discrete and continuous random variables, expected values and variances, moment generating functions, bivariate distributions, Bayesian networks, law of large numbers and central limit theorem, normal, t, and chi-square distributions, confidence intervals and hypothesis testing and simple linear regressions. A MAT 370 is a one semester introduction to probability and statistics intended primarily for science or engineering majors who have completed two semesters of calculus. Students cannot apply both A MAT 362 and A MAT 370 or both A MAT 363 and A MAT 370 toward the requirements for a Mathematics major. A MAT 370 fulfills the probability/statistics requirement for the Mathematics BA. A MAT 367 and A MAT 370 can be one of the two sequences required for the B.S. in Mathematics. Students who expect to do graduate work in mathematics or statistics should take both A MAT 362 and A MAT 363, not A MAT 370. **Course Description Part II:** The first course description is taken from the university bulletin. This second description is meant to give you an idea of how the course will actually proceed. I divide this course into three parts. The first part covers chapters two, three, and four, in the required text. Broadly speaking, this part is an introduction to basic probability theory together with discrete and continuous random variables. I should mention looking at the STAM test requirements it seems like we cover all the variables required for that test. The second part of the class covers chapters five and seven upon joint distributions, random samples, the central limit theorem, as well as confidence interval methods. Part three, the final part of the course, will cover chapters eight and twelve in the required text. The final topics we therefore cover are those of hypothesis testing and linear regression.

Exam Policy: There shall be one exam after each part of the course

mentioned in course description part two, above. The exams corresponding to parts I and II provide the scores used to compute the in-class exam portion of your grade, below. The exam corresponding to part three of the course is used to compute the final exam portion of your grade, below.

Homework Policy: As mentioned alongside the textbook heading, we shall use the online course resource webassign to assign and grade homework. I shall assign homework at the end of each section we complete in class together. To sign up, visit www.webassign.com and either enter or purchase an access code. Once you have signed up, you will need the following course key to join our class: **albany 4663 8520**

Excuse Policy: We adhere to the university guidelines for academic integrity pertaining to medical excuses etc.

Academic Integrity: Obviously cheating and dishonesty are forbidden in this class. More details on the university's academic integrity policy can be found at www.albany.edu/undergraduatebulletin/regulations.html

Disability Accommodations: Accommodations are provided to students with documented disabilities. If one has a documented disability that requires accommodations during in-class examinations or some other aspect of the course, please notify the disability resource center at dr@albany.edu. The DRC shall alert me that accommodations are required and they shall be provided in accordance with the university policy.

Religious Observances: Absence due to religous observances are permitted by New York State Law. One is allowed to be excused from class without penalty to observe their religious practices. Opportunities to make up work missed because of religious observances will be provided by the instructor. Any accommodations requested by the student of the instructor for religious observance shall be provided.

Classroom Behavior: Please do not have any cellphones out during class.

Grade Distribution:

- 25 % Homework
- 50 % In-Class Exams
- 25 % Final Exam

Grading Scale: A 94-100 %, A- 93-90 %, B+ 89-87 %, B 86-83 %, B- 82-80 %, C+ 79-77 %, C 76-73 %, C- 72-70 %, D+ 69-67 %, D 66-63 %, D- 62-60 %, E less than or equal to 59 %

Course Objectives: The objectives of this course are to familiarize students with the major distributions of statistics in the sense of which distributions are most commonly used in industry and applications. Besides such familiarization, one also learns of major statistical techniques in the same sense of major as above. For example, we study the central limit theorem, null hypothesis testing, anova and linear regressions. By the end of the course, a student should be able to competently recognize which distribution is appropriate to solve a problem or to use in an application and what other additional techniques may be useful and how those techniques can be used.

I. Course Title: AMAT 403 Life Contingencies I

II.Location and Time: Tuesdays and Thursdays 10:30 am –11:50 am, via zoom.

III. Instructor: Karin Reinhold, PhD, Associate Professor of Mathematics
Office: ES 132D
Office Hours: Tuesday and Thursday noon-1, Wednesdays 1-2pm, via zoom.
Additional time by appointment.
E-mail: reinhold@albany.edu
Telephone:

IV. Course Description: Treatment of single and joint lives including mortality functions, various kinds of annuities and life insurance, premiums, reserves and standard actuarial notations for these concepts.

Prerequisite: Grades of C or better in Mat 301, 362 and 363.

Description of the Course: In conjunction with Mat 464 and Mat 404 these courses cover the content of SOA Exam LTAM and the life contingencies material on CAS Exam 3L.

Topics covered: life insurance, survival models, life tables, insurance benefits, annuities, and premium calculation.

Course Objectives: The purpose of each item in the syllabus is to develop the candidate's knowledge of the theoretical basis of certain actuarial models and the application of those models to insurance and other financial risks.

- A thorough knowledge of calculus, probability, and interest theory is assumed.
- Knowledge of risk management at the level of Exam P/1 is also assumed.

The course is structured to meet the educational needs of students who major in Actuarial Studies and/or are preparing for the SOA Exam MLC / CAS Course 3L, jointly administered by the Society of Actuaries (SOA) and the Casualty Actuarial Society(CAS).

Our goal is to provide an understanding of the fundamental concepts of life contingencies, and how these concepts are applied in calculating present and accumulation values for various streams of cash flows as a basis for future use in: reserving, valuation, pricing, asset/liability management, investment income, capital budgeting and valuing contingent cash flows.

The primary objective is for students to understand the learning outcomes at a high enough level in order to pass the SOA/CAS Exam. We also hope to develop effective study skills that will help students prepare forfuture professional examinations, to improve presentation and communication skills, andto increase personal responsibility.

Learning Outcomes

- Understand how decrements are used in insurances, annuities, and investments.
- Understand the models used to model decrements used in insurances, annuities, and investments and calculate probabilities based on those models.

- Understand the non-stochastic interest rate models used to calculate present values and accumulated values of cash flows and calculate present values and accumulated values of cash flows.
- Understand the models used to model cash flows of traditional life insurances and annuities and calculate the present values of the cash flows.
- Understand reserves as liabilities.
- Understand net (benefit) reserves and calculate net (benefit) reserves for traditional life insurances and annuities.
- Understand how concepts presented for traditional life insurances and annuities extend to non-interest sensitive insurances other than traditional insurances (examples include: disability income insurance, product warranty insurance, defined benefit pension plans, and health insurance).
- Understand the models used to model cash flows for basic universal life insurances and basic variable annuities and calculate contract level values.
- Understand the models used to model cashflows of basic universal life insurance and basic variable annuities and calculate the present values of the cash flows.
- Understand the net (benefit) reserve for and calculate net (benefit) reserves for basic universal life insurances and basic variable annuities.

- Understand the relationship between expenses and gross (contract) premium and calculate contract level values based on the gross (contract) premium for life insurances and annuities, including gross (contract) premium reserve and asset share.

VI. Instructional Material

Textbook: Actuarial Mathematics for Life Contingent Risks (2nd Edition), by Dickson, Hardy, and Waters, is published by Cambridge University Press, is available from the University bookstore, and is required.

Chapters 1-7,will be covered in AMAT 403 and chapters 8 - 11 will be covered in AMAT 404.

Supplementary Notes for Actuarial Mathematics for Life Contingent Risks. This document can be downloaded at no cost from the Cambridge UniversityPress website. http://www.cambridge.org/gb/knowledge/isbn/item2703201/?site_locale=en_GB&display=genresources&anchor=true

Calculator/Excel: Currently the Society of Actuaries (SOA) approves the following calculators: Texas Instruments BA-35, BA II plus, BA II plus Professional,30X, and/or 30Xa. I don't require any but a familiarity with Excel will be handy in a couple of assignments.

Other Study Materials: Visit www.actexmadriver.com or www.actuarialbookstore.com for various study aids.

Study Notes Available from the Society of Actuaries: www.soa.org. These include sample questions and old examinations (Course 3).

VII. Instructor Goals for Students

In addition to mastering the mathematical content described in Learning Outcomes, I hope that students

1. be positive contributors in class,
2. are honest with self and others,
3. take responsibility for learning the course content,
4. improve self, and
5. for those wishing to become actuaries, master the material well enough to progress through the professional examination system and become valuable members of the actuarial profession.

Behavior that I wish to encourage:

- honesty (with self, peers, me),
- learning/understanding (e.g. defining variables, you are the audience),
- discovering and challenging self and peers (names, strengths, weaknesses),
- helping class,
- modeling productive behavior,
- exceeding expectations,
- participation,
- communication, and
- taking responsibility (no excuses).

Behavior that I wish to discourage:

- dishonesty (claim understand in class and while doing homework, but not on exams),
- memorizing formulas,
- looking at solutions prior to attempting yourself,
- abusing solutions manuals.

VIII. Instructor Specific Course Policies:

A. **Make-up work:** Make-up work is a rare event. If you must miss a scheduled exam, you must make alternative accommodations with me (typically taking theexam before it is scheduled).
B. **Cheating:** It is bad, do not do it. Cheating during an examination will result in a letter grade of F. For exams online, we will follow the honors code.

C. **Class Distractions:** You will make the necessary arrangements so that cell phones, watch alarms, mechanical erasers and the like do not disturb you and/or your class mates during class.

D. **Learning Situations Outside of Class:** Following presentations in class is a good start to understanding, being able to complete problems on your own shows a higher level of awareness, and being able to explain solutions to others demonstrates exceptional insight. Therefore, you are encouraged to form study groups. I am available during class, during scheduled office hours, and by appointment. I hope that you feel comfortable receiving help from me in a timely manner. I look forward to helping those motivated students who have attempted their homework. Bring your work into class and or office hour to discuss your confusion.
E. **Extra Credit:** It is a rare event. Extra work is not a substitute to learning the material in a timely fashion. It is inappropriate for you to request extra credit work.
F. **Professionalism:** Students are expected to maintain appropriate behavior in the classroom and other activities that reflect the actuarial program and university.

IX. University Policies and Services

- **Honor Code:** The core values of the University at Albany are learning, discovery, freedom, leadership, individual opportunity and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, fairness, and respect toward peers and community.
- **Students with Disabilities:**The University at Albany provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, students with disabilities should contact the Disability Resource Center: 442-5490 http://www.albany.edu/disability/

- **Policy on Academic Dishonesty:** Students who violate university rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failing in the course and/or dismissal from the University. For clarification and interpretation of the regulations, students should contact the Office of the Vice Provost for Undergraduate Education, Lecture Center 30.
- **UAlbany Division of Student Success:** http://www.albany.edu/undergraduate_bulletin/student_affairs.html
- **UAlbany Counseling Center:** Suite 104 400 Patroon Creek Blvd Albany, PHONE (518) 442-5800 Email consultation@albany.edu, or visit the website at www.albany.edu/counseling_center/The Middle Earth Café website is a non-commercial, non-profit service of the Middle Earth Peer Assistance Program, an agency staffed by undergraduate students and supervised by professional psychologists at the University at Albany Counseling Center. The site aims to provide quality information about mental health and behavioral issues affecting college students in order to support our students. We also wanted to provide an alternative to the Middle Earth telephone hotline (518-442-5800) for students who prefer to communicate with us online.

X. Delivery System:

This is a synchronous course which means that it has days, as stated at the beginning, where the whole class meets. It is important that you attend these meetings because we will be working on problem sets and you can discuss with me approaches to the problems right there during the meeting. The recordings of these meetings will be available on Blackboard.

This is your course. The responsibility of learning the course objectives and attaining your learning outcomes is entirely your responsibility.

We'll be interacting on zoom during class time and I will be available for office hours. I am here to help you learn the content and guide you. Videos of the class will be available afterwards on Blackboard.

Drills, assignments and exams will be posted on Blackboard.

It is my hope that you develop a working group with class mates with whom you can consult and share ideas. A few of the assignments are group projects that will require teamwork.

The learning journey and development of self-inquiry is your own and what you make of it.

XI. Grading Information

A. Definition of Letter Grades: The following scale will be used as a guide to assign grades at the end of the term. Be careful using this scale on any individually scored work. Some exams/assignments are easier (most students score substantially higher) than other exams/assignments. It is your job to maximize your total points. A student's final class average is the weighted average of their raw average scores based upon graded work.

- [90%,100%] A/A-Achievement of distinction with an unusualdegree of intellectual initiative
- [80%,90%) B+/B/B-Superior work
- [70%,80%) C+/C/C-Average knowledge attainment
- [60%,70%) D+/D/D-Unsatisfactory, but passing
- [0%,60%) F Failing

B. Assessment During the Term:

- From the teacher - students will receive feedback on their homework, while working in groups, during question and answer periods, during office hours, and during exams;
- From other students – during study sessions and projects;
- From oneself – while working on homework problems, in-class examinations, while discussing these concepts with others, and on the comprehensive final examination.

C. Homework:

As mentioned previously, my goal is expose topics of actuarial models to UAlbany students. I trust our goals include demonstrating content proficiency by obtaining a passing score on SOA Exam LTAM and improved communication skills. We consider the prompt and accurate completion of homework to be the single most important factor in student learning. It is my expectation that students study for this class (and the professional examination) as a model for future study. I recommend that students keep (and bring to class) a homework notebook of all assigned problems. You may choose to keep some notes, other exercises, sample examinations, projects, this syllabus, and etcetera with the notebook.

Assigned Problems: One of your goals should be to attempt and solve all appropriate homework problems (from this text and elsewhere). If specific exercises will be assigned and collected, they will be announced in class and in Blackboard. Assigments consist of Drill problems to practice basic skills learned (done in Blackboard) and sets of problems for practice. I will be collecting some of these problems. They tend to have a higher level of difficulty than the drill problems and so we'll be going over how to approach

problem in class.

D. Typical Point Scale:

- Exam 1, 2 & 3: 100 points each (300 pts total)
- Drills and assignments, other: 200 pts

Penalties:

- Late Work 25% if complete within one day, 50% complete within a week, but after a day100% if complete after one week.
- Cheating on an Examination Course grade is F.

E. Attendance: It is your responsibility to be aware of what was covered in class on a day that you had to miss a class. Be advised that there is no makeup for activities missed on a day that you did not come to class. There is no reason to miss an exam other than getting sick (bring note from doctor), being on a team that has a game at the same time an exam is given (bring a note from your coach), or a death or serious illness in your family (bring a note from your family). In the event you cannot attend/take an exam, you must notify me in advance, otherwise your grade for that exam will be 0. You can contact me by phone (leave a message if I'm not in), stop by my office (leave a note if I'm not in) or send me an e-mail.

F. Academic Integrity: I expect you to behave with the highest standard of academic integrity in all graded work for this course. This means that I expect you to treat all graded assignments as work to be conducted privately, unless otherwise instructed.

For more detail about UAlbany's Standards of Academic Integrity:

http://www.albany.edu/undergraduate_bulletin/regulations.html

Discussion of home work problems is permitted and encouraged. But you have to write your problems in your own words. If you work out problems with other students, do not copy the answers. Instead, go take a 30-minute walk, and then write up the answer on your own without the aid of other people. Copying work that is not yours is plagiarism, even if the work was done as part of a discussion of a problem. Sharing your work with another student on an individual assignment is a violation of the academic integrity policy called "facilitating academic dishonesty." This violation is as serious as any other violation of the academic integrity policy. In general, you are permitted to discuss an assignment with other students, but you should write your own assignments. You should not share your individual work with any other student by electronic means because this encourages the copying or stealing of ideas (i.e.,

plagiarism). You should not share your group work with any other group by electronic means because this encourages the copying or stealing of ideas.

Group Work: All group members must sign the front page of assignments to certify that

- all members participated in the assignment
- no member plagiarized or cheated on the assignment
- no member facilitated academic dishonesty by inappropriately sharing this assignment with others. If you are allowed to discuss assignments in a group, use the rule described above: If you work out problems with other students, do not copy the answers. Instead, take a 30-minute walk, and then write up the answer on your own without the aid of the group work. Copying work that is not yours is plagiarism, even if the work was done as part of a discussion of a problem. Graded assignments will be explicitly designated as "group" or "individual."
- For group assignments, you will work on the assignment within your team but may not share information with any other team.
- For individual assignments, you can discuss problems with other students but you must write your own version, in your own words.
- For Exams, you will work individually, without consulting with other students or outside sources.

XII. Schedule

Changes: This syllabus is subject to modification. Topics covered may change according to the amount of material we are able to cover and practice during class time. Any changes to exams will be announced in class.

AMAT 403 Tentative Schedule

- Aug 25: Syllabus & quick intro: §2.1-2.3 Survival models, force of mortality. HW=2.1 a-d
- Aug 27: §2.4 Actuarial Notation #§ 2.5 Mean and Standard Deviation. Practice notation with simple models. HW: 2.1 e-g, 2.2, 2.3, 2.5, 2.6, 2.7, 2.8, 2.10, 2.12, 2.13, 2.14
- Sept 1: practice actuarial notation: Ex2.6 Makeham formula. Compute the survival function. Ex 2.12 § 2.6 Curtate Future Lifetimes. Expected Complete Future Lifetimes HW: 2.5, 2.6, 2.7, 2.8, 2.10, 2.12, 2.13, 2.14
- Sept 3:(Last day to drop w/o a W) § 3.1 Life Tables§ 3.2 Fractional age assumptions
- Sept 8: § 3.4 National Life Tables § 3.7 -3.9 Select and ultimate
- Sept 10: § 4.1 -§ 4.4 Assumptions and Valuation of Insurance Benefits

AMAT 404 Life Contingencies II - Spring, 2020 - 3 Credits

MWF 10:25 A.M. - 11:20 A.M. in ES 143.
Instructor: Professor Martin Hildebrand
Office: ES 137A
Office Hours: By Appointment
Phone: 518-442-4016
E-mail: mhildebrand@albany.edu
Text: *Actuarial Mathematics for Life Contingent Risks*, 2nd ed, by Dickson, Hardy, and Waters.
Prerequisite: Mathematics 403 or 503A.

Course Description

This course provides further concepts related to life contingent risks for those students who have had a semester-long course on life contingent risks. These concepts include multiple state multiples, multiple decrements, joint life and last survivor models, dependent future lifetimes, and pension mathematics. This course is partial preparation for the actuarial exam LTAM.

Course Assignments and Attendance

There will be homework assignments most weeks. There also will be two in-class tests and a final exam. Late homeworks will be accepted only at the discretion of the instructor and possibly for reduced credit; otherwise homeworks not submitted on time will receive a score of 0. Missed tests or final exams will receive a score of 0 unless an acceptable reason for a make-up test or exam is provided. Be prepared to provide documentation of the reason, and make your request promptly. Note that the University Medical Excuse policy is available at http://www.albany.edu/health_center/medicalexcuse.shtml.

Stuidents should read the sections covered in the text and should explore additional sections of the text.

While I do not formally anticipate taking attendance, students are responsible for announcements made in class and material covered in class even when the students are absent. Be advised that frequent absences may reduce your learning and hence your grade.

The Blackboard online system may be used for some announcements and other course-related purposes. Details will be announced in class.

Cooperation and Academic Dishonesty

In general, students may discuss course material with each other. While some cooperation on homework is OK, students should not merely copy each other's answers. Students should not cooperate with each other or receive outside aid during tests or the final exam. Violations constitute academic dishonesty and are subject to both disciplinary sanction

and reduced or failing grades. Even after a test, posting the test online without permission may violate copyright laws.

Students should be aware of the Standards of Academic Integrity in the *Undergraduate Bulletin*; see

`http://www.albany.edu/undergraduate_bulletin/regulations.html`

Classroom Behavior

While I do encourage students to ask questions or to respond to questions I ask, students should be respectful of others in the classroom and should avoid disruptive behavior. In particular, ringing cell phones can be disruptive, and thus if you are carrying a cell phone, it should be turned completely off during classes (as well as tests and the final exam). If you believe that you have unusual circumstances which require you to be able to respond to cell phone calls even in class, please discuss the matter with me.

Grades

30%	Homework assignments
20%	Test 1
20%	Test 2
30%	Final Exam

I anticipate dropping the lowest homework score. The exact translation between the numerical average and course grade is at the discretion of the instructor. This course is graded on the A-E scale. Grades may be lowered in the event of academic dishonesty or for extreme examples of disruptive classroom behavior. Incomplete grades (I) will be provided only when the student has nearly completed the course but completion is delayed due to circumstances beyond the student's control (e.g. hospitalization during the final exam).

Students with Disabilities

Students with *documented* disabilities may request reasonable accommodation. Such students should be aware of the Disability Resource Center in Campus Center 130 (telephone 518-442-5490); this office can help disabled students obtain the needed documentation as well as help with the accommodations needed.

The points will be converted to percent scale grades, and then letter grade as follows:

A: 93–100 | A-: 90–92 | B+: 87–89 | B: 83–86 | B-: 80–82 | C+: 77–79

C*:73–76 | C-: 70–72 | D+: 67–69 | D: 63–66 | D-: 60–62 | E: below 60

* C is the minimum grade for S/U grade. Please refer to related UAlbany policies for details.

Disruptions to the Semester or Final Exam

In the event that emergency circumstances disrupt the semester or the final exam, the instructor may notify class members of course-related updates via announcements posted on Blackboard or via e-mail if warranted by the circumstances and possible under the circumstances. Such e-mail would be sent to the address provided to the instructor by MyUAlbany. Such emergency circumstances may require changes in the schedule or in the grading scheme.

Approximate Schedule

Week	Material Covered
1/22-24	8.2, 8.3
1/27-31	8.3, 8.4
2/3-7	8.5, 8.6
2/10-14	8.7, 8.8
2/17-21	8.9, 8.10
2/24-28	Test 1, 8.12
3/2-6	8.13, 9.2
3/9-13	9.3, 9.4
3/16-20	Spring break!
3/23-27	9.5, 9.6
3/30-4/3	9.7, 10.2, 10.3
4/6-10	Test 2, 10.4
4/13-17	10.5, 10.6
4/20-24	10.7, 12.2
4/27-5/1	12.3, 12.4
5/4-5	Review

The exact sections covered are subject to change. The dates of the test are approximate and subject to change. The date of the final exam is as announced by the Registrar's Office.

Learning Outcomes:
Students will expand their learning from A MAT 403 with emphasis on two or more lives in combination and on multiple causes of decrement. Students will understand population theory, multi-life statuses, multi-life functions, reversionary annuities, multiple-decrement functions, primary and secondary decrements, and applications of multiple-decrement functions.

AMAT409 Vector Analysis (Spring, 2021) (3 credits)

Text: Vector analysis (6th ed.), J. E. Marsden and A. Tromba

Instructor: Dr. Ron Yang,
Office Hours: 11-12 (TuThr) or by appointment at Zoom.
Contact: phone: 2-4640; email: ryang@albany.edu
Prerequisite(s): A MAT 214.
Course Objectives: This course is a continuation of Calc III. We will strive to cover all 8 chapters of the textbook. Major topics include inner product, cross product, determinants of matrices, derivative and integrals in high dimensions, extremal values, curves and surfaces and differential forms (time permitting). This course is designed for senior undergraduates and graduate students in math.

Homework: Homework is assigned at each class and will be collected each Sunday. Although HW will not be graded problem by problem, it will be a basis for possible extra credits at then end of semester.

Quiz and Test: There is an hour-long quiz every week on Tuesday, and quiz problems are selected from HW, with possible minor modifications. There will be a two-hour exam near the end of each month. Problems will be similar to that in the quizzes. Dates will be scheduled later. 80% of the test problems will also be of homework-type while the other 20% will be more challenging. There is no make up test, those with difficulties should make arrangement for an early test.

Percentage: quiz 40%, exams 20% each.

Grading: A: 90-100, B:80-89, C:70-79, D: 60-69, E: 0-59.

Classroom Manners: Arrive before class starts, leave after class. Atten-dance will be checked from time to time and will affect grade. Special cases need permission from professor. Turn off cell phone during class. Cheating on quizzes or exams is strictly forbidden. Please read academic integrity regu-lations at http://www.albany.edu/undergraduate_bulletin/regulations.html.

Course Description: Classical vector analysis presented heuristically and in physical terms. **Topics include** the integral theorems of **G**auss, **G**reen, and **S**tokes.

AMAT 416 - Partial Differential Equations
3 Credits
Fall 2021
Instructor: Ivana Alexandrova, Associate Professor of Mathematics

Welcome to the course! I hope you have an enjoyable and productive semester.

Lecture:	Tu Th 12:00 pm - 1:20 pm in ES 144
Office Hours:	Tu Th 10:25 pm - 11:55 am in ES 132F or by appointment
Contact Information:	ES 132F, ialexandrova@albany.edu, 518-442-4623
Prerequisites:	AMAT 311 or equivalent.
Textbook:	Partial Differential Equations: An Introduction, Walter Strauss, 2nd Ed., Wiley, 2008.
Topics covered (tentative):	The partial differential equations of classical mathematical physics. First order equations, separation of variables, eigenvalue problems, Fourier series and other orthogonal expansions.

Course Objectives

The broad objectives of this course are as follows:

- Learn the most common PDEs and develop an understanding of how PDEs are derived.
- Learn how to classify PDEs according to different criteria.
- Learn the most fundamental tools and techniques used to solve the most common PDEs and classes of PDEs.

Students successfully completing the course should be able to:

- Identify some of the most common PDEs.
- Classify PDEs according to several different criteria.
- Solve PDEs with different boundary conditions using the tools and techniques introduced in the course.

Course Description: The partial differential equations of classical mathematical physics. Separation of variables, eigenvalue problems, Fourier series and other orthogonal expansions. First order equations, Green's functions, Sturm-Liouville theory, and other topics as time permits.

Homework:

I will give you homework at the end of every lecture. On Tuesday of every week of the semester, starting with the second week of the semester, I will tell you which of the homework problems assigned so far in the course you have to write up and turn in for a grade at the beginning of the following lecture. Each homework problem will be scored individually and your five lowest homework problem grades will be dropped from the computation of your final grade.

You may discuss the homework problems with your classmates as well as consult external sources but the solutions you write up for a grade must be your own. You must also acknowledge any sources you have used in solving the homework problems. Copying another

student's solutions, allowing them to copy yours, or using external sources without proper acknowledgment are forms of plagiarism and will be sanctioned accordingly.

Please turn in your homework to me at the beginning of the lecture on the day on which it is due. Homework will not be accepted later than 15 minutes after the start of the class and you will not be allowed to spend the first 15 minutes of the class period working on your homework. If you do not come to class, you have to turn in your homework before the beginning of class.

At the beginning of each lecture one of you will present the solution to one homework problem assigned during the last two lectures. Everyone will be expected to make one such presentation during the semester and you will be able to choose when to make the presentation and the solution to which problem to present. The problem you choose to present may not be one of the problems assigned to turn in as your written graded homework.

Final Presentation:

You will each choose a topic on which to make an up to 30 minute presentation in front of the class at the end of the semester. Your presentation may consist of the solutions to several problems not previously assigned as homework, which are unified by a common theme, for example, you may choose to solve several problems illustrating the properties of Bessel functions. You may choose your topic or ask me to suggest a topic to you and begin working on it at any time during the semester but the topic of your presentation must be approved by me. Your presentation must also include at least one external reference. You may consult with me during the preparation of your presentation but you will be responsible for its final form. Your presentation will be graded on its clarity, accuracy, and depth, as well as the independence you have shown in preparing it.

Making Up Missed Assignments:

You will be allowed to make up missed assignments only if you can document with an official document or a written and signed statenent (see also the next Section of this syllabus) that you have had to miss them for a good reason such as an illness, family reasons, representing the University in some official capacity, etc.

Attendance:

Students who attend lecture regularly and participate in the class activities find the class easier and more enjoyable. The work we will be doing in class this semester will be important. You will be analyzing and solving problems with your classmates regularly. This in-class work allows you to share and workshop ideas as well as get immediate feedback from me on your progress. While this in-class work is a key part of your learning, missing this in-class work might be unavoidable in the case of illness or emergency. If you are sick, please stay home and contact your healthcare provider. In the case that missing class is unavoidable, I will inform you of what we have covered in class and you will be encouraged to learn this material on your own with as much help as you need and I can provide to you outside of class. Please note, however, that this will involve more work for you and will probably not result in as much learning as the in-class version. Your best route to success and learning is to attend all classes unless you feel unwell. When in class I will expect you to give it your full attention as well as not distract the other students. You will receive attendance for a lecture only if you are present for the entire duration of the lecture and if you have given it your full attention. For example, you will be considered absent if you use an electronic device or read a newspaper during the lecture. The best way to excuse an absence will be to provide written

evidence that you had an official reason to miss class (e.g., doctor's note clearly stating that you had to be absent during the time of the lecture). Please review also the University's Medical Excuse Policy at http://www.albany.edu/health_center/medicalexcuse.shtml. If you had a good reason for missing class but cannot provide a written evidence of that, you will be allowed to provide a written and signed statement explaining that reason and will be allowed to make up any assignments you might have missed because of that. If your statement is later found to be untruthful, you will receive an absence for the missed class(es) covered by your statement, your scores on the assignments you were previously allowed to make up will be changed to 0, and you may face other academic sanctions in accordance with all University policies.

For every unexcused absence after your fifth unexcused absence a point will be deducted from your course grade (see below how it is computed) if the latter is below 90 before any curve is applied.

Academic Integrity:

We will adhere to the University's Standards on Academic Integrity as outlined here: http://www.albany.edu/undergraduate_bulletin/regulations.html.

Course Grades:

Your course grade will be computed using the following weights on the components of the course:

Oral homework presentation	5%
Class participation	5%
Final presentation	10%
Written homework	80%

Course letter grades will be assigned according to the following scale:

%	Letter Grade	%	Letter Grade
93 – 100	A	73 – 76	C
90 – 92	A-	70 – 72	C-
87 – 89	B+	67 – 69	D+
83 – 86	B	63 – 66	D
80 – 82	B-	60 – 62	D-
77 – 79	C+	0 – 59	E

COVID-19 Protocols

Throughout the semester you will be expected to follow all current UAlbany COVID-19 protocols. It is your responsibility to know what they are at any point during the semester.

AMAT 424, Advanced Linear Algebra - 3 Credits

Instructor Dr. Changlong Zhong
Office ES 132E
Email czhong@albany.edu **(Important: when sending me emails, include "AMAT 424" in the title).**
Lectures MWF, 11:30-12:25, BA0227
Office Hours (From August 29th to December 12th, subject to change)
MW, 10:25AM-11:20AM, or by appointments.
Course webpage
See Blackboard for grades and announcements of this class.

Textbook Linear algebra done right, by Axler, Sheldon, 3rd edition.

Description and Topics:

Duality, quadratic forms, inner product spaces, and similarity theory of linear transformations. Prerequisite(s): AMAT 220 and AMAT 326, or permission of instructor.

Course Objectives To understand the abstract notion of vector spaces, and develop a deep understanding of various properties of matrices from the point of view of linear transformations.

Tutoring room The department maintains a tutoring room in ES 138, staffed during business hours Monday-Friday. However, students in 100 level courses have priority for this service.

Homework There will be homework every one or two weeks, but they will not be collected or graded.

Quiz There will be a quiz on every Friday, unless otherwise mentioned. The quiz questions will be chosen from the homework questions. Attending the lectures and working on the homework will prepare you for the quizzes and the exams. I will drop the lowest score of the quizzes.

Test There will be one midterm. The date will be announced later.

Grading Quiz: 20% Test: 30%; final exam: 45%; attendance & in-class performance, 5%.

There will be no make-up test or make up quiz.

All exams are closed book exams; no notes, no books, no mobile phones (mobile phones are not to be brought to an exam), and no calculators.

Class Policy

You are expected to arrive to class on time, and be ready to participate. All electronic devices are to be silenced or turn off during class. Any loud, disruptive, or disrespectful behaviour will not be tolerated, and you will be

asked to leave the class. Be sure to be on time for class. It is important that you attend each and every class. If you missed any class, then it is your responsibility to get class notes, assignments, or announcements that were given in class.

Academic Honesty

The University's policy on academic honesty will be strictly enforced. Cheating of any form will not be tolerated and can result in a grade of zero for all parties involved, regardless of the level of involvement. Cheating will be reported to both the departmental chair and the university, which may result in disciplinary action from the university. The policy can be found online:

`http://www.albany.edu/undergraduate_bulletin/regulations.html`

Important Dates

- 8/29, Monday, class begins
- 9/5, Monday, Labor Day, no classes
- 9/12, Tuesday, last day to drop semester length course without receiving a "W"
- 10/3, Monday, Holiday, no class
- 10/12, Wednesday, Holiday, no class
- 11/23-25, no class
- 12/12, Monday, last day of classes

Course Grade:

GRADING SCALE
A = 100-93 | A- = 92-90 | B+ = 89-87 | B = 86-83 | B- = 82-80 |C+ = 79-77 | C = 76-73 | C- = 72-70 | D = 69-65 | E = Below 65 points

AMAT 425

An Introduction to Number Theory and Cryptography, Spring 2022

3 Credits

Instructor: Professor Antun Milas

WWW: `www.albany.edu/~am815139`

Class Format: in person MW: 8:00-9:20

Attendance: It is expected that you attend at least 50% of the lectures in order to receive a passing grade.

Office hours: M 9:30-10:30, W 10:30-11:30 in ES 123A, or by appointment (including Zoom sessions).

Contact: (no phone), only by email `amilas@albany.edu`

Prerequisites: Classical algebra AMAT 326 or equivalent (specifically, mathematical induction, congruence classes mod m, polynomials, long division)

Course Description: Divisibility, congruences, quadratic reciprocity, Diophantine equations, sums of squares, cubes, continued fractions, algebraic integers.

Course objectives and list of topics:

Number Theory is the area of mathematics whose aim is to uncover the many deep and subtle relationships among different sorts of numbers, particularly properties on integers. Fundamental to questions in number theory is the concept of *prime numbers* (e.g., 2,3,5,7,11,...). In this course, students will gain acquaintance with many basic topics in elementary number theory. Students will learn about primes, unique factorization, congruences, divisibility, Diophantine equations (e.g. Pell's equation), primitive roots, and quadratic reciprocity. We shall also discuss several more advanced topics including elliptic curves.

Until the mid-20th century, number theory was considered the purest branch of mathematics, with no direct applications to the real world. The advent of computers and digital communications revealed that number theory could provide unexpected answers to real-world problems especially in cryptography. Mathematicians have shown how number theory leads to the creation of simple codes that are so secure that even the National Security Agency is unable to break them. In this course, students will learn basic concepts behind cryptography, with a focus on public key encryptions such as RSA (the most famous public-key cryptosystem). Its security is based primarily on the difficulty of the factorization of large positive integers. We will also analyze "attacks" on RSA using Diophantine approximation.

Detailed list of topics covered (not necessarily in this order)

1. Review of numbers, factorization, congruences.
2. Greatest common divisor.

3. Chinese Remainder Theorem, Fermat's Theorem, Wilson's Theorem.
4. Gauss' Quadratic Reciprocity Law.
5. Applications of the reciprocity law.
6. Public key, simple cryptosystems, RSA.
7. Diffie-Helman key exchange, discrete logarithm.
8. Quadratic rings $\mathbb{Z}[\sqrt{d}]$, $d \in \mathbb{Z}$.
9. The Gaussian integers. Applications.
10. Diophantine approximation and applications in cryptography.
12. Elliptic curves. Group Law. Rational points.
13. Elliptic curves in cryptography.

Texts:

A. Dujella, "*Number Theory*", 1st edition, ISBN-10: 9530308973 (can be ordered from Amazon).

J. Silverman, "*A Friendly Introduction to Number Theory*", 3rd or 4th edition, ISBN-10: 0321816196 (available freely online).

Examination: There will be two take home exams (midterm and final).

Homeworks: There will be weekly homeworks posted on Blackboard.

Grading: Midterm (30%), Final Exam (30 %) and Homework (40 %).

Grades: A, A-$90 - 100\%$; $B\pm$ $77 - 89\%$; $C\pm$, $70 - 76\%$; $D, D+$, $60 - 69\%$; E, $\leq 59\%$..

Absence Due to Religious Observance: New York State Education Law (Section 224-a) requires instructors to excuse, without penalty, individual students absent because of religious beliefs, and to provide equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences. Students should contact the instructor prior to such absences in order to reschedule and accommodate these absences related to religious observations. Students should notify the instructor in a timely manner. More information on Law 224-a can be found here:

`http://www.nysenate.gov/legislation/laws/EDN/224-A`

Medical Excuses: `http://www.albany.edu/health_center/medicalexcuse.shtml`

Academic Honesty: `http://www.albany.edu/undergraduate_bulletin/regulations.html`

AMAT 432 - Foundations of Geometry - 3 Credits

Class. AMAT 432-0001 (2612). Meets TuTh 2:45PM - 4:05PM in ES 146.

Instructor. Cristian Lenart, Office ES-116A, Tel. 518-442-4635, e-mail: clenart@albany.edu.

Course Description: This course is devoted to an axiomatic development of geometry, both Euclidean and non-Euclidean; that is, we define axiom systems for various types of planes, show that they are consistent by constructing models for them, and derive theorems within those axiom systems.

The course is divided into two parts. In the first part, we study *absolute geometry*, which is the common ground between Euclidean and non-Euclidean geometries. This offers us the occasion to learn some useful facts about Euclidean geometry as well, for instance about isometries (linear transformations which preserve distances) of the Euclidean plane. The second part is devoted to non-Euclidean geometries, and in particular to the hyperbolic plane defined by Bolyai and Lobachevski (which has important applications outside mathematics, such as the relativity theory in physics).

I will attempt to cover, in more or less detail, chapters 1-9, 12-14, 16-24, 26. Sometimes, I will have to skip several topics in the book, and will only concentrate on the most important issues in a particular chapter. Only the material covered in class will be examined, but you are encouraged to do extra reading on your own.

Topics: Axiomatic development of absolute geometry, theory of parallels, introduction to non-Euclidean geometry, isometries of the Bolyai-Lobachevsky plane.

Objectives upon completion of the course. The students will be able to approach the classical results in Euclidean geometry using an axiomatic perspective. Then they will become familiar with non-Euclidean geometries. The material taught in this class is useful for proof skills and mathematical reasoning, in general. It is also useful for teaching high-school geometry.

Prerequisites. AMAT 220. Familiarity with mathematical logic and proofs is very helpful.

Textbook. *The Foundations of Geometry and the Non-Euclidean Plane* by George E. Martin, Springer, 1998, ISBN 0-387-90694-0, 3-540-90694-0.

Homework. I will assign homework problems (mainly from the textbook) after each class. You are welcome to work together on them, but the solutions must be written up independently. Two solutions which are written up in an identical way (I mean identical notation, formulation etc.) will be penalized. The homework assigned on each week will de due the following week on Friday. The homework represents a bare minimum amount of work needed, so you are strongly encouraged to solve more problems from the book

on your own, especially since most of them have solutions at the end of the book (of course, starting by reading the solution does not bring you any benefits). Late homework is accepted but will only receive 2/3 of the credit.

Exams. There will be a mid-term exam on October 23, covering the material presented in class from Chapters 1-16. The final exam is scheduled by the University, see the information on its website.

Grading. A-E graded. Grading will be done according to the following percentages:

Homework 40%
Mid-term exam 25%
Final 35%.

		94-100 A	90-93 A-
87-89 B+		83-86 B	80-82 B-
77-79 C+		73-76 C	70-72 C-
67-69 D+		63-66 D	60-62 D-

Office hours. Monday and Friday 11:25-12:20, Wednesday 2:40-3:35 in my office, ES-116A. You are welcome to ask me for help related to the material I covered and the homework, provided that you made some attempts at the problems before.

Absences. Attendance is required as part of your grade. Every absence starting with the fourth will lower your overall score by 5%. Students will not be excused from a class or an examination or completion of an assignment by the stated deadline except for emergencies or other comparable situations; a proof is required. See also the University's Medical Excuse Policy, link below.

https://www.albany.edu/health_center/medicalexcuse.shtml

Absence due to religious observance: These are excused, and opportunities will be made available for make-up examinations, study, or work requirements missed because of such absences; see New York State Education Law (Section 224-A). Students should notify the instructor in a timely manner.

Academic integrity. Plagiarism during the tests or the final exam will result in failing the class; this includes the situation when two virtually identical papers are identified. Such violations may be also subject to penalties outside the course. See

http://www.albany.edu/undergraduate_bulletin/regulations.html;

for more information on the University's Standards of Academic Integrity and Attendance.

Important: You typically will have to spend twice as much time or more on learning the material outside of class than you spend class. In particular, it is very important to work regularly on the exercises in order to test your understanding and in order to master the required techniques. If you encounter difficulties, seek help from the instructor as soon as possible.

Out of consideration for your fellow students' efforts to learn, and your instructor's efforts to teach, you are required to arrive on time for class and to remain seated (barring an emergency) until the class is finished. For the same reasons, please turn off cell phones, and do not send or receive text messages, play video games, read the newspaper, sing, or otherwise goof off and distract other people in the room. Loud eating or drinking, repeated talking while the instructor or other students are talking, or ringing cell phones or pagers are not allowed during the class. Repeated violations of any of the above rules shall be grounds for sanction or dismissal from the class. You are strongly encouraged to actively participate in class and exchange ideas with the instructor and your colleagues.

FALL, 2021, AMAT 452: History of Mathematics - 3 Credits
Class meets in ES 146, M, W 4:30 – 5:50 PM

Instructor: A. SRIVASTAV, ES 319A
Office Hours: M, W, F: 01:55 PM - 02:50 PM

email: asrivastav@albany.edu
Phone: 442-4622

Course Description: History of the development of mathematics, emphasizing the contributions of outstanding persons and civilizations.
Prerequisite(s): A MAT 214, 326, and either 331 or 432.
Course Objective:
The objective of the course is for the students to learn how geometry, arithmetic, trigonometry, number systems, algebra, calculus, and analysis developed in various civilizations. What were the classical mathematical problems?
Who are the outstanding mathematicians and what are their contributions to the development of mathematics by discovering and proving important concepts and theorems?

Readings: 1. Math through the Ages: A gentle History for Teachers and Others, 2nd Edition. By W. P. Berlinghoff and F. Q. Gouvea.

2. Journey through Genius, the Great Theorems of Mathematics by William Dunham (recommended but not required).

Grading:

Three Quizzes:	: 40 points each
Final	: 80 points
Writing Assignments:	200 points
Total	: 400 points

There are five writing assignments. Each assignment is of 40 points. Each writing assignment will require at least 4 pages of writing. There may be substantive revisions of these assignments. Students can improve their work with responsive revisions.

Schedule (subject to change): Quizzes: W 09/22, W 10/20, M 11/22
Final: W 12/08, 3:30 pm- 5:30 pm

Grades: A: 93%-100%; A-: 90%-92%; B+: 87%-89%; B: 83%-86%;
B-: 80%- 82%; C+: 77%-79%; C: 73%-76%; C-: 67%-72%;
D+: 60% - 66%; D: 55%-59%; D-: 50%-54%.
D+: 60% - 66%; D: 55%-59%; D-: 50%-54%.

Incomplete grades, absences, make-ups and academic integrity:
(Please see the appropriate sections of the Undergraduate Bulletin)

1. http://www.albany.edu/health_center/medicalexcuse.shtml
2. http://www.albany.edu/undergraduate_bulletin/regulations.html
3. --As you all know, masks are required at all times, with very few exceptions; for all COVID-related information (including what to do if a student tests positive), see
   https://www.albany.edu/covid-19/

4. --You need to complete the COVID-19 protocols affirmation 3 days before coming to campus, see link at
   https://www.albany.edu/hr/assets/COVID-19-Protocols-Affirmation.pdf

5. --You need to submit proof of vaccination at
   https://ps.itsli.albany.edu/psp/ps92prod/EMPLOYEE/SA/c/UA_SELF_SERVICE.UA_COV_VACC_DATA.GBL?%22%20\

6. --If you are not fully vaccinated, you are required to participate in the weekly surveillance testing program, as well as to complete the daily health screening; see
   https://www.albany.edu/hr/COVID-Resources.php

7. --Two important resources: the Counseling and Psychological Services
   https://www.albany.edu/counseling_center/

   and the EAB platform for advising and student success, available directly on the MyUAlbany webpage.

Topics:
Pythagorean Triples and Fermat's Last Theorem; Ruler-Compass Constructions and Euclidean Numbers; Euclid's Elements; The Parallel Axiom and Non-Euclidean Geometry; Archimedes and Measurements of Circle; Heron's Formula; Zero and Negative numbers; Hindu-Arabic Decimal Number System; Mathematics of China, India and Arabia; Pell's Equations; Chinese Remainder Theorem; Solution of cubic and quartic equations by radicals; coordinate geometry; logarithms; Calculus; Newton and Leibniz; Fermat, Euler, Gauss, Abel, Galois, Cantor, Noether; Probability and Statistics, Analysis; Topology; Prominent Women Mathematicians.

I. Course Title: Mat 464 Stochastic Processes – Spring 2019 - 3 Credits

II. Location and Time: Tuesdays and Thursdays 10:15am – 11:35am ES 147

III. Instructor: Karin Reinhold, PhD, Associate Professor of Mathematics
Office: ES 132D
Office Hours: Tuesday, Wednesday and Thursday 2:45-3:45pm
Additional time by appointment or by chance (if I am in my office and willing).
E-mail: reinhold@albany.edu
Telephone: (518) 442-4641 – Office

IV. Grader or Teaching Assistant: None.

V. Prerequisite: Grades of C or better in the probability classes you may have taken: Mat 362, 363, 367.

VI. Description of the Course: Mat 464 Stochastic Processes. In conjunction with Mat 403, these two courses cover the content of SOA Exam MLC. **Topics covered:** Computing probabilities and expected values by conditioning. Discrete time Markov Chains. Poisson Processes. Continuous time Markov chains. Queuing processes. Reliability models. Brownian motion.

VII. Course Objectives: The purpose of each topic in the syllabus is to develop the theoretical basis of certain stochastic processes and their application to the insurance field. A thorough knowledge of calculus and probability is assumed.
Our goal is to provide an understanding of the fundamental concepts of stochastic processes, and how these concepts are applied in calculating simple Survival Models. Markov Chains provide the means to model how an entity can move through different states and have been applied to model real life situations in several fields such as engineering, biology and economics and insurance.

For students who major in Actuarial Studies, this course will help with preparing for the SOA Exam P, Exam MLC of the Society of Actuaries (SOA) and Exam S of the Casualty Actuarial Society (CAS).

We also hope to develop effective study skills that will help students prepare for future professional examinations, to improve presentation and communication skills, and to increase personal responsibility.

VIII. Learning Outcomes

LEARNING OBJECTIVES set forth, usually in broad terms, what the student should be able to do in actual practice. Included in these learning objectives are certain methodologies that the student would be able to explain conceptually in the context of a problem.

KNOWLEDGE STATEMENTS identify some of the key terms, concepts, and methods that are associated with each learning objective. These knowledge statements are not intended to represent an exhaustive list of topics that may be tested, but they are illustrative of the scope of each learning objective.

Learning Objectives	Key Terms
Random Variables • Review and basic properties. Cumulative distributions. Survival functions. • The exponential distribution and the memory-less property. • Definition of stochastic process **Ross 2, 5.2** **Problems Ch 5:1, 3, 4, 9 12(a), 20,**	• Stochastic Process • Exponential random variable • Failure time random variables • Cumulative distribution functions • Survival functions • Probability density functions
• Computing probabilities by conditioning. • Computing expected values by conditioning. • Computing variances by conditioning. • Compound random variables and their moments. • Applications to Random Graphs **Ross 3.1-3.5, 3.7, 5.2**	• Wald's equation • Conditional mean equation • Conditional variance equation • Memory-less property
Discrete Markov Chains • Definition of a Markov Chain • Chapman-Kolmogorov Equations for n-step transition calculations • Classification of states, Accessible states • Ergodic Markov Chains and • steady-state behavior and equilibrium distributions, • absorption probabilities, • queueing theory **Ross 4.1-4.9** **25, 28, 29, 30 33, 35, 52,**	• Absorbing states • Recurrent vs. transient states • Transition step probabilities • Stationary probabilities. • Random Walk • Gamblers ruin problem • Branching Processes • Gibbs sampler
Describe the properties of Poisson processes: • For increments in the homogeneous case • For interval times in the homogeneous case • For increments in the non-homogeneous case	• Poisson process • Non-homogeneous Poisson process • Probability calculations for Poisson process • Compound Poisson Processes

• Resulting from special types of events in the Poisson process • Resulting from sums of independent Poisson processes For Poisson processes and inter-arrival times, calculate: • Expected values • Variances • Probabilities For a compound Poisson process, calculate moments associated with the value of the process at a given time. **Ross 5.3-5.4** **34, 36, 37, 39, 42, 50, 51, 52, 53, 56, 59, 60, 6164, 69, 80, 82, 83, 86.**	
(Optional) Given the joint distribution of more than one source of failure in a system (or life) and using Poisson Process assumptions: • Calculate probabilities and moments associated with functions of these random variables' variances. • Understand difference between a series system (joint life) and parallel system (last survivor) when calculating expected time to failure or probability of failure by a certain time • Understand the effect of multiple sources of failure (multiple decrement) on expected system time to failure (expected lifetime) **Ross 9.1-9.6** **5-9,11**	• Joint distribution of failure times • Probabilities and moments • Time until failure of the system (life) • Time until failure of the system (life) from a specific cause • Effect of multiple sources of failure (multiple decrements) on failure time calculations (competing risk)
Continuous Markov Chains under both homogeneous and non-homogenous states • Definition of a continuous Markov Chain • Kolmogorov Backwards and Forwards Equations for n-step transition calculations • Limiting probabilities **Ross 6.1-6.5** **14, 17, 20, 23, 24, 25, 32, 34,**	• Queuing systems • Birth and death processes
• Definition of Brownian Motion.	• Brownian motion and its moments.

• Relationship to random walks. • Hitting times • Variations of Brownian motion. • applications to option pricing. **Ross 10.1-10.4** **1-7, 10** **12, 14, 15,** **16, 17,** **25, 26, 27, 28, 30,**	

IX. Instructional Materials:
A. Suggested Textbook: Introduction to Probability Models 9th edition is fine, by Sheldon Ross.
B. Study Notes Available from the Society of Actuaries: www.soa.org. These include sample questions and old examinations (Course 3).

X: Instructor Goals for Students: In addition to mastering the mathematical content as described in section VIII: Learning Outcomes, I hope that students 1) be positive contributors in class, 2) are honest with self and others, 3) take responsibility for learning the course content, 4) improve self, and 5) for those wishing to become actuaries, master the material well enough to progress through the professional examination system and become valuable members of the actuarial profession.

1. Behavior that I wish to encourage: honesty (with self, peers, me), learning/understanding (e.g. defining variables, you are the audience), discovering and challenging self and peers (names, strengths, weaknesses), helping class, modeling productive behavior, exceeding expectations, participation, communication, and taking responsibility (no excuses). Ask me for a copy of common excuses.

2. Behavior that I wish to discourage: dishonesty (claim understand in class and while doing homework, but not on exams), memorizing formulas, looking at solutions prior to attempting yourself, abusing solutions manuals, use of words "very, like, it, this, that, they, but", ignorance, wasting the time of your classmates, excuses, complaining, whining, and crying.

XI. Instructor Specific Course Policies:
A. Make-up work: Make-up work is a rare event. If you must miss a scheduled exam, you must make alternative accommodations with me (typically taking the exam before it is scheduled).
B. Cheating: It is bad, do not do it. Cheating during an examination will result in a letter grade of F.
C. Class Distractions: You will make the necessary arrangements so that cell phones, watch alarms, mechanical erasers and the like do not disturb class.
D. Learning Situations Outside of Class: Following presentations in class is a good start to understanding, being able to complete problems on your own shows a higher level of awareness, and being able to explain solutions to others demonstrates exceptional insight. Therefore, you are encouraged to form study groups. I am available during class, during scheduled office hours, and by rare appointment. I hope that you feel comfortable receiving help from me in a timely manner. I will be intentionally unavailable 24 hours before a scheduled examination. I look

forward to helping those motivated students who have attempted their homework. Bring your work into class and or office hour to discuss your confusion.
E. Extra Credit: None. Extra work is not a substitute to learning the material in a timely fashion. It is inappropriate for you to request extra credit work.
F. Professionalism: Students are expected to maintain appropriate behavior in the classroom and other activities that reflect the actuarial program and university.

XII: University Policies and Services
A. Honor Code: The core values of the University at Albany are learning, discovery, freedom, leadership, individual opportunity and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, fairness, and respect toward peers and community.

B. Students with Disabilities:
The University at Albany provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, students with disabilities should contact the Disability Resource Center: 442-5490
http://www.albany.edu/disability/

C. Policy on Academic Dishonesty: Students who violate university rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failing in the course and/or dismissal from the University. For clarification and interpretation of the regulations, students should contact the Office of the Vice Provost for Undergraduate Education, Lecture Center 30.

E. UAlbany Division of Student Success:
http://www.albany.edu/undergraduate_bulletin/student_affairs.html

F. UAlbany Counseling Center:
Suite 104 400 Patroon Creek Blvd Albany,
PHONE (518) 442-5800
Email consultation@albany.edu, or visit the website at www.albany.edu/counseling_center/

The **Middle Earth Café** website is a non-commercial, non-profit service of the Middle Earth Peer Assistance Program, an agency staffed by undergraduate students and supervised by professional psychologists at the University at Albany Counseling Center. The site aims to provide quality information about mental health and behavioral issues affecting college students in order to support our students. We also wanted to provide an alternative to the Middle Earth telephone hotline (518-442-5800) for students who prefer to communicate with us online.

XIII. Delivery System: This is your class. The responsibility of learning the course objectives and attaining your learning outcomes is entirely your responsibility. I will model various teaching techniques including lecturing, group projects, examinations, teamwork, self-inquiry, and student presentations.

My role is to guide you through the learning material. I am your ***Learning Coach***. The syllabus contains a description of the topics for the class. There will be several activities for each class:

(a) pre-class reading of material, (b) pre-class on-line assignment or/and journal entry, (d) in-class assignments, (e) post class homework.

(a) It is very important that you read the material before class and communicate with me about problems with the topics before class.
(b) The pre class assignments will help me see what are the difficulties you are facing. The idea is to do basic problems based on what you have read and your performance will let me know what needs to be emphasized.
(c) The lesson journal is important to help you take important definitions and key topics or results. Each class I will ask to write down in your own words, the journal entry of the day. I will grade the journal entries as "good attempt", "fair attempt", "not even tried".
(d) During class time we will work on problems and more difficult issues concerning the day's lesson. Whenever there is a definition or a main theorem in the assigned lesson, I will include it as part of a class quiz.
(e) The post class homework is designed to practice what you have learned during class.
Of course we will also have exams, four in total.

XIV: Grading Information
A. Definition of Letter Grades: The following scale will be used to assign grades at the end of the term. Be careful using this scale on any individually scored work. Some examinations are easier (most students score substantially higher) than other examinations. It is your job to maximize your total points. A student's final class average is based upon graded work.

[90%,100%] A/A- Achievement of distinction with an unusual degree of intellectual initiative
[72%,90%) B+/B/B- Superior work
[60%,72%) C+/C Average knowledge attainment
[44%,60%) D+/D/D-/C- Unsatisfactory
[0%,44%) F Failing

B. Assessment During the Term: From the teacher - students will receive feedback on their projects, while working in groups, during question and answer periods, during office hours, and during competency examinations; From other students – during study sessions and projects; From oneself – while working on homework problems, in-class examinations, while discussing these concepts with others, and on the comprehensive final examination.
C. Homework: As mentioned previously, my goal is expose topics of actuarial models to UAlbany students. I trust our goals include demonstrating content proficiency by obtaining a passing score on SOA Exam MLC and improved communication skills. We consider the prompt and accurate completion of homework to be the single most important factor in student learning. It is my expectation that students study for this class (and the professional examination) as a model for future study. All students are to keep (and bring to class) a homework notebook of all assigned problems. You may choose to keep some notes, other exercises, sample examinations, projects, this syllabus, and etcetera with the study aid.
Assigned Problems: One of your goals should be to attempt and solve all appropriate homework problems (from this text and elsewhere). If specific exercises will be collected, they will be announced in class.
Scoring Rubric: Your homework notebook *may* be collected and graded at random times throughout the term.

D. Typical Point Scale and Examination Dates:
Exam 1, 2, 3 & 4: 100 points each (400 pts total)
Quizzes, projects, assignments, other: 200 pts
Exam dates:

Exam 1 Feb 14
Exam 2 Mar 7
Exam 3 Apr 4
Exam 4 May 4 (day of take home part) & 9

Penalties:
Syllabus Understanding **-25** points for failure to understand this contract.
Late Work 25% if complete within one day, 50% complete within a week, but after a day 100% if complete after one week.
Cheating on an Examination Course grade is F.

I. Course Title: AMAT 465Applied Statistics

II. Location and Time: Tuesdays and Thursdays TBA.

III. Instructor: Karin Reinhold, PhD, Associate Professor of Mathematics
Office: ES 132D
Office Hours: Tuesday and Thursday 1:15-2:15pm, Wednesdays 1-2pm.
Additional time by appointment or by chance (if I am in my office and willing).
E-mail: reinhold@albany.edu
Telephone:

IV. Prerequisite: Grades of C or better in Mat 220, 362 and 363.

V. Course Description: A second or third course in statistics, focusing on simple and multiple regression and time series. Course carries VEE credit from the Society of Actuaries in applied statistics

Learning Objectives:
This course provides an introduction to the theory, methods and practice of regression analysis. The goals are (a) to understand basic regression designs, (b) use sample data to investigate relationships between variables, (c) develop models to predict a future value for a dependent variable, (d) read and understand professional literature that uses regression analysis. The course assumes a working knowledge of matrix algebra and elementary statistical concepts and techniques.

VI. Topics we will cover:

- Understanding the simple linear regression model.
- Evaluating simple linear regression models.
- Using a simple linear regression model to estimate and predict likely values
- Checking the assumptions that need to be met for a simple linear regression model to be valid
- Working with multiple predictors in a regression model
- Additional assumptions that need to be met when we use multiple predictors in the regression model for the model to be valid
- Using a multiple linear regression model to estimate and predict likely values
- Understanding how categorical predictors can be included into a regression model
- Understanding when it is useful and necessary to transform data in order to deal with problems identified in the regression model
- Strategies for building regression models
- Distinguishing between outliers and influential data points and how to deal with these
- Understanding regression models in time dependent contexts

VII. Instructional Material

A. TEXT: ***Introduction to Regression Modeling***, Abraham & Ledolter. Ed: Brooks/Cole
B. **R software**: The focus of the course is the study of simple and multiple linear regression models, nonlinear models, and logistic regression. We will use the

statistical software R which is a very powerful statistical software that is an open source product and it is FREE: http://www.r-project.org/

VIII. Instructor Goals for Students: In addition to mastering the mathematical content as described in section VII: Learning Outcomes, I hope that students 1) be positive contributors in class, 2) are honest with self and others, 3) take responsibility for learning the course content, 4) improve self, and 5) for those wishing to become actuaries, master the material well enough to progress through the professional examination system and become valuable members of the actuarial profession.

1. Behavior that I wish to encourage: honesty (with self, peers, me), learning/understanding (e.g. defining variables, you are the audience), discovering and challenging self and peers (names, strengths, weaknesses), helping class, modeling productive behavior, exceeding expectations, participation, communication, and taking responsibility (no excuses).
2. Behavior that I wish to discourage: dishonesty (claim understand in class and while doing homework, but not on exams), memorizing formulas, looking at solutions prior to attempting yourself, abusing solutions manuals.

IX. Instructor Specific Course Policies:

A. Make-up work: Make-up work is a rare event. If you must miss a scheduled exam, you must make alternative accommodations with me (typically taking the exam before it is scheduled).

B. Cheating: It is bad, do not do it. Cheating during an examination will result in a letter grade of F.

C. Class Distractions: You will make the necessary arrangements so that cell phones, watch alarms, mechanical erasers and the like do not disturb class.

D. Learning Situations Outside of Class: Following presentations in class is a good start to understanding, being able to complete problems on your own shows a higher level of awareness, and being able to explain solutions to others demonstrates exceptional insight. Therefore, you are encouraged to form study groups. I am available during class, during scheduled office hours, and by rare appointment. I hope that you feel comfortable receiving help from me in a timely manner. I will be intentionally unavailable 24 hours before a scheduled examination. I look forward to helping those motivated students who have attempted their homework. Bring your work into class and or office hour to discuss your confusion.

E. Extra Credit: None. Extra work is not a substitute to learning the material in a timely fashion. It is inappropriate for you to request extra credit work.

F. Professionalism: Students are expected to maintain appropriate behavior in the classroom and other activities that reflect the actuarial program and university.

X: University Policies and Services

A. Honor Code: The core values of the University at Albany are learning, discovery, freedom, leadership, individual opportunity and responsibility. Each

member of the University is expected to uphold these values through integrity, honesty, fairness, and respect toward peers and community.

B. Students with Disabilities:
The University at Albany provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, students with disabilities should contact the Disability Resource Center: 442-5490 http://www.albany.edu/disability/

C. Policy on Academic Dishonesty: Students who violate university rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failing in the course and/or dismissal from the University. For clarification and interpretation of the regulations, students should contact the Office of the Vice Provost for Undergraduate Education, Lecture Center 30.

E. UAlbany Division of Student Success:
http://www.albany.edu/undergraduate_bulletin/student_affairs.html

F. UAlbany Counseling Center:
Suite 104 400 Patroon Creek Blvd Albany,
PHONE (518) 442-5800
Email consultation@albany.edu, or visit the website at
www.albany.edu/counseling_center/

The **Middle Earth Café** website is a non-commercial, non-profit service of the Middle Earth Peer Assistance Program, an agency staffed by undergraduate students and supervised by professional psychologists at the University at Albany Counseling Center. The site aims to provide quality information about mental health and behavioral issues affecting college students in order to support our students. We also wanted to provide an alternative to the Middle Earth telephone hotline (518-442-5800) for students who prefer to communicate with us online.

XI. Delivery System:

This is an asynchronous course. However, I will also set up a meeting time that is convenient for the majority of the students on Tues & Thrs. The recordings of these meetings will also be available on Blackboard.

This is your course. The responsibility of learning the course objectives and attaining your learning outcomes is entirely your responsibility.

We'll be interacting on zoom during class time and I will be available for office hours. I am here to help you learn the content and guide you. Videos of the class will be available afterwards on Blackboard.

Lab assignments and exams will be posted on Blackboard.

It is my hope that you develop a working group with class mates with whom you can consult and share ideas.

The learning journey and development of self-inquiry is your own and what you make of it. This is your class. The responsibility of learning the course objectives and attaining your learning outcomes is entirely your responsibility. I will model various teaching techniques including lecturing and lab sessions.

XII: Grading Information

A. Definition of Letter Grades: The following scale will be used to assign grades at the end of the term. Be careful using this scale on any individually scored work. Some examinations are easier (most students score substantially higher) than other examinations. It is your job to maximize your total points. A student's final class average is the average of their raw average scores based upon graded work.

[90%,100%] A/A- Achievement of distinction with an unusual degree of intellectual initiative
[80%,90%) B+/B/B- Superior work
[70%,80%) C+/C/C- Average knowledge attainment
[60%,70%) D+/D/D- Unsatisfactory, but passing
[0%,60%) F Failing

B. Assessment During the Term:

- From the teacher - students will receive feedback on their labs, while working in groups, during question and answer periods, during office hours, and during exams;
- From other students – during study sessions and projects;
- From oneself – while working on homework problems, in-class examinations, while discussing these concepts with others, and on the comprehensive final examination.

C. Homework: We consider the prompt and accurate completion of homework to be the single most important factor in student learning. Homework (Labs) will be assigned and announced on Blackboard. It is my expectation that students study for this class as a model for a future of ongoing learning.

Assigned Problems: One of your goals should be to attempt and solve all appropriate homework problems (from this text and elsewhere). If specific exercises will be collected, they will be announced in class and on Blackboard.

D. Typical Point Scale and Examination Dates:

Exam 1, 2 & 3: 100 points each (300 pts total 50%)
Labs & other: 200 pts (33%)
Final Project 100 pts (17%)

Penalties:

Late Work 25% if complete within one day, 50% complete within a week, but after a day

100% if complete after one week.
Cheating on an Examination Course grade is F.

E. Attendance: It is your responsibility to be aware of what was covered in class on a day that you had to miss a class. Be advised that there is no makeup for activities missed on a day that you did not come to class.
There is no reason to miss an exam other than getting sick (bring note from doctor), being on a team that has a game at the same time an exam is given (bring a note from your coach), or a death or serious illness in your family (bring a note from your family). In the event you cannot attend an exam, you must notify me in advance, otherwise your grade for that exam will be 0. You can contact me by email.

F. Academic Integrity: I expect you to behave with the highest standard of academic integrity in all graded work for this course. This means that I expect you to treat all graded assignments as work to be conducted privately, unless otherwise instructed. For more detail about UAlbany's Standards of Academic Integrity: http://www.albany.edu/undergraduate_bulletin/regulations.html.
Discussion of home work problems is permitted and encouraged. But you have to write your problems in your own version. If you work out problems with other students, do not copy the answers. Instead, go take a 30-minute walk, and then write up the answer on your own without the aid of other people. Copying work that is not yours is plagiarism, even if the work was done as part of a discussion of a problem.

Sharing your work with another student on an individual assignment is a violation of the academic integrity policy called "facilitating academic dishonesty." This violation is as serious as any other violation of the academic integrity policy. In general, you are permitted to discuss an assignment with other students, but you should write your own project and assignments. You should not share your individual work with any other student by electronic means because this encourages the copying or stealing of ideas (i.e., plagiarism). You should not share your group work with any other group by electronic means because this encourages the copying or stealing of ideas.

Group Work:
All group members must sign the front page of assignments to certify that

- all members participated in the assignment
- no member plagiarized or cheated on the assignment
- no member facilitated academic dishonesty by inappropriately sharing this assignment with others

If you are allowed to discuss assignments in a group, use the rule described above: If you work out problems with other students, do not copy the answers. Instead, take a 30-minute walk, and then write up the answer on your own without the aid of the group work. Copying work that is not yours is plagiarism, even if the work was done as part of a discussion of a problem.

Graded assignments will be explicitly designated as "group" or "individual."

- For group assignments, you will work on the assignment within your team but may not share information with any other team.
- For individual assignments, you can discuss problems with other students but you must write your own version, in your own words.
- For Exams, you will work individually, without consulting with other students or outside sources.

Tentative Exam dates:

Exam 1: Sept 22; **Exam 2:** Oct 20; **Exam 3:** Nov 24
Final Project: Dec 3.

Week 1: Read Chapter 1. Intro to R. Introduction to simple linear models. Least squares regression: parameters, fitted values, residuals, estimation of σ^2. Verifying assumptions of the model. Lab 01
Week 2: Properties of parameters. Inference about regression parameters, prediction. Lab 02
Week 3: ANOVA tables and the global F-test. model fit, R^2 and S.
Matrices. Matrix approach to regression. Lab 03
Week 4: Multiple Linear Regression. Regression in R. Correlations. Final Project – statement of project.
Week 5: Exam 1. Tests for the betas. Prediction. Global F tests. Adjusted R^2. Lab 04.
Week 6: Comparing models. Extra sums of squares. Lab 05.
Week 7: Specification Issues in regression Lab 06.
Week 8: Model Checking. Lab 07.
Week 9: Adequacy of the functional form, variance stabilizing transformations. Lab 08. Exam 2.
Week 10: Model Selection. Lab 09.
Week 11: Regression models for Time Series. Final Project- progress report.
Week 12: Logistic regression. Lab 10. Interpreting the output from R.
Week 13: Likelihood ratio tests and the meaning of Deviance. Interpreting the output from R. Comparing models using deviance. Sensitivity and specificity. ROC curves. Lab 11
Week 14: Final Project. Exam 3.

Mathematics 467 - Continuous Probability and Mathematical Statistics
Fall, 2019 - 3 Credits

Class numbers 1909 (for AMAT 467)
MWF 1:40-2:35 P.M. in ES 245.
Instructor: Professor Martin Hildebrand
Office: ES 137A
Office Hours: By Appointment
Phone: 518-442-4016
E-mail: mhildebrand@albany.edu

Course Description: One and two-dimensional calculus applied to probability. Continuous random variables in one and two dimensions, including the normal, bivariate normal, exponential, gamma (including chi-square), and beta. Density functions of transformations of random variables. Moment generating functions, weak law of large numbers, central limit theorems, convergence of random variables. Maximum likelihood and unbiased estimators. Confidence intervals, mainly for normal means and variances.

Text: *Introduction to Mathematical Statistics*, 7th or 8th edition, by Hogg, McKean, and Craig.
Prerequisite: AMAT 214, AMAT 220, and one of AMAT 362 or 367

Material Covered and Learning Objectives

This course covers continuous probability and applications of continuous probability to statistics. Students completing this course should understand density, distribution, and moment generating functions for continuous random variables and how to use such functions to find various quantities, transformations of continuous random variables, recognize certain distributions (e.g. gamma, chi square, and t distributions) important in statistics and relations between some of these distributions, and some statistical inferences including confidence intervals, among other things.

Course Assignments and Attendance

There will be homework assignments most weeks. These assignments are important for the student to develop an understanding of the material in the course and reasoning related to this material. Some problems may be numbered differently the 7th and 8th editions; I intend to note the differences, but you still need to make sure you are using the numbers for the edition you have. There may be differences in assignments between AMAT 467 and AMAT 554. There also will be two in-class tests and a final exam. Late homeworks will be accepted only at the discretion of the instructor and possibly for reduced credit; otherwise homeworks not submitted on time will receive a score of 0. Missed tests and exams will receive a score of 0 unless an acceptable reason for a make-up test or exam is provided. Be prepared to provide documentation of the reason, and make your request promptly. Note the University's Medical Excuse Policy is available at
http://www.albany.edu/health center/medicalexcuse.shtml

You should read the sections covered in the text.
While I do not formally anticipate taking attendance, students are responsible for announcements made in class and material covered in class even when the students are absent. Be advised that frequent absences may reduce your learning and hence your grade.

New York State Education Law (Section 224-A) requires that individual students who are absent due to religious observances be excused and that such students be provided equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences. Students should notify the instructor in a timely manner.

Cooperation

In general, students may discuss course material with each other. While some cooperation on homework is OK, students should not merely copy each other's answers. Students should not cooperate with each other or receive outside aid during tests or the final exam. Violations constitute academic dishonesty and are subject to both disciplinary sanction and reduced or failing grades. Also note that even after a test or an exam, posting the test or exam online without permission may violate copyright laws.

For more information on the University's Standards of Academic Integrity, look at `http://www.albany.edu/undergraduate_bulletin/regulations.html` or `http://www.albany.edu/graduatebulletin/requirements_degree.htm` .

Classroom Behavior

While I do encourage students to ask questions or to respond to questions I ask, students should be respectful of others in the classroom and should avoid disruptive behavior. In particular, ringing cell phones can be disruptive, and thus if you are carrying a cell phone, it should be turned completely off during classes (as well as tests and the final exam). If you believe that you have unusual circumstances which require you to be able to respond to cell phone calls even in class, please discuss the matter with me.

Grades

30%	Homework assignments
20%	Test 1
20%	Test 2
30%	Final Exam

Grade Scale: The following grading scale will be used to determine your grade.

A	(93%)	A-	(90%)
B+	(87%)	B	(83%)
B-	(80%)	C+	(77%)
C	(73%)	C-	(70%)
D+	(67%)	D	(63%)
D-	(60%)	E	(<60%)

I anticipate dropping the lowest homework score. The exact translation between the numerical average and course grade is at the discretion of the instructor. This course is graded on the A-E scale. Grades may be lowered in the event of academic dishonesty or for extreme examples of disruptive classroom behavior. Requests for incomplete grades (I) will be granted only under extenuating circumstances; see the Undergraduate Bulletin as appropriate, for more details.

Blackboard

I may utilize the Blackboard online system for certain things in the course; details will be announced in class.

Students with Disabilities

Students with *documented* disabilities may request reasonable accommodation. Such students should be aware of the Disability Resource Center in Campus Center 130 (telephone 518-442-5490); this office can help disabled students obtain the needed documentation as well as help with the accommodations needed.

Disruptions to the Semester or Final Exam

In the event that emergency circumstances disrupt the semester or the final exam, the instructor may notify class members of course-related updates via an announcement on Blackboard or via e-mail if warranted by the circumstances and possible under the circumstances. Such e-mail would be sent to the address provided to the instructor by MyUAlbany. Such emergency circumstances may require changes in the schedule or in the grading scheme.

Approximate Schedule

8/26-30	1.1-1.3
9/2-6	No class Mon.,1.4
9/9-13	1.5, 1.6
9/16-20	1.7, 1.8
9/23-27	1.9, 1.10
9/30-10/4	2.1, 2.2
10/7-11	Test 1, 2.3
10/14-18	No class Mon., 2.4-2.5
10/21-25	2.6, 2.7
10/28-11/1	3.1-3.3
11/4-8	3.4-3.6
11/11-15	Test 2, 4.2
11/18-22	4.3-4.5
11/25-29	4.6, no class Wed. and Fri.
12/2-6	4.7, Summary of Ch. 5, 6.1
12/9	Review

The exact sections covered are subject to change. The numbers on the right equate to chapters and subsections in our text. The dates of the in-class tests are approximate and subject to change. The date of the final exam is as announced by the Registrar's Office. I reserve the right to give portions of tests or the final exam as take-home.

Mathematics 468 - Mathematical Statistics
3 Credits

Spring, 2018
Class Numbers: 7983 (for math 468) and 7984 (for math 555).
MWF 1:40 P.M.- 2:35 P.M. in ES 108.
Instructor: Professor Martin Hildebrand.
Office: ES 137A.
Office Phone: 518-442-4016.
E-mail: mhildebrand@albany.edu
Office Hours: By Appointment

Text: Hogg, McKean, and Craig, *Introduction to Mathematical Statistics*, 7th edition.
Prerequisites: Mathematics 467 (for mathematics 468)

Topic Overview and Learning Outcomes

This course provides an overview of some aspects of mathematical statistics for students who have background involving probability and some basics of mathematical statistics. Topics covered include some probability distributions involved in statistical tests, hypothesis testing, maximum likelihood methods, sufficient statistics, optimal tests of hypotheses, and, if time permits, topics such as analysis of variance and regression and a brief introduction to Bayesian statistics.

Grading

Most weeks there will be a homework assignment. There also will be a midterm and a final whose formats are to be determined. It is possible that an exam may be take-home. It is possible that certain assignments may differ between math 468 and math 555.

The grading is as follows:

Homeworks	50%
Midterm	20%
Final	30%

Grade Scale: The following grading scale will be used to determine your grade.

A	(93%)	A-	(90%)
B+	(87%)	B	(83%)
B-	(80%)	C+	(77%)
C	(73%)	C-	(70%)
D+	(67%)	D	(63%)
D-	(60%)	E	(<60%)

The lowest homework will be dropped. The instructor reserves the right to make minor adjustments as he judges fit. This course is graded on an A-E scale, and the exact translation between the numerical average and the letter grade is at the discretion of the instructor.

Late assignments will be accepted only at the discretion of the instructor and possibly for reduced credit. Make-up exams will be given only for acceptable reasons. Be preprared to provide documentation for your request, and make your request promptly. Incomplete grades (I) will be issued only under circumstances described in the Undergraduate Bulletin or Graduate Bulletin, as appropriate.

Cooperation

Some cooperation on homework assignments is acceptable; however, you should not merely copy someone else's homework. You should actively work on all solutions you submit, and the solutions should be in your words and expressions. Unless indicated

otherwise, there is to be no cooperation on the midterm and final. Acts of academic dishonesty are subject to grade penalties and university disciplinary action. Students should be aware of standards of academic integrity contained in the Undergraduate Bulletin and the Graduate Bulletin, as appropriate.

For more information on the University's Standards of Academic Integrity, look at `http://www.albany.edu/undergraduate_bulletin/regulations.html` or `http://www.albany.edu/graduatebulletin/requirements_degree.htm` .

Attendance

Although I do not plan to formally take attendance, students are responsible for material and announcements even when the students are absent. Frequent absences pose obvious risks to the amount of learning a student gets in this course. Note that the University's medical excuse policy is available online at
`http://www.albany.edu/health_center/medicalexcuse.shtml`

Classroom Behavior

While I do encourage students to ask questions or to respond to questions I ask, students should be respectful of others in the classroom and should avoid disruptive behavior. In particular, ringing cell phones can be disruptive, and thus if you are carrying a cell phone, it should be turned off completely during classes (as well as tests and the final exam). If you believe that you have unusual circumstances which require you to be able to respond to cell phone calls even in class, please discuss the matter with me.

Students with Disabilities

Students with *documented* disabilities may request reasonable accommodation. Such students should know of the Disability Resource Center (CC 130; telephone 518-442-5490); this office can help disabled students obtain the needed documentation as well as help with the accommodations needed.

Blackboard

The Blackboard online system may be used for announcements and other course related purposes. Details will be announced in class. In the event of an emergency disrupting the semester, announcements may be placed there.

Approximate Schedule

The sections covered and dates listed are approximate and subject to change.

Week	Material Covered
1/23-26	Introduction, Review of Ch. 4
1/29-2/2	Ch. 5, 6.1
2/5-9	6.2, 6.3
2/12-16	6.4, 7.1
2/19-23	7.2, 7.3
2/26-3/2	7.4, 7.5
3/5-9	7.6, Midterm
3/12-16	Spring break!
3/19-23	7.7, 7.8, 7.9
3/26-30	8.l, 8.2
4/2-6	8.3, 8.4
4/9-13	9.1, 9.2
4/16-20	9.3, 9.4
4/23-27	9.5, 9.6
4/30-5/4	9.7, 11.1
5/7-9	11.2, Review

The date and time of the final exam, if it is not a take-home, is announced by the Registrar's Office. If the final is a take-home, it will be due at the time of the exam as announced by the Registrar's Office.

Information Literacy in Mathematics and Statistics
UNL 299
Syllabus sample
1 Credit

Instructor: Irina Holden, Information Literacy and Science Outreach Librarian,
Office: SL 241 (Science Library)
Phone: (518) 437-3941
E-mail: iholden@albany.edu
Office Hours: Wednesday, 11:00 – 12:00 p.m. and by appointment

Course: UNL 299 Information Literacy in Mathematics and Statistics
Day and Time: TBA
Location: University Library, B48
Course web page:

Course description:

Information is an extremely necessary and valuable commodity in today's world. Information is far more accessible than it ever was, and is generated by a far broader range of authors than ever before. Indeed, you yourself are an information producer, and you may be publishing some of this information publicly on the Web. Because of this incredible abundance, it is imperative to be able to efficiently find information and to critically assess and evaluate it and the sources in which it appears. In this course, you will interact with a broad range of information sources and strategies for finding information with an emphasis in the disciplines of mathematics and statistics. Various case studies and examples from scientific, technical, and popular literature will be used to achieve this purpose.
You will practice using your skills in the context of a team web-based research guide on a topic related to mathematics, statistics and/or computer sciences. There will be a component in the course on ethical and social issues connected with finding and using information, from plagiarism to the effects of technological access, not only to increase your exposure to different viewpoints, but also to empower you in your own decision making processes. UUNL299 meets the requirements for Information Literacy in the mathematics and statistics major. Please see the end of the syllabus for more details.

Prerequisite(s): None Corequisite: AMAT 300

Information Literacy Learning Objectives:
At the end of this course, students will be able to:

1. Understand the information environment and information needs in the discipline in today's society, including the organization of and access to information, and select the most appropriate strategies, search tools, and resources for each unique information need
2. Demonstrate the ability to evaluate content, including dynamic, online content if appropriate
3. Conduct ethical practices in the use of information, in ways that demonstrate awareness of issues of intellectual property and personal privacy in changing technology

environments (this will include discussions of copyright and patenting, and open access practices)
4. Produce, share, and evaluate information in a variety of participatory environments
5. Integrate learning and research strategies with lifelong learning processes and personal, academic, and professional goals
6. Apply knowledge of the APA (American Psychological Association) style by compiling a bibliography. Know how to write critical annotations

Student Responsibilities:

Each student is expected to contribute to an environment conducive to the learning of all students. This contribution includes, but is not limited to:

- Respecting the opinions of others
- Being prepared to participate actively, both in class as a whole, and in your team
- Taking responsibility for your learning and progress in the course
- Helping your team and the rest of the class to learn, and allowing others to help you learn
- Seeking help from the instructor as needed

Students are responsible for knowing and following the policies listed below. Students are also responsible for knowing and following the University policies outlined in the Undergraduate Bulletin (http://www.albany.edu/undergraduate_bulletin/academic.html).

Instructional Methods:

This course will incorporate active learning techniques and will require a high level of student participation. Teams will be established on the first day of class, and will work together throughout the course. Preparation for class material will take place before class, and several times during the quarter, I will be giving Readiness Assessment Tests (RATs), to check your preparation for class. These tests first will be taken individually (iRATs), and then together as a team (tRATs). Students will be responsible for taking part in class and team discussions. The class participation will be graded and then incorporated into your final course grade.

Class readings, handouts and other supplementary materials will be available through Blackboard.

Because of the structure of the course and your team's reliance upon every member, you need to attend regularly in order to do well.

Class Policies:

1. Class attendance:

   i. Readiness assessment tests are generally given at the beginning of class, and once one starts it is not possible to take it if you arrive late.

   ii. Work done during class is integral to the course, so this work cannot be made up. Your team will be counting on your participation. Stay in touch

with your team members and instructor.

2. Assignments:

- It is always the responsibility of the student to know when assignments are due.
- In order to show exact formatting, you must type citation and annotation assignments. I do not accept handwritten citations and annotations. Submit these assignments in Word or rtf files via Blackboard. Most of the assignments are due by 10 a.m. on the day of the class; however some exceptions apply. Such exceptions will be specified individually.

3. The use of personal electronic devices is not allowed during the class period.
4. In order to protect the computers, only water can be brought into the classroom.
5. Incompletes are not given for this course.

Academic Integrity

- If at any point in the semester you attempt to pass off someone else's words or ideas as your own – i.e. *plagiarize* – you will receive a grade of "0" for the assignment. You are responsible for acquainting yourself with the University's Plagiarism Policy (see http://www.albany.edu/undergraduate_bulletin/regulations.html).

Blog Posting Assignments

We will be using a class blog in order to practice one of the popular Web 2.0 tools. Most of the time you will be required to read an article or watch a web tutorial or a video and then present your responses to the questions formulated in the assignment. Grades will be based on the quality of your writing. Thoughtful, in-depth posts should be comprised two paragraphs and present a good example of college writing. Brief, perfunctory, or unoriginal responses will earn few points. Please be civil and considerate in your posts.

Website Research Project (Weebly or wiki – this is a subject to your choice)

Your final course project is a web-based information guide, produced collaboratively by your team. It will be located in PB Works (for the wiki) or weebly.com.

This guide will provide solid evidence of your team's understanding of the material highlighted in this course. Consider it, too, as a guide for novice researchers on the topic you are addressing. You should create your web guide with these interested users in mind. You will be finding, evaluating, citing and annotating resources in various formats that will become an annotated bibliography part of your wiki project. The information guide will also contain the Statistics in news exercise example, a glossary of key terminology on your topic, a database comparison and social media/open access component related to mathematics or statistics.
I encourage your team to use the team discussion forums. I can set up such forums within Blackboard upon your team's request.

Your **individual** weekly assignments ought to be submitted via Blackboard. During the class meetings the team will decide which sources might best contribute to the team web site.

The final web-based research guide (either in a wiki or Weebly platform) created by your team will contain the following components, presented in an aesthetically pleasing and functionally effective way:

- Title
- Indication of the components, with a way to maneuver between them (similar to the table of contents)
- Glossary of terminology: Define, in your own words, at least five of the terms connected with your team's topic. Select terms that novice researchers might not understand, or that were important when you were doing database searches for materials. If you need to include a brief phrase from a print- or Web-based source, include an in-text citation to show that these are not your own words
- Database comparison
- Statistics in news
- Social media/open access component
- Annotated bibliography: See below for full specifications

The annotated bibliography portion of the wiki should contain eight items in alphabetical order:

- A reference source (usually an entry in an encyclopedia, handbook, etc.)
- A book
- Two articles: one scholarly and one popular (based on criteria discussed in class)
- One excellent website
- One web source in the social media format: a blog written by a scientist, or scientific community site, or multimedia source such as online lecture, etc.
- *All sources should be labeled as primary, secondary or tertiary*

Use the APA page in CitationFox (linked through Blackboard or available through the library's website), or the Sixth Edition of *Publication Manual of the American Psychological Association* to make certain your citations are written correctly.

Course Readings:

- Students are required to read two-three articles from the Science Section of the New York Times (comes out on Tuesdays). Each class we will begin with the discussion.
- Other required and suggested readings, tutorials and videos for this course are available through Blackboard.

Grading and Course Requirements:

Grading (A-E grading system)

6%	Discussion posts on class blog
20%	RATs (divided between individual & team)
24%	Individual research guide components
10%	In-class participation
25%	Team web project
7%	Team presentation
8%	Team peer feedback and assessment

Scale	
A	1000-926
A-	925-896
B+	895-866
B	865-826
B-	825-796
C+	795-766
C	765-726
C-	725-696
D+	695-666
D	665-626
D-	625-596
E	595 and below

Class 1

Introductions: students and instructor
Syllabus and course policy discussion
Team formations
Information literacy and science literacy concepts
Virtual tour of the University Library and Science Library
Minerva/Databases (first peak)
Selecting a topic from the provided list– groups are working during class
Formulating a thesis statement (in-class ex.)

Homework assignment:

1. Post individually to the class blog the following:

- Your research strategy for narrowing down the topic selected by your team (you may list 3-5 questions or write a short paragraph), and 4-5 keywords that you might use for research on this topic.
- A preliminary thesis statement (use the strategies in the handout distributed in class.) It is also available from *www.indiana.edu/~wts/pamphlets/thesis_statement.pdf.*

Readings:

1. Science Section of the New York Times
2. Reference Resources, a mini-lecture available from Blackboard
3. Mini-lecture on Thesis Statement from Blackboard
4. ***Research strategies: Finding your way through the information fog*** by Bill Badke, Chapter 1, "Taking charge", available online at http://www.acts.twu.ca/library/chapter1.htm (link is also available through Blackboard)

Class 2 /

RATs (individual and team)
News in science for today (discussion of the *Science Times*)
Team web project work
Reference sources in mathematics and statistics
eDiscover service
Library of Congress Subject Headings
Annotated bibliography/APA Style Guide
Critical annotations
Tour of the Science Library
Online reference sources; in-class exercise
Reference Universe

Homework assignment:

- Find, cite and annotate a book and a reference book on a topic of your team project (book must be in print; reference book could be either in print or electronic format; both must be from the University Libraries – not from Amazon or Google books). No textbooks.

Readings:

1. Science Section of *the New York Times.*
2. ***Research Strategies: Finding your way through the information fog*** by William Badke, Chapter 4, "Metadata and the Power of Controlled Vocabularies" (available through Blackboard)
3. Mini-lecture *Periodicals* available from Blackboard

Class 3

RATs (individual and team)

News in science for today
Team web project work
Periodicals: scholarly journals vs. trade/professional or popular
A scholarly article: how to read?
Electronic databases: selection, search strategies, Boolean operators, fields, controlled vocabulary vs. keyword search
In-class exercise

Homework assignment:
Find, cite and annotate two articles on a topic of your bibliography.

- Article 1 must be from the scholarly journal.
- Article 2 must be found from the popular magazine, trade/professional journal or newspaper
  Note: Both articles should be found in one of the online databases to which University libraries subscribe such as Web of Science, INSPEC, MathSciNet, eDiscover, LexisNexis Academic, etc. and should not be from online news web sites

Reading:

1. ***Evaluating Web Content*** available at http://library.albany.edu/usered/eval/evalweb/index.html
2. ***Web Sources*** mini-lecture available from Blackboard
3. Science Section of *the New York Times*

Class 4

RATs (individual and team)
News in science for today
Team web project work
Web sources: search engines and search directories
Web sources evaluation

Homework assignment:

1. Find, cite and annotate two excellent websites on your topic: one of them should be in a social media format such as blog or other similar layout (no Wikipedia articles)
2. Blog posting (check our blog for a new assignment)
3. Complete mid-term peer-assessment

Reading:

1. Science Section of *the New York Times*
2. Mini-lecture *Primary, Secondary and Tertiary Sources* from Blackboard
3. Primary and Secondary Sources for Sciences available from http://library.albany.edu/usered/dr/prisci.html

Class 5

News in science for today
Team web project work

Primary/Secondary/Tertiary sources in mathematics and statistics, and other related subjects
Dissecting a primary article
Science literacy: civic, practical, cultural
SciFinder in-class exercise

Homework assignment:
Statistics in news: Find an article in one of the popular periodicals such as *New York Times*, *Wall Street Journal*, etc. (use LexisNexis Academic or EBSCO Academic Search Complete) that includes some data or other statistical information as an explanation targeting general public. Find the original research that is described in this article, and compare how the data was represented and interpreted in both sources.

Readings:

1. Science section of the *New York Times*
2. "Cracking open the scientific process", an article by Thomas Lin from the *New York Times* (January 17, 2011) (available through Blackboard)
3. Mini-lecture *Patenting and Copyright* available through Blackboard

Class 6
RATs (individual and team)
News in science for today
Team work: working on a web project
Copyright/plagiarism/academic dishonesty
Digital divide, electronic privacy issues
Open source publications
Patents; in-class exercise
Questions/answers/final projects
Research project grading rubric

Homework assignment:

- Database Critique and Comparison: Select a pair of databases from the list (provided in Blackboard) and write a two-paragraph narrative analyzing and comparing the databases according to the homework assignment sheet.
- Complete the team web project and prepare an outline of your presentation consulting the handout
- Blog posting (check our blog for a new assignment)
- Final peer assessments

Readings:

1. Science Section of *the New York Times*

Class 7

News in science for today
Course overview
Wrap-up exercise
Presentations

Information Literacy

Information literate individuals are able to gather, evaluate, use, manage, synthesize, and create information and data in an ethical manner. They also understand the dynamic environment in which information and data are created, handled, and enhanced. Students demonstrate information literacy through finding information from appropriate sources; evaluating, using and managing information; and appreciating the role of information literacy in learning. Learning is understood here as the constant search for meaning by acquiring information, reflecting on and engaging with it, and actively applying it in multiple contexts. To this end, each academic major will offer increasingly sophisticated research assignments that rely upon diverse information sources. Students will find, process, evaluate, and cite information sources, creating and sharing information presented in multiple formats from multiple sources in a form appropriate to the discipline.

ICSI 431: Data Mining
SUNY Albany, Fall 2021
3 Credits

Key Information:

Lecture Time/Location: Tue/Thu, 1:30 om – 2:50 pm, Earth Science 245
Professor: Dr. Shaghayegh (Sherry) Sahebi
Office hours: Thursdays 3:30 pm- 5 pm on Zoom; and by email
https://albany.zoom.us/j/98538544807?pwd=ZzVLWVRhVGZBQUVFTDR5TVlQZmRCdz09
Email: please use Blackboard mailing system or use the **subject line "F21-CSI431-[email subject]"** for your email.

Textbook
DATA MINING AND MACHINE LEARNING: Fundamental Concepts and Algorithms, M. J. Zaki and W. Meira Jr.
(Read online on the book's webpage: https://dataminingbook.info/book_html/).

Useful references (Mostly available online):
Brandt Petersen and Syskind Pedersen, The matrix cookbook.
Klein, Coding the matrix.

Course Description:

This course will provide an introduction to the theory and practice of data mining and data analysis. Topics covered in the course include: Data analysis (DA) foundations: data types, dimensionality and preprocessing, Regression and Neural Networks, Clustering: representatives, hierarchical, density and spectral methods, Classification: probabilistic, and SVM.
Blackboard (https://blackboard.albany.edu/) will be used to provide essential course materials, the most current syllabus, exams, and assignments. A tentative class schedule is uploaded on blackboard and will be updated during the semester.
For a tentative schedule of the class, in addition to tentative deadlines, look at the schedule posted on Blackboard.

Prerequisites: AMAT 220 and ICSI 213
Students are expected to have familiarity with:

- basic probability theory
- writing rigorous proofs
- linear algebra
- algorithmic analysis

Grading:

1. Exams (45%)
    a. 15% Exam1
    b. 15% Exam 2
    c. 15% Exam 3
2. Homework assignments (35%)
3. In-class activities (5%)
4. Course project (15%)
5. Extra credit: up to 5% for Blackboard discussion participation

You must complete **all requirements** in order to be qualified for passing the course. A grade of incomplete will be given only when circumstances beyond your control cause a substantial amount of course work to be unfinished by the end of the semester. Per department policy, "...students may not submit additional work or be re-examined for the purpose of improving their grades once the course has been completed and final grades assigned."

Exams:

The class includes three exams that happen on prespecified dates, in classroom. On the date of each exam, you will have a limited time to complete your test.

If you have any questions regarding exam grading, you should contact the professor or TA within **one week** after grades are returned.

- Exam 1: Tuesday, 9/28/21, during class
- Exam 2: Thursday, 11/4/21, during class
- Exam3: **Saturday**, 12/11/21, 10:30 am – 12:20 pm

Homework Assignments (in Course Materials > Homework Assignments):

- Homework assignments will include written answers, 5-minute JING videos, and programming assignments.
- Questions about assignment grading must be resolved with the TA or the professor within **one week after it is returned.**
- For late assignments, you will receive 20% off per day on any assignment handed in late up to the 3 days. However, after 3 late days on any given homework you will receive no credit for the assignment. Late days apply to the entire assignments, so that handing in one problem counts as a late day towards the whole assignment.
- Remember that an incomplete homework is better than turning in no homework.

In-class activities (and attendance):

Attendance itself is not graded. But in-class tasks constitute an important part of the course grade. The work we do in class this semester is important. You will be analyzing and solving problems with your classmates regularly. This in-class work allows you to share and workshop ideas as well as get immediate feedback from your professor on your progress. While this in-class work is a key part of your learning, missing this in-class work might be unavoidable in the case of illness or emergency. If you are sick, please stay home and contact your healthcare provider. To allow for a more flexible attendance policy, especially in cases of justifying circumstances where missing classes is unavoidable, only 80% of your in-class activities, with the highest grades, will contribute to your final grade. Missing class means earning an automatic "0" for the missed activities.

Please do not disrupt the class by entering late or leaving early without professor approval. See also: http://www.albany.edu/health_center/medicalexcuse.shtml

Course project (in Course Materials > Class Project):

A final project will be required. Projects may be done in teams of 2-3 students and will involve proposing a problem, applying the techniques learned in class to solve that problem, and presenting progress reports, the code, and the results.

Electronics Policy:

Please show respect for your fellow students by making sure your cell phone is turned off before entering the classroom. You are allowed to bring your laptop (or a similar device) to class for access to reading

assignments and note taking. Please refrain from emailing, gaming, surfing, and activities unrelated to the class.

Collaboration policy and honor code:

You are free to form study groups and discuss homework assignments and projects. However, you must write up homework assignments and code from scratch independently. Plagiarism and other acts of academic dishonesty will be punished and reported to the university. Cheating or plagiarism in a homework exercise, programming, or project assignment will result in a ZERO for that entire homework, program, or project for all the students involved. Such an act will be reported by the professor to the university. Students who cheat in two or more incidents will receive an E grade for the course. The names of such students will also be forwarded to the Dean's office for disciplinary action. Please read the Standards of Academic Integrity and Policies in the bulletin:
http://www.albany.edu/undergraduate_bulletin/regulations.html

If you feel you may have violated the rules speak to us as soon as possible. The following are examples of honor code violations:

- Sharing the exam questions or posting them anywhere.
- Looking at the writeup or code of another student.
- Showing your writeup or code to another student.
- Discussing homework problems in such detail that your solution (writeup or code) is almost identical to another student's answer.
- Uploading your writeup or code to a public repository (e.g. github, bitbucket, pastebin) so that it can be accessed by other students.
- Looking at solutions from previous years' homework assignments - either official or written up by another student.
- Looking up for solutions from code repositories, such as GitHub.
- Copying a sentence or part of an article.
- Quoting a sentence or part of an article without proper references.

Responsible Computing:

Students are required to read the University at Albany Policy for the Responsible Use of Information Technology:
https://wiki.albany.edu/display/public/askit/Responsible+Use+of+Information+Technology+Policy
Students will be expected to apply the policies discussed in this document to all computing and electronic communications in the course.

Classroom safety and masking. Out class will not be safe without your collaboration. The practices described here are based on the current information we have about reducing the risk of transmission of the coronavirus. Please be sure that you enter the classroom wearing your face covering, and keep it on for the entire class period. Also, to ensure that everyone is wearing their mask throughout class, the University has prohibited eating and drinking in classrooms this semester. If you haven't already, I recommend that you familiarize yourself with the University's Fall 2021 Protocols and Requirements for keeping you safe during COVID-19: https://www.albany.edu/covid-19/fall-2021
Please do not disrupt the class by entering late or leaving early without professor approval.

Students with Disabilities:

Reasonable accommodations will be provided for students with documented disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (BA 120, 442-5490). That office will provide the course professor with verification of your disability, and will recommend appropriate accommodations. For further information, refer to the University's Disclosure Statement regarding Reasonable Accommodation found at the bottom of the document at the following website:
http://www.albany.edu/disability/docs/RAP.doc
This website can be reached by following the link under "Reasonable Accommodation Policy" at the following webpage http://www.albany.edu/disability/faculty-staff.shtml

Mental Health:

As a student there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily life. The University at Albany Counseling and Psychological Services (CAPS) provides free, confidential services including individual and group psychological counseling and evaluation for emotional, social and academic concerns.
Given the COVID pandemic, students may consult with CAPS staff remotely by telephone, email or Zoom appointments regarding issues that impact them or someone they care about. For questions or to make an appointment, call (518) 442-5800 or email consultation@albany.edu.
Visit www.albany.edu/caps/ for hours of operation and additional information. If your life or someone else's life is in danger, please call 911. If you are in a crisis and need help right away, please call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).
Students dealing with heightened feelings of sadness or hopelessness, increased anxiety, or thoughts of suicide may also text "GOT5" to 741741 (Crisis Text Line).

This table shows a ***tentative*** class schedule. Each row is color-coded to show the type of deadline on that date: Homework assignment, Project, and Exam.

#	Date	Topic	Book	assignments	Project
1	8/24/21	Data Mining and Analysis: Intro	Ch. 1		
2	8/26/21	Numeric Attributes	Ch. 2		
3	8/31/21	Numeric Attributes	Ch. 2		
4	9/2/21	High Dimensional Data Analysis	Ch. 6		
5	9/7/21	Dimensionality Reduction	Ch. 7	HW 0 due	Create project groups
6	9/9/21	Dimensionality Reduction II	Ch. 7		
7	9/14/21	Kernels	Ch. 5		
8	9/16/21	Kernel PCA	Ch. 7		
9	9/21/21	Linear Regression, QR Factorization	Ch. 23		Project Proposal
10	9/23/21	Ridge Regression, Kernel Regression	Ch. 23		
	9/25/21	-		HW 1 due	
11	9/28/21	Exam I			

12	9/30/21	Ridge Regression, Kernel Regression	Ch. 23		
13	10/5/21	Logistic Regression	Ch. 24		
14	10/7/21	Logistic Regression	Ch. 24		
15	10/12/21	No class - Fall break			
16	10/14/21	Neural Networks	Ch. 25		
17	10/19/21	Multilayer Perceptrons	Ch. 25		Project Progress Report
18	10/21/21	Deep Networks, RNNs	Ch. 26		
19	10/26/21	Bayes Classifier	Ch. 18	HW 2 due	
20	10/28/21	SVM	Ch. 21		
21	11/2/21	SVM II	Ch. 21		
22	11/4/21	Exam II			
22	11/9/21	Classification eval II	Ch. 22		
23	11/11/21	Clustering: K-Means/EM Clustering	Ch. 13	HW 3 due	
24	11/16/21	Clustering: K-Means/EM Clustering	Ch. 13		
25	11/18/21	Clustering: K-Means/ Hierarchical	Ch. 14		
26	11/23/21	Density-based Clustering	Ch. 15		
27	11/25/21	No class - Thanksgiving			
28	11/30/21	Spectral & Graph Clustering	Ch. 16	HW 4 due	
29	12/2/21	Project report + presentation + code			Project report + presentation + code
	12/6/21	Last day of classes			
	12/11/21	EXAM III	10:30am	–12:30pm	

Learning Objectives:
Students will learn how to mine data and how to recognize interesting data types and situations. Students will gain experience in algorithms that address the five core data mining tasks: prediction, classification, estimation, clustering, and associations.

Grades will be assigned on the following scheme:

% Possible	Grade
90% and up	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
below 60%	E

AMAT 502—Modern Computing for Mathematicians—Spring 2022 — 3 Credits

Instructor: Prof. Justin M. Curry **Office:** ES 120C **Email:** jmcurry@albany.edu

Course Objectives: *Modern Computing for Mathematicians (AMAT 502)* is designed to take a student with no previous background in computer science or programming to a basic level of competency in programming in Python so that they can carry out the fundamental tasks of a data scientist. Specifically, by the end of the semester the student should have a basic mastery of defining functions, assigning variables, working with basic data types (lists and dictionaries), understanding of basic concepts from object oriented programming and the ability to create a `Class` from scratch. The student should be able to call methods on objects, control the flow of a program via good programming principles such as abstraction, create scatter plots and plots of mathematical functions using Matplotlib, simulate random phenomena such as flipping a coin, apply machine learning methods such as regression, KNN, K-Means, PCA, logistic regression, SVM, and naive Bayes classifiers. The student will be able to load a data set (provided as a CSV file) as a Pandas data frame, and perform basic data cleaning, feature engineering, and apply scikit-learn libraries to analyze said data set. A final project, which consists of a 20 minute group oral presentation and a 4-8 page writeup is meant to develop presentation skills using some slideshow software, e.g. PowerPoint or Key Note, as well written communication skills in English and basic competency in the LaTeX typesetting language. Working in groups also is meant to develop student's interpersonal skills and prepare them for the workplace.

Description of the Course: *Modern Computing for Mathematicians (AMAT 502)* is meant to be the core requirement of the Data Science Masters program here at UAlbany. This course will provide an introduction to programming for students who have never coded before as well as a refresher for more experienced programmers. We will also provide a theoretical and practical introduction into machine learning. At a high-level, this course has three parts:

- 8 lectures on Programming Fundamentals in Python
- 4 lectures on Numpy, SciPy and Statistics
- 12 lectures on the machine learning using Pandas and Scikit-Learn as well as its conceptual underpinnings.

The remaining time is for group projects and presentations. A lecture outline is on Page 2.

Pre-Requisites: Basic undergraduate mathematics such as calculus, linear algebra, probability and stats.

Lecture Place and Times: *Phys 224* on *MW 1:10-2:30pm*

Office Hours: Thurs 3-4:20pm or by appt with Robert Cardona rlcardona@albany.edu.

Grading Schema:

- 40% Determined by lecture-based exercises and extended programming projects.
- 30% Determined by final project, which will have an individual presentation component and a group writeup component. Groups are 3-5 people.
- 25% Determined by an in-class midterm exam.
- 5% Determined by attendance and participation. Absences must be approved by Dr. Curry.

Academic Integrity: Please familiarize yourself with UAlbany's *Standards of Academic Integrity* page: https://www.albany.edu/studentconduct/standards_of_academic_integrity.php

I take violations of academic integrity very seriously. Programming is a subject where it is too easy to cheat yourself of valuable learning opportunities. It is permissible to consult existing questions and answers on *Stack Overflow* or *Geeks for Geeks* or similar programming help websites, but you CANNOT post one of the questions from the HW or projects as a new question to one of these sites or use Chegg or a similar "homework help" service. You are, however, permitted to ask your *coding buddies* (defined below) or me or the TA for help, but you should make sure you've tried to figure it out on your own for 10-15 minutes at least. **The single most important thing to NOT do is to copy large blocks of code from**

a classmate or the internet. If you are caught copying and pasting someone else's code the following penalty system will apply:

(1) For the first offense, **a zero for the question that you copied on.**
(2) For the second offense, **a zero for the assignment and I file a Violation of Academic Integrity Report (VAIR).**
(3) For the third or later offense, **you get a letter grade reduction (or possibly fail) and I refer you to community standards, which could result in expulsion from UAlbany.**

Coding Buddies: Please self-organize into teams of 3-5. These are your coding buddies. *You and your coding buddies are the only people you can collaborate with, without citation, outside of me and Mr. Cardona.*

Course Materials: I have developed Jupyter Notebook lectures that cover all the necessary material for this class as well as videos for each lecture. Please watch these ahead of time.

- GitHub Back-Up of Lectures: `https://github.com/jmc42/AMAT502/`
- YouTube Lectures: `https://www.youtube.com/channel/UC3HHUGPjUfyHOYmkYXfFMbQ`
- Required Text: *Introduction to Computation and Programming Using Python* by Guttag, 3rd ed.
- Additional Free Text: `https://github.com/jakevdp/PythonDataScienceHandbook`

Attendance and Missed Work Policy:

Attendance during this course will be mandatory and counts for 5% of your grade. Valid excuses for illness and emergencies will be accepted, but must be reported before class or as soon as reasonably possible. It is considered the student's responsibility to communicate reasons for missed work and to follow university policy, but I will consider excuses on a case-by-case basis. See this this for official UAlbany policy.

`https://www.albany.edu/graduatebulletin/requirements_degree.htm#attendance`

There will be approximately six problem sets and an extended programming project. These range in value between 14 to 30 points. **I will take off 1 point for every day an assignment is late, unless I grant you an extension, which must be negotiated before the due date.**

Lecture Outline:

The lectures are pre-recorded and available on YouTube. Search for "AMAT502". The following is the link to the channel.

`https://www.youtube.com/channel/UC3HHUGPjUfyHOYmkYXfFMbQ`

- Lec 1 = Introduction to Data Science + Basic Numerical Operations,
- Lec 2 = Conditionals and Loops,
- Lec 3 = Bisection Search and Functions, Quick Discussion of Big-O Notation
- Lec 4 = Functions and Recursion,
- Lec 5 = More Recursion, Strings and Lists
- Lec 6 = Data Types and Edit Distances
- Lec 7 = "One Liners" and Intro to Object Oriented Programming
- Lec 8 = More OOP and Data Structures
- Lec 9 = OOP for Mortgages and Matplotlib
- Lec 10 = NumPy Array Operations + Intro to Randomness
- Lec 11 = Basic Probability Distributions Review
- Lec 12 = Hypothesis Testing and the CLT
- Lec 13 = Into to Machine Learning: Regression
- Lec 14 = Intro to ML: Classification and Clustering Overview,
- Lec 15 = Catch-Up Lecture + Intro to Pandas
- Lec 16 = K-Means Clustering
- Lec 17 = Principal Component Analysis
- Lec 18 = MNIST via K-means and K-Nearest Neighbors

- Lec 19 = Model Validation and Bias-Variance Tradeoff
- Lec 20 = Naive Bayes Classifier
- Lec 21 = Maximum Likelihood and Logistic Regression
- Lec 22 = SVM: From Hyperplanes to Kernels
- Lec 23 = Decision Trees and Entropy
- Lec 24 = Data Science Reconsidered + Intro to TDA

Look above for the approximate content of the lectures listed below.

MONDAY	WEDNESDAY
Jan 24th Lecture 1	**Jan 26th** Lecture 2
Jan 31st Lecture 3	**Feb 2nd** Lecture 4
Feb 7th Lecture 5 **♣PS01 Due♣**	**Feb 9th** Lecture 6
Feb 14th Lecture 7	**Feb 16th** Lecture 8 **♣PS02 Due Sun Feb 20♣**
Feb 21st Lecture 9	**Feb 23rd** Lecture 10
Feb 28th Lecture 11 **♣PS03 Due♣**	**Mar 2nd** Lecture 12
Mar 7th Lecture 13	**Mar 9th** Lecture 14 **♣PS04 Due♣**
Mar 14th ♡*SPRING BREAK*♡	**Mar 16th** ♡*SPRING BREAK*♡
Mar 21st Lecture 15	**Mar 23rd** Lecture 16
Mar 28th Lecture 17 **♣PS05 Due♣**	**Mar 30th** **♠IN-CLASS MIDTERM♠**
Apr 4th Lecture 18	**Apr 6th** Lecture 19 **♣Project K-Means Due♣**
Apr 11th Lecture 20 **♣PS06 Due♣**	**Apr 13th** Lecture 21
Apr 18th Lecture 22 **♣Final Project Proposal Due♣**	**Apr 20th** Lecture 23
Apr 25th Lecture 24	**Apr 27th** **♡Final Project Group Work♡**
May 2nd ♠*Final Presentations*♠	**May 4th** ♠*Final Presentations*♠

The grading scale is as follows:

100-95	94-90	89-87	86-83	82-80	79-77	76-73	72-70	69-67	66-63	62-60	<60
A	A-	B+	B	B	C+	C	C-	D+	D	D-	E

ITM 215 – Information Technology for Business – Fall 2019 – 3 Credits
Professors: Pranay Jinna, Giri Tayi, Eliot Rich
Course Manager: Ethan Sprissler

Section Number: 2677 Tues/Thurs 1:15 PM – 2:35 PM LC 18
Course Pre-requisite: Sophomore Standing

Professors: Pranay Jinna, Giri Tayi, Eliot Rich

Course Manager: Ethan Sprissler esprissler@albany.edu

Course Managers Office Hours: Tuesdays and Thursdays, 4:00 – 6:00 pm office BB 318

Course Managers Office: **Business Building (BB) #318 (Course Managers Office)**

Contact: **If you have any concerns or want to arrange a meeting, please speak to the COURSE MANAGER in his office during office hours. Please refrain from contacting the Course Manager via e-mail unless** there is a medical emergency, a situation which may prevent you from taking an exam, or if there will be an extended period of absence.

Required Materials: **1. iClicker (any version) –** if you buy used, make sure that the previous owner de-registers the iClicker **AND ONE (1) of the following:**

2. Exploring Microsoft Excel Comprehensive with MyLab IT package:
ISBN: 9780135825280 **OR**

3. MyLab IT with Pearson eText for Exploring Microsoft Office 2019
ISBN: 9780135402467

This includes the material for Excel; the most important aspect is the digital access code for MYITLab; this is where all of your homework will be submitted. The **physical** copy of the text is not necessary as there is an e-text option available; **however, success in this course will require reading the textbook**. E-texts are less expensive; however, many students report that the e-text is much more difficult to work with and many do not read it. Please keep this in mind when you select your textbook option. You may share a text book, but you definitely need access to a text, but everyone will need his or her own access code.

The publisher has set up a web site for this course where you can order the text directly from the publisher: http://www.pearsoncustom.com/ny/ualbanycis/ . If you wish to purchase the eText and an Access Code for MyITLab or just an Access Code for MyITLab, follow the directions at the end of the syllabus for registering for MyITLab.

Learning Objectives:

1. Understanding of the role of information systems in business.
2. Understand databases and learn to write simple queries in SQL.
3. Acquire an intermediate to advanced understanding of Excel.
4. Understand basic concepts and terms from computer programming and scripting using macro creation utilizing VBA.

Course Description:

This 3-credit course covers the role of information systems in business, including software applications, business analytics, e-commerce, and cyber-awareness. Development of spreadsheets is emphasized, including elementary scripting and computer programming concepts. Emphasis is placed on acquiring an intermediate to advanced understanding of Excel and SQL, the goal of which is to prepare students for work as a data analyst or in any number of business fields which require compiling and sorting a large amount of data.

Attendance and iClicker questions:

ATTENDANCE IS MANDATORY. In order to avoid confusion, "**mandatory**" means ***you are required to attend***. There will be a maximum of two allowed missed classes. This includes medical and/or family emergencies. In other words, a student may miss two classes without penalty. ***This does not mean a student may miss two classes IN ADDITION to medical or family excuses***. If a student skips two classes and then requires additional time off, EVERY ABSESNCE must be documented or will receive a penalty for all excuses beyond the second. The best way to avoid penalties is to plan on attending every class this semester. If there is a long-term medical reason keeping a student away for more than two classes, the student must speak with the professor as soon as possible and documentation must be provided. Again, this does not mean that a student can skip two classes AND attempt to use a medical excuse. In this case, any days not covered by the documentation will be considered 'missed.'

Student Athletes that miss class due to games/matches/meets will not be penalized. However, before each absence the Course Manager **must be notified by email**.

Late arrivals and early departures from class are rude and disruptive for everyone. If you must arrive late or leave early, please take a seat in the back of the lecture center.

There will be several iClicker questions per class period, beginning in September. These questions will refer to material in the lecture, as well as provide possible test questions. **You may miss two days of clicker questions without penalty**. For every day of iClicker questions you miss after the 'free' two days will reduce your final grade by 20 points.

Example: missing three days will cost 20 points off the final grade, four days will cost 50 points.

Medical excuses DO count towards the 2 allowable missed classes. **In other words, you are not able to skip two days AND still receive credit for missed days, even with a medical excuse**. If you miss two classes without a medical excuse, then provide an excuse for a third day, you will still have missed more than 2 days of class and therefore will be subject to penalty. The only exception is a documented chronic medical condition, where more than two consecutive days will be missed. All medical excuses must be documented with a note from the on campus medical center.

Homework Assignments:

Twelve (12) Excel homework problems have been assigned and are located on MyITLab. These assignments are currently "hidden" and will be made available when we arrive at the appropriate point in the course. Completion of each assignment on the computer will help you learn the course material. Instructions for completing each assignment will be available on MyITLab. Your homework assignments must be submitted on-line, through MyITLab.

This semester you will be able to submit these assignments 2 times; you may submit the first time, view your score and identify which steps you did incorrectly and then correct them and resubmit. The final score for each assignment is THE AVERAGE of both submissions. This is intentional. The lower first score will not be deleted so that your average will be higher. The final submission of these assignments is due at 11:00 PM on the posted due dates. No late submissions will be accepted, no exceptions.

Point Totals:

- 180 points: 45%: 12 Excel homework assignments, each 15 points, completed through MyITLab
- 210 points: 52.5%: 3 multiple choice exams: 70 points each
- 10 points: 2.5%: Class Participation (based on Clicker Response)

400 TOTAL POINTS

Grading:

Your final grade in this class will be based on 12 Grader homework assignments worth 15 points each, three exams worth 70 points each and class participation of 10 points. Each counted Graded Homework assignment is worth 15 points (total of 180 points) and the three Exams are worth 70 points each (total of 210 points). Class participation counts for 10 points. Altogether, this brings us to a total of **400 possible points**. The chart below specifies the minimum number of points for each letter grade category.

Final grades will be assigned as follows:

Total Points	Grade Category
372+	A
360-371	A-
348-359	B+
336-347	B
324-335	B-
312-323	C+
300-311	C
288-299	C-
276-287	D+
264-275	D
252-263	D-
Less than 252	E

NOTE: This does not take into account attendance penalties or extra credit options. *If you have 362 points, but you missed more than two classes, your final grade will be lower than this chart indicates.*

All Grader Homework scores will be available on the MyITLab site. As you submit each Homework on the MyITLab site, that assignment will be automatically graded, and you should be able to see your grades in the gradebook area of the site. The Exam scores and any extra credit quizzes I decide to give will be posted on Blackboard under the 'Announcements' section.

TO FIGURE OUT YOUR CURRENT, BEST-POSSIBLE GRADE AT ANY POINT IN TIME: sum all the points that you have missed and subtract that total from 400. Using the chart above, you should be able to determine the best possible grade you may achieve before taking into account extra credit or attendance penalties.

Academic Integrity:

This issue is taken very seriously at the School of Business and in BITM 215. We want to encourage you to take it seriously as well, and avoid any temptations, errors of judgment, or other weaknesses that would put you at risk. Therefore, please be clear on the following expectations.

We assume that all work done for credit in this course will be the result of your own efforts. Anyone who gives or receives unauthorized assistance in the preparation of graded course work will be subject to disciplinary action, which will include failure in the course (BITM 215) and possibly expulsion from the University.

We encourage students to be able to learn from each other in BITM 215. The following describes the difference between ***unauthorized assistance*** and the collaborative learning that I encourage. Collaborative learning is different than collaborative work. The former is encouraged, the latter is subject to penalty. To work collaboratively means to push each other's boundaries with regard to the skills and knowledge of the course. It may be accomplished through examples and illustrations that aid a classmate in understanding challenging material. With respect to collaborative learning, the distinguishing point you must be clear about is that collaborative learning must end when you are producing your to-be-graded work.

Should you believe you are wading into what may be a grey area in the distinction between collaborative learning and unauthorized collaborative work, we strongly advise you to err on the side of caution. Ultimately it is the instructors in BITM 215 who decides on matters of academic integrity in this course, and not the student. The consequences of breaches of academic integrity, or errors in judgment that lead to breaches of academic integrity are severe and will include failure in BITM 215, and possibly expulsion from the University.

In BITM 215 the following are considered Integrity Violations; if you commit any of these actions, we will file an academic dishonesty violation with the Office of Conflict Resolution & Civic Responsibility and fail you in the course.

1. **Exams** - Any act of Academic Dishonesty associated with an exam will result in failing the course, examples of Academic Dishonesty include (but are not limited to):

    a. Talking during an exam/quiz
    b. Copying another student's answers during an exam/quiz
    c. Using any electronic aid, such as a computer, smart phone, translator, pad, tablet, etc. during an exam/quiz
    d. Using cheat sheets, information written on clothing or body parts, other written material during an exam/quiz.

2. **Homework Assignments** - The following are examples act of Academic Dishonesty with respect to the Grader Homework assignments; **the penalty for cheating is failure in the course**:

    a. Paying another person to do your assignment.
    b. Having a tutor work with you on a **graded homework** assignment (this does not include practice exercises).

c. Copying any data from a file posted on the web, or any external source, and pasting that data on your worksheet or data base, and submitting it as your work.
d. Copying another student's file (or part of a file) and submitting it as your own work.
e. **Giving another student your work also counts as cheating.**
f. **Using homework answers found online, regardless of whether or not you personally downloaded the assignment, also counts as cheating.**

3. **In class** – using someone else's iClicker to make it appear that another student is present in class when they are not actually in the classroom is also considered cheating and **20 points** will be deducted from both **the student who is using the iClicker as well as the student who is not in class.**

If you commit an integrity violation and subsequently drop the course, after the drop date, the registrar will reinstate you in the course, and you will receive an appropriate failing grade. In addition to the above noted penalty, we will file an academic dishonesty violation with the Office of Conflict Resolution & Civic Responsibility. Generally, even a student with no prior disciplinary record may face suspension from the University for a Minimum one semester, or longer in aggravated cases.

Downloading Files: (These steps are required each time you download a file from MyITLab)

When you navigate to the MyITLab site and log in, you should then navigate to which ever assignment you are ready to complete. Select that assignment and a dialog box will open. Select Download Files, and another box will open. You may download the ZIP folder with the Excel/Access file and the Instructions. These Excel/Access files will have a name such as:

- Exploring_e01_Grader_EOC.xlsx (Excel Grader 1 End of Chapter)

At this point you should open the file, then go to the File Tab and select Save As. A dialog box will open and you should change the file name to something that will distinguish it as your file, such as: **Sprissler_Excel_Grader_1.xlsx** or a name designated in the directions. Then select a location to save the file in, such as the S drive on a public campus computer, a flash drive, etc. Close all the files (handle the directions files any way you want). Then open the application file (Excel or Access Grader that you just renamed and saved) and do the assignment.

When you have completed the assignment, save the file, close the file, navigate to the MyITLab site and upload our submission in the Course Content area.

MAKE SURE THAT YOU ARE UPLOADING THE CORRECT FILE! DOUBLE CHECK THE NAME OF YOUR FILE BEFORE YOU UPLOAD!

If you are on a public computer (Library, user room, etc.) delete your file off the desktop/My Documents (you may save it to the S Drive or a flash/thumb drive) and log off the computer.

Hardware & Software requirements to complete the coursework:

1. Access to a computer with MS-Excel 2016 installed, either by itself or as part of Office 365. You must use a PC (**not a MAC**) for the Grader assignments. It is advisable not to use a computer with a foreign operating system, such as Chinese, Japanese, Korean, Dutch, etc.

2. You are expected to complete the Hands-On Exercises in the Excel text. These exercises require student data files (Hands-On files) that can be downloaded from the publisher's web site; these files (Hands-On) are also posted on Blackboard.

3. If you do not already own Office 365, there will be a link provided on Blackboard to the University agreement that will allow you to download the software for use while you remain a student at the University.

Help:

Prior to seeking help for a topic, you should have already completed the corresponding Simulation and/or Hands-On Exercise in the textbook for that topic. If you have not completed the appropriate Hands-On Exercise, the **TAs** (and **Course Manager**) ***will be unable to help you. You MUST demonstrate that you have made some effort to learn this material.*** TAs are available for help with understanding the material covered on the homework; they can be found on the 1st floor of the New School of Business building, room 320. You are strongly advised to go see a TA as soon and as often as you need help. ***The TA's are there to help you understand HOW to complete problems, not give you the answers***; if you did not understand a **specific** function or topic in Excel, we will work with you so you can understand that area, but we will use files other than the Grader Homework file to explain the procedures. You will learn the Excel and Access material by completing the Hands-On Exercises. The TAs' office hours will be posted on Blackboard by the end of the second week of classes.

Schedule: The following is a general plan for the course. Deviations may be necessary.

Class #	Date	Topic	Additional Info.
1	8/27	Introduction with Course Manager	**Create MYItLab account**
2	8/29	Introduction to Excel (Pranay Jinna)	**Homework 1-4 available on 8/29; due 9/20 at 11:00 pm EST**
3	9/3	Formulas & Functions	
4	9/5	Formulas & Functions	
5	9/10	Charts	
6	9/12	Datasets & Tables	
7	9/17	*Business Analytics**	
8	9/19	Professional Services Industry Presentation (PwC)	**Homework 1-4 due 9/20 at 11:00 pm EST**
9	9/24	**Exam 1 (35 Minutes)**	**Bring ID and Pencil!**

10	9/26	Subtotals, PivotTables & PivotCharts (Giri Tayi)	**HW 5-8 available 9/26; due 10/18 at 11:00pm EST**
11	10/1	What-If Analysis	
12	10/3	What-If Analysis	
13	10/8	Specialized Functions	
14	10/10	Specialized Functions	
15	10/15	**NO CLASS – FALL BREAK**	
16	10/17	Statistic Functions	**HW 5-8 due 10/18 at 11:00pm EST**
17	10/22	*E-Commerce**	
18	10/24	**Exam 2 (35 Minutes)**	**Bring ID and Pencil!**
19	10/29	Multi-sheet workbook management (Eliot Rich)	**HW 9-12 available 10/29; due 11/22 at 11:00pm EST**
20	10/31	Importing Data, Web Queries, and XML	
21	11/5	Importing Data, Web Queries, and XML	
22	11/7	Collaboration	
23	11/12	Collaboration	
24	11/14	Templates, Styles, and Macros	
25	11/19	Templates, Styles, and Macros	
26	11/21	*Cyber-awareness and Ethics**	**HW 9-12 due 11/22 at 11:00pm EST**
27	11/26	**Exam 3 (35 Minutes)**	**Bring ID and Pencil!**
28	11/28	**~~~ No Class – Thanksgiving Break ~~~**	
39	12/3	**Guest Speaker – William Trevor**	
30	12/5	Final class ~ Extra credit quiz	

Note: Topics "Business Analytics", "Professional Services Industry Presentation", "E-Commerce" and "Cyber Awareness and Ethics" are not part of the exam.

Your homework assignments must be submitted on-line, through Pearson MyITLab.

To register for MyITLab, follow the directions on the MyITLab registration which follow, and the directions for entering your Student ID into MyITLab which follow the registration directions.

Browser: When accessing MyITLab, the recommended browser is Chrome. FireFox would be a second choice.

MyLab & Mastering
Student Registration Instructions

MyITLab®

PEARSON ALWAYS LEARNING

To register for BITM 215 – Section 2677:

1. Go to pearsonmylabandmastering.com.
2. Under Register, click **Student** then click **OK Register Now**
3. Enter your instructor's **course ID**: **sprissler54003**, and click **Continue**.
4. Sign in with an existing Pearson account or create an account:
   - If you have used a Pearson website (for example, MyITLab, Mastering, MyMathLab, or MyPsychLab), enter your Pearson username and password. Click **Sign in**.
   - If you do not have a Pearson account, click **Create**. Write down your new Pearson username and password to help you remember them.
5. Select an option to access your instructor's online course:
   - Use the access code that came with your textbook or that you purchased separately from the bookstore **or**
   - Buy access (Access Code & eText or just Access Code) using a credit card or PayPal.
   - If available, get 14 days of temporary access. (Look for a link near the bottom of the page.)
6. Click **Go To Your Course** on the Confirmation page. Under MyLab & Mastering New Design on the left, click **BITM 215 Section 3965** to start your work.

Retaking or continuing a course?

If you are retaking this course or enrolling in another course with the same book, be sure to use your existing Pearson username and password. You will not need to pay again.

To sign in later:

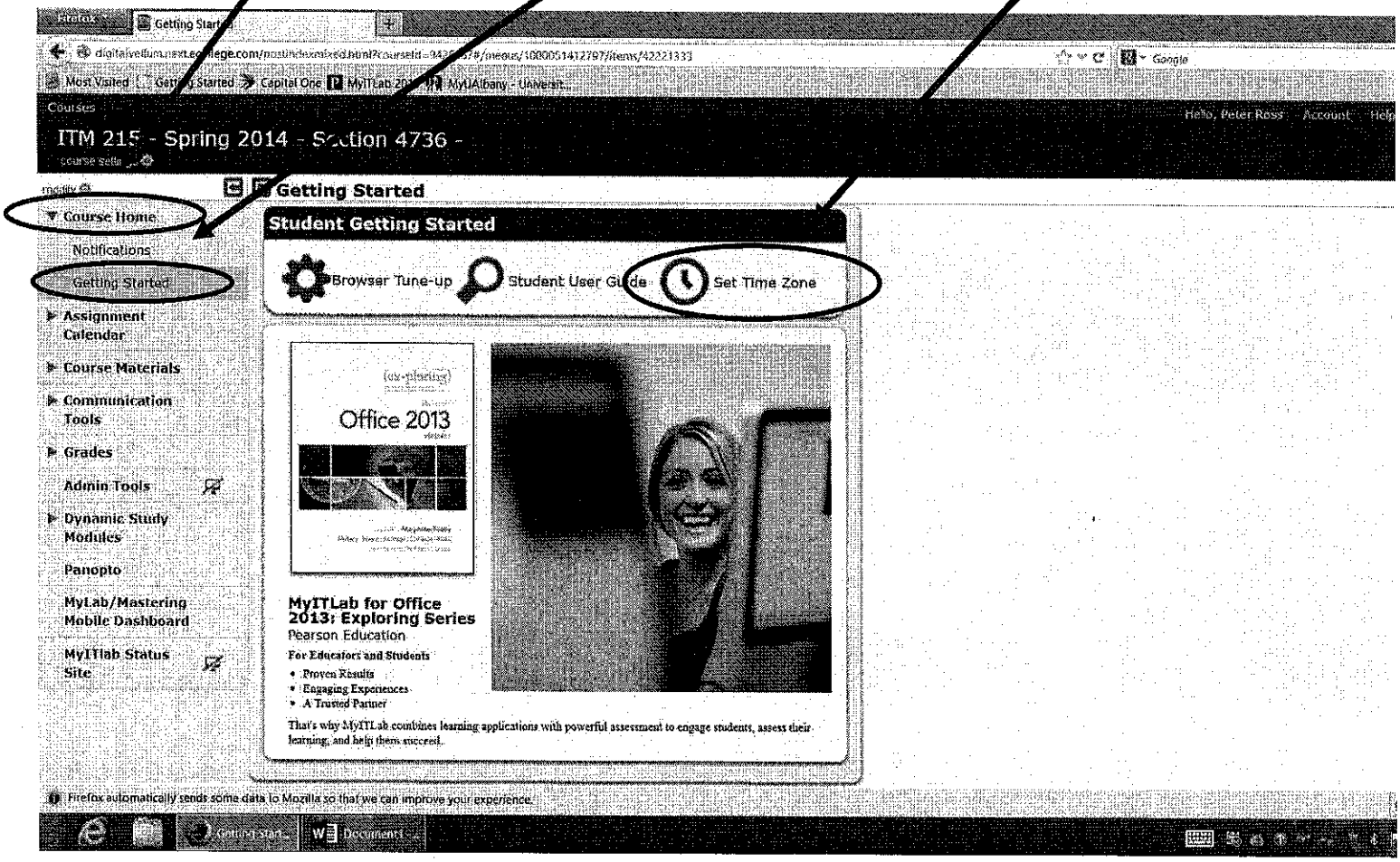
1. Go to pearsonmylabandmastering.com.
2. Click **Sign in**.
3. Enter your Pearson account username and password. Click **Sign in**.
4. Under MyLab & Mastering New Design on the left, click **BITM 215 Fall 2019 Section 2677** to start your work.

Entering your NetID into MyITLab.

Sign into MyITLab and select Course Home.

Select Getting Started.

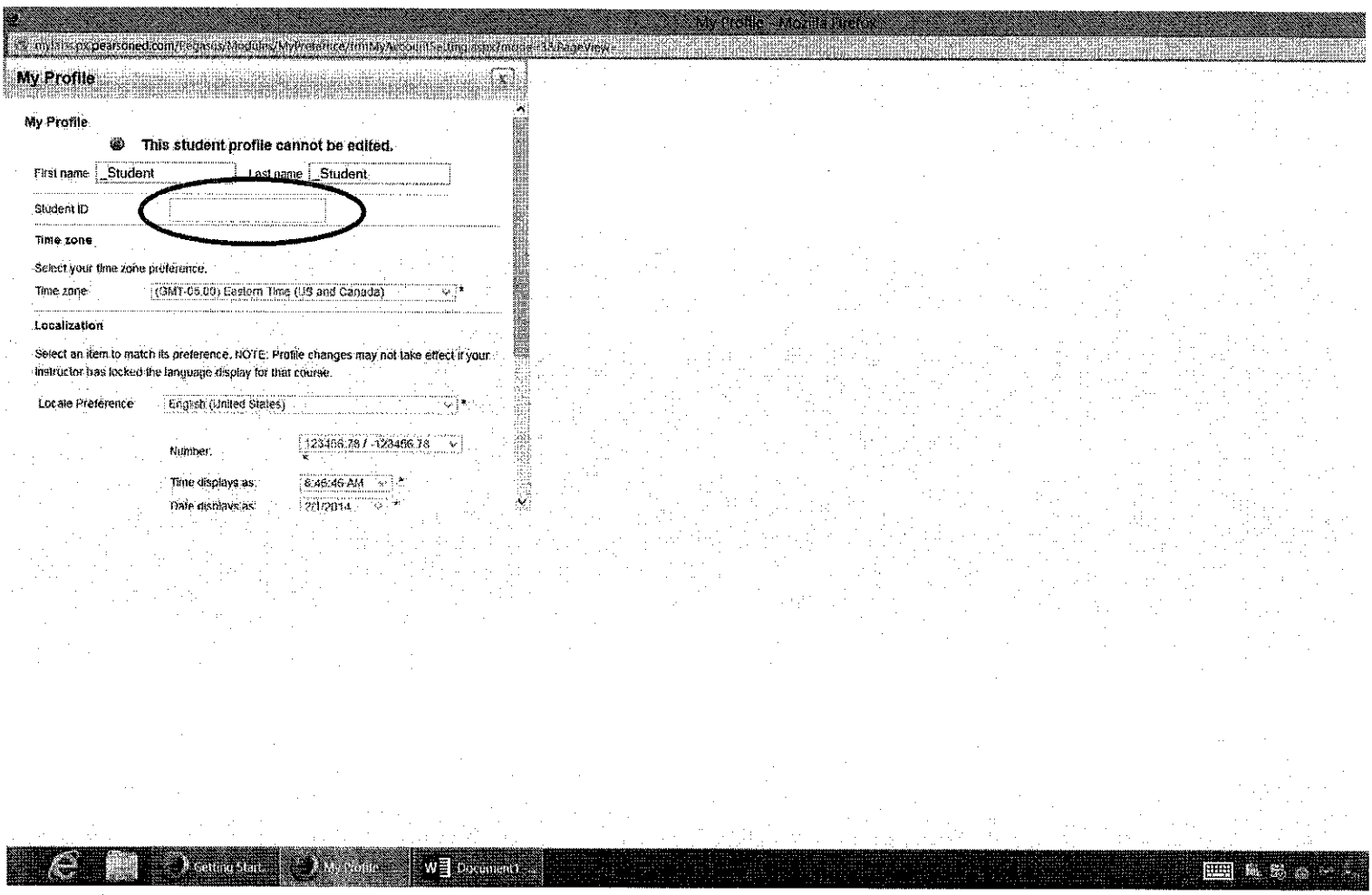
Then Click Set Time Zone.



CONTINUE TO THE NEXT PAGE

You will see a screen that looks like this, but the student profile will allow editing. Your first and last names will already be in their respective boxes. Enter your **NetID (typically two letters and 6 numbers, ex: JD518439).** Then, scroll down and click the SAVE.

Your NetID is used to sync your homework scores between Pearson and Blackboard. Failure to follow this set of instructions will result in zeros on your homework assignments.



University at Albany, School of Business
BITM 330
Improving Business Performance with Information Technologies
Fall 2019
Call#1002 (LC 24) and Call#6853 (LC 23)

This is the three-credit course.
Pre-requisites: BITM 215, AMAT 106, and AMAT 108, or equivalent courses
Lectures are Tu/Th, but, please follow the syllabus for the weeks when the Lab is scheduled and on those weeks no Thursday class will be offered.
Labs are required; please attend ONLY the Lab according to YOUR LAB day and time.
Instructors:

Saggi Nevo	**Jakov (Yasha) Crnkovic**
Office: BB393	Office: BB391
Office hrs. (until 9/30/2019) 1. Tue. 10:30-11:30 am 2. Thur. 10:30-11:30 am	Office hrs. (from 10/1/2019) 1. Wed, 1:00 - 2:00 pm 2. Thursdays during class times (when lecture is not offered because of the Labs)
Course coordinator: Ethan Sprissler, Office: BB318; **E-mal: esprissler@albany.edu** Office hrs. T, R 4-6 pm Please come in person. Do not send e-mails unless it is extremely emergency!	

There are **four TAs/GAs** assigned for this courses and they will run Lab sections and conduct their office hrs.

Texts: 1: Kroenke, Auer: Database Concepts, (printed) and
2. Poatsy: Access 2016 (eBook) bundled with access for working on MyIT Lab, for the bundle: ISBN: 9780134776972. *Do not purchase anything before the first class since the Pearson rep will come to explain some details and to answer questions!*

Supplies: Portable memory or USB Drive ("flash drive", "thumb drive") is very useful. It costs less than $10 per 32 GB and you need only <1 GB for this course, so you will have enough room for all your courses on one drive! We will use mostly Microsoft Access and Excel towards the end of the course. Note: Access files you CANNOT send via e-mail, please have your USB drives in the Lab every time or use S drive. When visiting TA or professor's office hrs., bring your file on USB ("flash") drive!

Software: We will use Excel and Access 2016 (2013 versions will work fine, too). Please use library if you do not have Access on your machine.

- YOU MAY DOWNLOAD MS ACCESS FREE OF CHARGE, **if you have the Windows OS…**
- Go to your UAlbany email, look for "Office 365", and look for the link to download Microsoft Access (you may also download other Microsoft products from here).
- Unfortunately, there is not such availability for Macintosh OS at this point.
- All submissions should be in Windows readable formats.

LAB sessions will follow the lectures and discussions. The focus will be in using Access to solve database management cases. Please DO NOT BRING YOUR OWN COMPUTER TO THE LAB: there is no space where to put it! You will be able to complete **the majority** of your individual projects during the LAB sessions, **but not all! Do not expect that TA will show all steps to solve!**

IT IS NOT ALOWED TO OPEN AND USE COMPUTER, TABLET OR ANY SUCH A DEVICE **INCLUDING CELL PHONES** DURING THE LECTURES (penalty 5 points per occasion). IT IS NOT ALLOWED TO TAKE

PICTURES, RECORD/TAPE THE LECTURES USING ANY KIND OF DEVICE (penalty 5 points per occasion)! IF YOU DO NOT WANT TO COMPLY WITH THIS REQUEST, PLEASE DROP THE COURSE ON TIME.

COURSE DESCRIPTION

This course covers database theory, design and applications of databases for the business uses. It covers data modeling and normalization process, database management approaches, database functions and database administration, followed by the design of database systems for business applications. Students will use Access, SQL and programming in VBA (Visual Basic for Applications). Experience with database applications is gained through several individual and group projects. The knowledge gained in classroom students will apply to create database systems working in the instructional computing lab. Course meets twice a week (once a week in a classroom and once a week in a lab). Attendance is required. In addition, professor will have extra office hours (in his office) every Thursday when there is no Lecture that day.

LEARNING OBJECTIVES:

By the end of the module student should be able to:

- ☐ Understand the role and importance of database management within organization
- ☐ Discuss and analyze database based information systems in business
- ☐ Find end user's role in company IT/IS independently of the role user has in the organization
- ☐ To be a comprehensive user of both Microsoft Excel (covered in BITM215) and Microsoft Access
- ☐ Get a solid base for development database applications in business and accounting
- ☐ Appreciate the role of database designer and managers

ASSESSMENT. The accomplishment of course objectives will be assessed in class by:

- ☐ Applying the concepts and software for solving business-like problems in individual homework projects
- ☐ Developing logical design for VBA projects and database systems
- ☐ Building small prototypes for decision making in various business applications
- ☐ Creating a working database prototypes in Access using wizards, macros and elements of VBA
- ☐ Linking the current business practices with the theory being discussed in classes
- ☐ Using the Blackboard and e-mail communications with your peers, and professor to discuss issues and current business and managerial practices in the related areas

PROJECTS, TESTS AND GRADING:

1. **Two MyLab IT projects (<=15 points** each, **total < =30)**
2. **Two DB design Projects ((<=15 points** each**< total <=30).** Detailed instructions will be provided on Blackboard.

Project	Topic
1 Access DB	Creating a database for a simple application (Capstone 1, MYITLab, autograded)
2 Access DB	Creating a database for a business application (Capstone 2, MYITLab, autograded)
3 VBA-Excel	Business Application Development – Excel (submit in Bb)
4 Access Db	Business Application Development - Access (submit in Bb)

3. **Three on-line tests**: up to 100 points each, total<= 300 points.
4. **MYIT Lab assignments.** Up to **105 points** for seven **MyIT Lab** activities (L1 to L7, <=15 for each Lab activity). Activities are assigned on MYITLab and auto-graded by the system. To get the full credit (15 points per activity), you need to score 85% or more for the activity, and if scored less it will be reduced number of points.
5. **MYIT Lab simulations.** Up to **35 points** for seven simulations **(<=5 for each simulation).** To get the full credit (15 points per activity), you need to score 85% or more for the activity, and if scored less it will be reduced number of points. **You should do this BEFORE the related Labs, so that it can instruct you how to do the Lab. No points for simulations if it is done after the Lab deadline.**

EXTRA POINTS

Class attendance is your obligation. TA will check it every time for the Lab and instructors will check attendance using mini quizzes. Each successful mini-quiz will earn one extra point, with the total of at least 10 points.

Negative points

1. Negative points may be applied for disruptive behavior in the classroom or in the Lab (**5 points** per occasion)
2. For **all projects** and all **MyITLab** activities (L1-L7, simulations), there will be a grade penalty. Submit your projects on time! Penalty for being late is 20% per day, and it is automatically deducted in the auto-grader.
3. We encourage students to attend and take advantage of the labs. This is the time we have allocated to assist you more directly with your issues. Please, use this time wisely! Missing Lab session (unless acceptable reason) leads to penalty of **5 points** per occasion.

FINAL GRADING:

Towards the end of the semester there are **NO extra points,** and **NO extra work** ("I will do anything" and similar "stories"). Also, there is no **re-grading** of any previously submitted and graded material! From max of 500 points (actually student can earn max of 510, but grades are based on 500), 470 points is the minimum number of points for an A. For the other grades, please see the table below. There are extra points making the total higher, and because of that, no calculation for the % matching will occur: please just use the table of points.

Table for grades:

Grade	**Min** number of points for the grade (please notice that the intervals are different)
A	**470 or above**
A-	**460**
B+	**450**
B	**440**
B-	420
C+	400
C	380
C-	360
D+	340
D	320
D-	300

NOTES:

1. Not all material and information will be on the Bb, so please attend the classes (this is not an online course.)

2. Written projects will consist of problem solving exercises and a short discussion. Problem descriptions will be distributed in class and on the Blackboard. Please follow the instructions on how to submit your solutions. Projects produced by: using any kind of copying; scanning, cut&paste or similar techniques will not be accepted (any **suspicion** of cheating will lead to zero points for the project.) Please work individually and keep a copy of your work in safe place. You will need to upload the project file (or files) to Blackboard.

YOU CANNOT SEND MICROSOFT ACCESS (*.ACCDB) FILE USING UNIVERSITY E-MAIL. ALSO, PLEASE DO NOT SEND ANY OF YOUR SUBMISSIONS AS E-MAIL ATTACHMENTS! IT IS SLOWING THE GRADING PROCESS.

Instructor and TAs most likely do not have S-drive access in their offices, so, if you need help with Access, please have your file on a flash drive before asking for help!

3. Please, do not be late with projects and homework assignments. It **means fewer points.** Please note that this **MUST** be enforced based on the grading scheme.

4. Exam and project grades will be posted on the Blackboard or MyITLab site. If a student feels that there is a mistake, the student must **visit the professor in person during office hours or by an appointment (NO E-MAIL CORRESPONDENCE IN THAT MATTER). There will be no RE-GRADING or "DISCUSSING" the project or test grade after the next project is due, and it WILL BE STRICTLY REINFORCED.**

5. Exam (test) dates will not be changed. There are NO make-up tests for whatever the reason may be, except documented medical reasons (please organize your other obligations accordingly, do not plan trips and do not schedule anything on those three test days).

6. The basic knowledge of Windows operating system, Internet, Word and **very good level of Excel** programs is assumed. Knowledge of **Access** is not needed (we will start from the beginning).

7. CHEATING (even attempted) IN ANY FORM WILL NOT BE TOLERATED. Individual will fail the exam, project or entire course (zero points for the exam or project or even a letter grade E for the entire course) and will be

reported to School officials for further actions. Do not cheat when submitting MyIT Lab assignments: system will "get you" and you will be dismissed from the class with the grade of E **and** reported to the University authorities!
8. If there is a problem connected with this course, please contact your professor as soon as possible using the e-mail, or in person during office hours or before the next class.

Tentative topic schedule

#	date	Activity	Description	Assignment Due
1	8/27/2019	Lecture	Organization of the course. Introduction (Ch.1)	
2	8/29/2019	Lecture	Introduction to Access. Tables and Relationships in Access (discussing features with readymade database)	
3	9/3/2019	Lecture	Queries (QBE) in Access. Reports and simple Forms	
4	9/5/2019	Lecture	The Relational Database Model (Ch. 2)	
5	9/10/2019	Lecture	Normalization (Ch.2)	
6	No LC 9/12/2019	Lab	Lab: L1, L2	
7	9/17/2019	Lecture	Normalization exercises / Exam 1 preps	
8	No LC 9/19/2019	Lab	Lab: L3, L4	L1, L2
9	9/24/2019	**Exam 1 (on line, <= 30 minutes). Student can start it anytime between Noon and 6 pm. Be sure to have reliable Internet connection, once started you need to finish in only one session!**		
10	No LC 9/26/2019	Lab	Lab: P1, L5	L3, L4
11	10/1/2019	Lecture	Data Modeling (Ch. 4)	
12	10/3/2019	Lecture	Entity-Relationship Model (Ch. 4)	
13	10/8/2019	Lecture	Database Design (Ch. 5) Controls/Objects in Access	
14	No LC 10/10/2019	Lab	Lab: L6, L7	P1, L5
	10/15/2019	University Fall Break		
15	10/17/2019	Lecture	SQL (Ch.3)	
16	10/22/2019	Lecture	SQL (Ch.3)	
17	No LC 10/24/2019	Lab	Lab P2	L6, L7
18	10/29/2019	Lecture	Exam 2 preps	
19	10/31/2019	**Exam 2 (on line, <= 30 minutes). Student can start it anytime between Noon and 6 pm. Be sure to have reliable Internet connection, once started you need to finish in only one session!**		
20	11/5/2019	Lecture	Database administration (Ch. 6)	
21	11/7/2019	Lecture	Computer Programming Concepts (VBA text)	
22	11/12/2019	Lecture	Designing business application in Excel	
23	No LC 11/14/2019	Lab	Lab P3	P2
24	11/19/2019	Lecture	Designing business application in Access	
25	No LC 11/21/2019	Lab	Lab: P4	P3
26	11/26/2019	Lecture	Intro to DW, Business Intelligence Systems, and Big Data (Ch. 8)	
27	12/3/2019	Lecture	Exam 3 preps	

28	12/5/2019	**Exam 3 (on line, <= 30 minutes). Student can start it anytime between Noon and 6 pm. Be sure to have reliable Internet connection, once started you need to finish in only one session!**	P4

Distance Education Format Proposal
For A Proposed or Registered Program

Form 4

Version 2014-11-17

When a new or existing program is designed for a distance education format, a campus Chief Executive Officer or Chief Academic Officer should submit a signed cover letter and this completed form to the SUNY Provost at *program.review@suny.edu*. According to MSCHE, the 50% standard includes only courses offered in their entirety via distance education, not courses utilizing mixed delivery methods. Also, MSCHE requires that the first two programs for which 50% or more is offered through distance education be submitted for Commission review and prior approval of a substantive change.

- All campuses must complete the following sections: Sections 1 - 3, and Part B: Program Specific Issues.
- Part A must be completed if the proposing campus has not previously submitted this form with a completed Part A: Institution-wide Issues, or has made significant changes to its institution-wide distance education operations since last completing Part A. This applies even if the institution has programs registered to be delivered at a distance.

Section 1. General Information		
a) Institutional Information	Institution's 6-digit SED Code:	210500
	Institution's Name:	University at Albany
	Address:	*1400 Washington Avenue, Albany, NY 12222*
b) Registered or Proposed Program	Program Title:	Mathematics
	SED Program Code	03011
	Award(s) (e.g., A.A., B.S.):	B.S.
	Number of Required Credits:	Minimum [120] If tracks or options, largest minimum [120]
	HEGIS Code:	1701
	CIP 2010 Code:	17.0101
c) Distance Education Contact	Name and title: Billie Bennett Franchini, Ph.D., Director of the Institute for Teaching, Learning and Academic Leadership and Interim Director of Online Teaching & Learning Telephone: (518) 442-4850 E-mail: bfranchini@albany.edu	
d) Chief Executive or Chief Academic Officer Approval	**Signature affirms that the proposal has met all applicable campus administrative and shared governance procedures for consultation, and the institution's commitment to support the proposed program. *E-signatures are acceptable.*** Name and title: Carol Kim, Ph.D., Senior Vice Provost for Academic Affairs & Provost Signature and date: 1/31/2023	
	If the program will be registered jointly[1] with one or more other institutions, provide the following information for <u>each</u> institution:	

[1] If the partner institution is non-degree-granting, see SED's CEO Memo 94-04.

	Partner institution's name and 6-digit SED Code: Name, title, and signature of partner institution's CEO (or **append** a signed letter indicating approval of this proposal):

Section 2: Enrollment

Year	Anticipated Headcount Enrollment			Estimated FTE
	Full-time	Part-time	Total	
1	10	0	10	10
2	10	0	10	10
3	10	0	10	10
4	10	0	10	10
5	10	0	10	10

Section 3: Program Information

a) ***Term length*** (in weeks) for the distance program: 15

b) Is this the same as term length for classroom program? [ ] No [X] Yes

c) How much "***instructional time***" is required per week per credit for a distance course in this program? (Do not include time spent on activities that would be done outside "class time," such as research, writing assignments, or chat rooms.) ***NOTE:*** *See SUNY policy on credit/contact hours and SED guidance.*

55 minutes

d) What proportion or percentage of the program will be offered in Distance Education format? Will students be able to complete 100 percent of the program online? If not, what proportion will be able to be completed online?

We anticipate offering 50% of the program requirements online.

e) What is the maximum number of students who would be enrolled in an online course section?

We will enroll a maximum of 35 students in our online courses.

Part A: Institution-wide Issues: Submit Part A only for the **first** Distance Education program proposed by your institution using this form. SUNY and the State Education Department will keep this in a master file so that your institution will not need to resubmit it for each new proposed online program, **unless there are significant changes, such as a new platform**.

Part A.1. Organizational Commitment

a) Describe your institution's planning process for Distance Education, including how the need for distance access was identified, the nature and size of the intended audiences, and the provisions for serving those audiences, including how each student's identity will be verified.

b) Describe your institution's resources for distance learning programs and its student and technical support services to ensure their effectiveness. What course management system does your institution use?

c) Describe how the institution trains faculty and supports them in developing and teaching online courses, including the pedagogical and communication strategies to function effectively. Describe the qualifications of those who train and/or assist faculty, or are otherwise responsible for online education.

d) If your institution uses courses or academic support services from ***another provider***, describe the process used (with faculty participation) to evaluate their quality, academic rigor, and suitability for the award of college credit and a degree or certificate.

e) Does your institution have a clear ***policy on ownership of course materials*** developed for its distance education courses? How is this policy shared with faculty and staff? ***NOTE:*** *You may refer to SUNY's statement on copyright and faculty ownership of instructional content, and/or faculty contract provisions.*

Part A.2. Learner Support

a) Describe how your institution provides distance students with ***clear information*** on:

- Program completion requirements
- The nature of the learning experience
- Any specific student background, knowledge, or technical skills needed
- Expectations of student participation and learning
- The nature of interactions among faculty and students in the courses.
- Any technical equipment or software required or recommended.

b) Describe how your institution provides distance learners with adequate ***academic and administrative support***, including academic advisement, technical support, library and information services, and other student support services normally available on campus. Do program materials clearly define how students can access these support services?

c) Describe how ***administrative processes*** such as admissions and registration are made available to distance students, and how program materials inform students how to access these services.

d) What ***orientation*** opportunities and resources are available for students of distance learning?

Part B: Program-Specific Issues: Submit Part B for each new request to add Distance Education Format to a proposed or registered program.

Part B.1. Learning Design

a) How does your institution ensure that the ***same academic standards and requirements*** are applied to the program on campus and through distance learning? If the curriculum in the Distance Education program differs from that of the on-ground program, please identify the differences.

The curriculum and syllabi for the Distance Learning Program will remain the same as our in-person program. Syllabi will have the same learning outcomes and expectations of students, whether the course is taught online or in-person.

b) Are the courses that make up the distance learning program offered in a sequence or configuration that allows ***timely completion of requirements***?

Yes - courses will be offered on a regular basis. Students work with an advisor to be sure they are taking courses when needed, to insure progression through the program. The program will be completed in the same amount of time as the in-person program.

c) How do faculty and others ensure that ***the technological tools*** used in the program are appropriate for the content and intended learning outcomes?

The University provides faculty with learning management software, currently Blackboard. Through this program faculty can upload videos, create discussion boards, provide readings and links for students, and posts. The University also uses Zoom, which provides faculty the ability to offer interactive lectures and also record those lectures to post to the class's Blackboard page. Zoom also allows for students to have breakout space for group work, and a way for faculty to offer office hours to students who are online. If faculty teaching these courses need more support for technological tools, they will reach out to the University's Institute for Teaching, Learning, and Academic Leadership. This Institute helps faculty with online teaching pedagogy and can help faculty learn new tools or ways to accomplish the goals they set for their classes and students.

d) How does the program provide for appropriate and flexible interaction between faculty and students, and among students?

Students will have a wide range of technologies available for communicating with other students, the instructor, and their academic advisor. Blackboard has a discussion board section, that allows students to comment on other's comments, helping to build a conversation between students and faculty. Typically, faculty use ZOOM for holding office hours and conferencing with students and the entire class at times for lectures. Zoom also has a breakout feature, allowing students to meet in groups with students for group work. Students and professors will have the ability to email each other or use the office telephone in addition to Zoom. Students

e) How do faculty teaching online courses verify that the student who registers in a distance education course or program is the same student who participates in and completes the course or program and receives the academic credit?

The University at Albany has a two-layer authentication and authorization system. Students participating in online learning are required to establish an account and log into the University password protected domain by using their NETID. The same will apply when they log in to the online learning system.

Part B.2. Outcomes and Assessment

a) Distance learning programs are expected to produce the ***same learning outcomes*** as comparable classroom-based programs. How are these learning outcomes identified – in terms of knowledge, skills, or credentials – in course and program materials?

Learning outcomes for the programs are set to meet the expectations of accreditation standards and career goals. Learning outcomes for each course are explicitly stated on each mathematics course syllabi. Students receive a copy of the syllabus on the first day of class.

b) Describe how the ***means chosen for assessing student learning*** in this program are appropriate to the content, learning design, technologies, and characteristics of the learners.

Student learning in all mathematics courses is assessed through a combination of problem solving and proof writing, in addition to projects/presentations. This applies to both online and in person courses. Assessment takes place by a combination of homework assignments, tests, and presentations, which would be the same for both online and in person.

Part B.3. Program Evaluation

a) What process is in place to monitor and ***evaluate the effectiveness*** of this particular distance education program on a regular basis?

The Mathematics Department has faculty members tasked with annual review and assessment of student learning outcomes in departmental courses. This applies to both in-person and online courses. These faculty review the syllabus (or syllabi) for that year, the learning outcomes and assessments used to meet the outcomes. They also look at student performance in the course. In addition, the department will monitor Student Instructional Rating Form (SIRF) evaluations for both types of courses to ensure student performance is comparable.

b) How will the evaluation results will be used for ***continuous program improvement***?

The Department Undergraduate Committee meets to discuss the results of these yearly evaluations and makes recommendations for improvement. The committee monitors changes over the years to ensure continuous improvement.

c) How will the evaluation process assure that the ***program results in learning outcomes appropriate to the rigor and breadth*** of the college degree or certificate awarded?

The program's learning outcomes were set to meet the University's and accreditation standards for rigor and depth. Each year the Department's Undergraduate Committee reviews each course's learning outcomes to be sure that the overall program's learning outcomes are being met. Should there ever be a concern, the committee will address that with all faculty who teach the courses in concern and assist in ways to ensure that the course is modified to meet the standards expected.

Part B.4. Students Residing Outside New York State

SUNY programs must comply with all "authorization to operate" regulations that are in place in other U.S. states where the institution has enrolled students or is otherwise active, based on each state's definitions.

a) What processes are in place to monitor the U.S. state of residency of students enrolled in any distance education course in this program while residing in their home state?

The State Authorization Reciprocity Agreement (SARA) process allows the University at Albany to deliver our online programs in states outside New York. SARA is a voluntary agreement among its member states and U.S. territories that establishes one set of national standards and regulations for offering postsecondary distance education courses and programs. This agreement is administered by four regional educational compacts and overseen by the National Council for State Authorization Reciprocity Agreements (NC-SARA). New York is a member of SARA and the University at Albany is an approved SARA institution. We adhere to the established SARA standards for offering online education among member states, districts and territories. As a result, our online students benefit from expanded access to educational offerings, an enhanced quality of distance education and better resolution of any complaints.

Federal regulations require institutions delivering courses by distance education to provide students or prospective students with contact information for filing complaints with the state approval or licensing entity in the student's state of residency and any other relevant state official or agency that would appropriately handle a student's complaint. What is the URL on your institution's website where contact information for filing complaints for students in this program is posted? https://www.albany.edu/online/non-nys-residents.php