UNIVERSITY AT ALBANY
State University of New York

Office of the Provost and Senior Vice President for Academic Affairs

January 20, 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 our College of Arts and Sciences, I am pleased to submit our proposal for an update to our Actuarial and Mathematical Sciences BS 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

University Hall, Suite 308
1400 Washington Avenue, Albany, NY 12222
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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 Avenue, 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:	Actuarial and Mathematical Sciences
	SED Program Code	19843, 28858
	Award(s) (e.g., A.A., B.S.):	B.S.
	Number of Required Credits:	Minimum [120] If tracks or options, largest minimum [ ]
	HEGIS Code:	1799
	CIP 2010 Code:	52.1304
	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:  1/20/2023	
	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
[ ] 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 of Change: *We added a few new honors course options in the foundational math courses for our accelerated students. We added Introduction to Proofs and an Information Literacy course to ensure these students had more writing courses and a research-based course, to support the writing and research competencies required for this profession. We removed a few upper-division math courses and added a few math courses that are more aligned to the knowledge base needed for this profession. We added options for computer science courses, so students could choose courses that aligned to their goals. We also specified which economics courses to take, to ensure a solid foundation in economics was complete within this program.*

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.

1995 Actuarial and Mathematical Sciences B.S. Requirements:	**2023 Proposed Changes to Actuarial and Mathematical Sciences B.S. Requirements:**
61 cr. major and minor sequence:	***64 cr. major and minor sequence:***
42 cr. in Mathematics:	***37 cr. in Mathematics:***
Select one AMAT 112 – Calculus I (4) / AMAT 118 – Honors Calculus I (4)	*Select one* AMAT 112 – Calculus I (4) / AMAT 118 – Honors Calculus I (4)
Select one AMAT 113 – Calculus II (4) / AMAT 119 – Honors Calculus II (4)	*Select one* AMAT 113 – Calculus II (4) / AMAT 119 – Honors Calculus II (4)
AMAT 214 – Calculus of Several Variables (4)	*Select one* AMAT 214 – Calculus of Several Variables (4) / AMAT 218 – Honors Calculus of Several Variables (4)
AMAT 220 – Linear Algebra (3)	*Select one* AMAT 220 – Linear Algebra (3) / AMAT 222 – Honors Linear Algebra (3)
	AMAT 300 – Introduction to Proofs (3)
	UUNL 299 – Information Literacy in Mathematics and Statistics (1)
AMAT 301 – Theory of Interest (3)	AMAT 301/AECO 351 – Theory of Interest (3) *Cross Listed Course 2022*
AMAT 362/362Z – Probability and Statistics I (3)	AMAT 362 – Probability for Statistics (3)
AMAT 363/363Z – Probability and Statistics II (3)	AMAT 363 – Statistics (3)
AMAT 372 – Linear Programming and Game Theory (3)	*Removed requirement*
AMAT 374 – Operations Research (3)	*Removed requirement*
AMAT 401 – Numerical Analysis (3)	*Removed requirement*
	AMAT 403 – Life Contingencies I (3)
	AMAT 464 – Applied Stochastic Processes (3)
AMAT 465 – Applied Statistics (3)	AMAT 465 – Applied Statistics (3)
7 cr. in Computer Science:	***Minimum of 6 cr. in Computer Science (current options available):***
ACSI 201N – Introduction to Computer Science (4)	ICSI/ICEN 201 – Introduction to Computer Science (4)
	ICSI 213 – Data Structures (3)
	ICSI 431 – Data Mining (3)
	AMAT 502 – Modern Computing for Mathematicians (3)
	BITM 215 – Information Technologies for Business (3)
	BITM 330 – Improving Business Performance with Information Technologies (3)
3 cr. from the following:	***6 cr. from the following:***
BACC 211 – Data Processing Principles (3)	BACC 211 – Data Processing Principles (3)
	BFIN 300 – Financial Management (3)
9 credits as advised, in courses from the School of Business or having prefix ACSI or AECO	***15 cr. in Economics:***
	AECO 110 – Principles of Economics I: Microeconomics (3)
	AECO 111 – Principles of Economics II: Macroeconomics (3)
	AECO 300 – Intermediate Microeconomics (3)
	AECO 301 – Intermediate Macroeconomics (3)
	AECO 466 – International Macroeconomics (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.*

AECO 110 – Principles of Economics I: Microeconomics
AECO 111 – Principles of Economics II: Macroeconomics
AECO 300 – Intermediate Microeconomics
AECO 446 – International Macroeconomics
AMAT 218 – Honors Calculus of Several Variables
AMAT 222 – Honors Linear Algebra
AMAT 300 – Introduction to Proofs
AMAT 403- Life Contingencies I
AMAT 404 – Life Contingencies II
AMAT 464 – Applied Stochastic Processes
AMAT 465 – Applied Statistics
AMAT 502 – Modern Computing for Mathematicians
BFIN 300 – Financial Management
BFIN 215 – Information Technologies for Business
BITM 330 – Improving Business Performance with Information Technologies
ICSI 213 – Data Structures
ICSI 431 – Data Mining
UUNL 229 – Information Literacy in Mathematics and Statistics

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

No additional costs, no additional faculty will be hired 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
[X] 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:_____Actuarial and Mathematical Sciences - BS_____

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, Economics_____ 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: Fall	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT112 Calculus I or AMAT 118 Honors Calculus	4	MS	4	4			
AECO110 Principles of Economics I	3	SS	3	3		X	
Humanities General Education	3	HU	3				
Natural Science General Education	3	NS	3				
Free Elective	3						
Term credit totals:	16	13	13	7			

Term 2: Spring	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT113 Calculus II or AMAT 119 Honors Calculus II	4	MS	4	4			MAT112
AECO111 Principles of Economics II	3	SS	3	3		X	ECO110
UUNI110 Writing and Critical Inquiry	3	BC	3				
US History General Education	3	AH	3				
Free Elective	3		3				
Term credit totals:	16	13	16	7			

Term 3: Fall	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT214 Calculus of Several Variables or AMAT 218 Honors Calculus of Several Variables	4		4	4		*218 New X	MAT113
AMAT300 Introduction to Proofs	3		3	3		X	MAT113or 119or214or218
UUNL299 Info Literacy in Math	1		1	1		X	
AECO300 Intermediate Microeconomics	3		3	3		X	Eco110,111MAT 106,111,112,118 or 214or218
Arts General Education	3	AR					
Foreign Language General Education	3	FL	3				
Term credit totals:	17	6	14	11			

Term 4: Spring	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT220 Linear Algebra or AMAT 222 Honors Linear Algebra	3		3	3		*222 New X	MAT113
AMAT301/AECO 351 Theory of Interest	3		3	3		X	MAT113
ECO301 Intermediate Microeconomics II	3		3	3		X	MAT106or111or118or112or112orECO210
International Perspectives General Education	3	OW	3				
Local General Education: Challenges in the 21st Century	3		3				
Term credit totals:	15	3	15	9			

Term 5: Fall	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT362 Probability & Stats I	3		3	3			MAT214
BACC211 Financial Accounting	3			3			
Computer Science Selective (1 of 2)	3-4			3-4			
LAS Elective	3		3				
Free Elective	3						
Term credit totals:	15-16		6	9-10			

Term 6: Spring	See KEY.						
Course Number & Title	**Cr**	**GER**	**LAS**	**Maj**	**TPath**	**New**	**Co/Prerequisites**
AMAT363 Statistics	3		3	3			MAT362
MAT 464 Applied Stochastic Processes	3		3	3		X	MAT362or367or 467
Computer Science Selective (2 of 2)	3		3	3	3	X	CSI201
BFIN300 Financial Management	3			3		X	ACC211
Free Elective	3						
Term credit totals:	15		9	12	3		

Term 7: Fall	See KEY.

Term 8: Spring	See KEY.

Course Number & Title	Cr	GER	LAS	Maj	TPath	New	Co/Prerequisites	Course Number & Title	Cr	GER	LAS	Maj	TPath	New	Co/Prerequisites
AMAT403 Life Contingencies I	3			3		X	MAT301,362,363	Upper Level Free Elective	3						
AMAT465 Applied Stats I	3		3	3			Mat220 and 308 or 363 or 468	Upper Level Free Elective	3						
Upper Level Free Elective	3						MAT214,220 , and 362 or 367	AECO466 Financial Economics	3		3	3			ECO301
Free Elective	3							Free Elective	3						
Free Elective	3														
Term credit totals:	15		3	6				Term credit totals:	12		3	3			

Program Totals (in credits):	Total Credits: 122-123	SUNY GER: 35	LAS: 79	Major: 65-66	Elective & Other: 33	Upper Division: 42	Upper Division Major: 42	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: [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) 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:				**Term 2:**			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**	**Course Number & Title**	**Credits**	**New**	**Co/Prerequisites**
Term credit total:				Term credit total:			
Term 3:				**Term 4:Spring**			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**	**Course Number & Title**	**Credits**	**New**	**Co/Prerequisites**
Term credit total:				Term credit total:			
Term 5:FallSpr				**Term 6:Spring**			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**	**Course Number & Title**	**Credits**	**New**	**Co/Prerequisites**
Term credit total:				Term credit total:			
Term 7:				**Term 8:**			
Course Number & Title	**Credits**	**New**	**Co/Prerequisites**	**Course Number & Title**	**Credits**	**New**	**Co/Prerequisites)**
Term credit total:				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					
Pinka Chatterji, Professor	25%	AECO 110, Principles of Economics I	PhD, Johns Hopkins University	Economics	
Ken Bulko, Lecturer	25%	AECO 111, Principles of Economics II	PhD, University at Albany	Public Finance	
Boris Yoruk, Professor	25%	AECO 300, Intermediate Microeconomics	PhD, Boston College	Economics	
Li Yue, Professor	25%	AECO 301, Intermediate Macroeconomics	PhD, University of Pittsburgh	Economics	
Lewis Segal,	25%	AECO 466, Financial Economics	PhD, Northwestern University	Economics	
Steven Plotnick, Professor	100%	AMAT 118, Honors Calculus 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	
Karin Reinhold, Associate Professor	100%	AMAT 403, Life Contingencies I, AMAT 464 Stochastic Processes, AMAT 465, Applied Statistics	PhD, Ohio State University	Mathematics	
Martin Hildebrand, Professor	100%	AMAT 404, Life Contingencies II	PhD, Harvard University	Mathematics	
Mary Wladkowski, Professor	25%	BFIN 300, Financial Management	PhD, Northcentral University	Business Administration	
Qi Wang, Lecturer	25%	ICSI 213, Data Structures	MS, California State University	Computer Science	

(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.**
Pranay Jinna, Assistant Professor of Information Systems and Business Analytics	40%	BITM 215 Information Technologies for Business	Ph.D., Emory University	Information Systems	
Giri Kumar Tayi, Professor of Information Systems and Business Analytics	25%	BITM 215 Information Technologies for Business	Ph.D., Carnegie Mellon	Engineering Systems and Policy	
Eliot Rich, Associate Professor and Chair, Department of Information Systems and Business Analytics	75	BITM 215 Information Technologies for Business	Ph.D., University at Albany MPP, Harvard University	Information Science Public Policy Economics	
Ethan Sprissler, Lecturer, Department of Information Systems and Business Analytics	100	BITM 215 Information Technologies for Business BITM 330 Improving Business Performance with Information Technologies	MS, University at Albany	Information Science	
Saggi Nevo, Associate Professor of Information Systems and Business Analytics	50	BITM 330 Improving Business Performance with Information Technologies	Ph.D., York University M.A., Northwestern University	Information Systems Economics	
Justin M. Curry, Assistant Professor of Mathematics	50	AMAT 502 Modern Computing for Mathematics	Ph.D., University of Pennsylvania	Mathematics	
Jakov (Yasha) Crnkovic, Clinical Professor of Management Science and Information Systems, School of Business	50	BITM 330 – Improving Business Performance with Information Technologies	Ph.D., University at Belgrade, Yugoslavia	Computer Science	
Petko Bogdanov, Assistant Professor	50	ICSI431: Data Mining	PhD, University of California, Santa Barbara	Computer Science	
Irina Holden, Information Literacy and Science Outreach Librarian	50	UUNL 299, Information Literacy	MSIS, University at Albany	Literacy and Information Sciences	

(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.**
		in Mathematics and Statistics			
Part 2. Part-Time Faculty					
None					
Part 3. To-Be-Hired Faculty (List as TBH1, TBH2, etc., and provide expected hiring date instead of name.)					
None					

Actuarial and Mathematics Sciences Syllabi

AECO 110 – Principles of Economics I: Microeconomics

AECO 111 – Principles of Economics II: Macroeconomics

AECO 300 – Intermediate Microeconomics

AECO 446 – International Macroeconomics

AMAT 218 – Honors Calculus of Several Variables

AMAT 222 – Honors Linear Algebra

AMAT 300 – Introduction to Proofs

AMAT 403- Life Contingencies I

AMAT 404 – Life Contingencies II

AMAT 464 - Stochastic Processes

AMAT 465 – Applied Statistics

AMAT 502 – Modern Computing for Mathematicians

BFIN 300 – Financial Management

BFIN 215 – Information Technologies for Business

BITM 330 – Improving Business Performance with Information Technologies

ICSI 213 – Data Structures

ICSI 431 – Data Mining

UUNL 229 – Information Literacy in Mathematics and Statistics

Economics 110
Principles of Economics I, Microeconomics
Department of Economics, University at Albany
Spring 2020
3 Credits

Prof. Pinka Chatterji
Classroom: LC 7
Office Hours: Mon 9:00-10:30 AM; Fri 9:00-10:30 AM
Email address: pchatterji@albany.edu

Call No. 3947
Tuesdays & Thursdays, 11:45 AM -1:05 PM
Phone: 518-442-4746
Office: Hudson (Bldg. 25), Room 211B

Course Description:
In this course, we examine the problems facing society in allocating resources. First, we learn about basic economic concepts such as opportunity cost, comparative advantage, and gains from trade. Next, we study the operation of the market in determining who supplies the good, who gets the good, and what price is paid. Related subjects include the possible role of government in influencing allocation, the organization of industry and firm behavior, and markets for factors of production. The three major goals for student achievement are:

1. Learning basic economic principles and concepts.
2. Mastering the graphical and mathematical techniques used in economic analysis.
3. Applying economic concepts to real economic situations and to analysis of government policy.

Eco 110 is a General Education Course in the Social Sciences Category. Further information about its General Education features is available at http://www.albany.edu/gened/dp_socsci.shtml. The prerequisites for this course are plane geometry plus intermediate algebra (high school level), or a course in pre-calculus.

Blackboard Website (BLS): https://blackboard.albany.edu/ I will post all materials for the course and any class announcements here. I will post exam grades and One Minute Quiz points (described below) on BLS. Register your iClicker2 on BLS – see left-hand sidebar after you log into BLS. Do not e-mail me through BLS; instead, use the e-mail address: pchatterji@albany.edu.

Tutoring and Mindtap Help: The Economics department offers daily, drop-in, free tutoring. I will announce the tutoring schedule in class and post it on BLS. I offer extra help without an appointment during my office hours. We have a Teaching Assistant who will specialize in offering Mindtap assistance. Her name is XXX and her office is located in Room XXX in Building 25 (Hudson). She will have office hours XXX. Her e-mail address is: XXX. Office hours start on XXX. Please do not go to the TA for technical issues – please call 1-866-994-2427 for technical assistance or contact Mindtap technical support through the BLS link. You may e-mail me as well.

Calendar: I am canceling class on Thursday, February 20 and replacing it with an online lecture since I am out of town on that date. We have no class on March 17 and March 19 due to Spring Break.

Course Activities and Required Materials:
Students in this class need the following materials: (1) access to the textbook *Principles of Economics* (Eighth Edition), by N. Gregory Mankiw (Cengage Publishers); (2) access to the online homework system (Mindtap); and (3) an iClicker2. **There is an additional handout posted on BLS providing detailed information on purchasing options for these course materials, and I will discuss options on the first day.**

Prerequisite(s): plane geometry and intermediate algebra, or A MAT 100

Registering for Mindtap and Doing Mindtap Homework:

In this class, students access, complete, and submit all homework on-line through a platform called "Mindtap." To register for Mindtap, go to our BLS website and click on the Mindtap course icon. You can then follow the prompts to register. Payment is not required until two weeks after your registration date. If you cannot pay, please see me immediately. If you bought the textbook bundled with an access code to Mindtap at the bookstore, you can enter the access code to pay for Mindtap once you click on the Mindtap icon on BLS. You also can buy the Mindtap code separately from the bookstore, or you can pay online using a credit or debit card, or PayPal (see additional handout on course materials purchase options). If you have already registered an access code from a prior semester, you should be able to gain access to this course by logging in with your username and password. You can check your system configurations by clicking on the "system check" button once you log into Mindtap.

The first homework assignment is due Friday, 1/31/20 (strict due date, even if you add the class late). Assignments generally are due every Friday at 11 PM – please be aware that towards the end of the semester, I sometimes extend the deadlines and will announce these extensions in class. Also, note that some assignments are due on Tuesdays towards the end of the semester (see schedule below). Some weeks have multiple assignments. When students submit an answer, Mindtap informs the student immediately whether the answer is right or wrong and provides an explanation. If the student is wrong, s/he can answer a different version of the question. The homework problem can be repeated up to 3 times to get it correct, and the score on the problem will be the highest of scores on the three attempts. Once the due date has passed, the grade will be recorded and it will not be possible to complete the assignment at that point. **Mindtap assignments must be completed by the due date – there are no exceptions to this rule**.

Sometimes the homework will cover material that has not been covered in class. The lowest two homework grades will be dropped. Every homework assignment is weighted equally – at the end of the semester, I compute an average of the percentage scores. In addition to graded homework assignments, Mindtap also offers video tutorials, practice assignments, and practice tests. These materials are optional and are not graded. **However, the practice materials are highly recommended – especially the Adaptive Test Prep which will give you practice with exam questions.**

One minute quizzes (Using iClicker2s in this course): During each class, I will give one or more graded one-question quizzes using the iClicker2. **We will start these quizzes on Tuesday, 1/28/20.** Students should bring their clickers to every class session. Students will receive 1 point for participating in each quiz – you do not have to get the correct answer to receive the point. **Each student will receive four "free" quiz points to allow for forgotten clickers, malfunctioning clickers, all kinds of excused absences, including athletic event-related absences, and including missing the quiz because you are late to class or leave class early.** If you need to miss more than four days of class for some other reason, please see me. **This "four free quizzes" policy is not permission to miss four classes; it is intended to cover legitimate excuses only.**

Students can buy clickers directly from the campus bookstore. To register your clicker, so that your responses will be recognized and recorded, log into BLS and select this course. Click **iClicker Registration** on the Course Menu on the left of the screen. In the page that appears, enter your iClicker Remote ID and submit. Your iClicker Remote ID appears for ten seconds when you turn your iClicker on, and it is written on the back of your clicker. You cannot get credit for these quizzes without registering your clicker. It is a violation of academic integrity to use another person's clicker, or to allow another person to use your clicker. I will use tested procedures to determine whether students are using their own clickers. Any student who brings more than one clicker to class, or whose clicker is being used in class in his/her absence, is violating academic integrity

rules. More information about clickers at UAlbany is available at: http://www.albany.edu/its/svc_clickers.php and students can go to the ITS Service desk at the main university library for clicker issues.

Grading: The course is graded A-E. The distribution of final grades will be curved so that about 50% of students get A's and B's, consistent with department guidelines. The final grade will depend on exam grades, homework, and One Minute Quizzes, weighted as follows:

First Exam (Chapters 1-5)	**March 3rd in class**	**20%**
Second Exam (Chapters 6-9)	**April 14th in class**	**20%**
Final Exam (Chapters 10, 11, 13, 14, 15, *17, 18, 19*)	**May 13th 8:00-10:00 AM**	**30%**
Homework	**On-line (Mindtap)**	**15%**
One minute quizzes	**In class**	**15%**

Note: Chapters 17, 18 and 19 will be covered if time permits

Exams: All exams take place in our classroom. Exams will consist of multiple-choice questions. There will be review sessions and extra office hours before each exam. I will post exam grades as soon as possible on the BLS website. Students must be prepared to show their University ID cards at exams. They should bring a Number 2 pencil, and a simple calculator if they want to use one. Students may **not** use a large calculator that shows multiple lines of calculations. Students may **not** use cellphones or ipods or earbuds. I will strictly adhere to the policies on academic integrity listed in the Undergraduate Bulletin, and will make use of the penalties and procedures for violations of academic integrity listed there. Make-up exams will be given at my discretion based on criteria listed in University regulations. Final grades will be posted at the BLS.

Student Responsibilities

1. Come to class before it starts and leave only after it ends
2. Obtain and register your clicker before class on January 28th
3. Bring your clicker in working order to each class period
4. Register for Mindtap and pay for within two weeks
5. Complete your Mindtap homework on time (first due date 1/31/20, no exceptions)
6. Learn your Student ID by the first exam
7. Bring a number 2 pencil and a small calculator to exams
8. Be prepared to take exams at the regularly scheduled times
9. Do not text or use a cellphone in class
10. Keep your copy of this syllabus handy so you do not need to ask questions that are answered on it
11. Email me at pchatterji@albany.edu instead of through the BLS site
12. Students are responsible for text material not covered in class

Weeks 1-2: Getting organized and Introduction to the discipline

Dates: January 23, January 28, and 30

Reading: Text, Chapters 1-2

Students should register for Mindtap this week (please see instructions above – there is no need

to pay yet if there is a chance that you may drop the course); Obtain and register your Clicker

Graded assignments: (1) How to do homework assignments
(2) Refresh your math and graphing skills
Due on 1/31/20 at 11:00 PM

Week 3: Interdependence and Gains from Trade

Dates: February 4-6

Reading: Text, Chapter 3

Graded Assignments: (1) Ten Principles of Economics (HW Chapter 1)
(2) Thinking like an Economist (HW Chapter 2)
Due on 2/7/20 at 11:00 PM

Week 4: The Market Forces of Supply and Demand

Dates: February 11-13

Reading: Text, Chapter 4

Graded Assignments: (1) Interdependence and Gains from Trade (HW Chapter 3)
Due on 2/14/20 at 11:00 PM

Week 5: Elasticity and its Applications

Dates: February 18 (no class on February 20)

Reading: Text, Chapter 5

Graded Assignments: (1) Market forces of supply and demand (HW Chapter 4)
Due on 2/21/20 at 11:00 PM

Week 6: Supply, Demand, and Government Policies

Dates: February 25-27

Reading: Text, Chapter 6

Graded Assignments: (1) Elasticity and its application (HW Chapter 5)
Due on 2/28/20 at 11:00 PM

Week 7: Consumers, Producers, and the Efficiency of Markets

Dates: March 3-5

EXAM ON TUESDAY MARCH 3RD IN CLASS, COVERING CHAPTERS 1-5

Reading: Text, Chapter 7

Graded Assignments: (1) Supply, demand and government policies (HW Chapter 6)
Due on Tuesday, 3/10/20 at 11:00 PM

Week 8: Costs of Taxation

Dates: March 10-12

Reading: Text, Chapter 8

Graded Assignments: (1) Consumers, producers, efficiency of markets (HW Chapter 7)
Due on Tuesday, 3/24/20 at 11:00 PM
(Please complete before leaving for Spring Break if possible.)

Week 9: **SPRING BREAK – MARCH 17-19**

Week 10: International Trade; Externalities

Dates: March 24-26

Reading: Text, Chapters 9-10

Graded Assignments: (1) Costs of taxation (HW Chapter 8)
Due on 3/27/20 at 11:00 PM

Week 11: Public Goods and Common Resources; The Costs of Production

Dates: March 31 and April 2

Reading: Text, Chapters 11 and 13

Graded Assignments:

(1) International Trade (HW Chapter 9)
Due on 4/3/20 at 11:00 PM

Week 12: Firms in Competitive Markets

Dates:	April 7-9
Reading:	Text, Chapter 14
Graded Assignments:	(1) Externalities (HW Chapter 10) (2) Public Goods and Common Resources (HW Chapter 11) **Due on Friday, 4/10/20 at 11:00 PM**

Week 13: Monopoly

Dates:	April 14-16
Reading:	Text, Chapter 15

EXAM ON TUESDAY APRIL 14TH IN CLASS, COVERING CHAPTERS 6-9

Graded Assignments:	(1) Costs of Production (HW Chapter 13) **Due on Tuesday, 4/21/20 at 11:00 PM**

Week 14: Oligopoly

Dates:	April 21-23
Reading:	Text, Chapter 17
Graded Assignments:	(1) Firms in competitive markets (HW Chapter 14) **Due on 4/24/20 at 11:00 PM**

Week 15: The Markets for the Factors of Production

Dates:	April 28-30
Reading:	Text, Chapter 18
Graded Assignments:	(1) Monopoly (HW Chapter 15) **Due on Tuesday, 5/5/20 at 11:00 PM**

Week 16: Earnings and Discrimination

Dates: May 5

Reading: Text, Chapter 19

Graded Assignments: None

Grading Scale

Letter Grade	Percentage
A	93% +
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%

Principles of Economics II – Macroeconomics (ECO 111)
Class #1537
Syllabus - Spring 2020
Credits: 3

Ken Bulko

MWFs – 11:30 am to 12:25 pm
LC 25

email: kbulko@albany.edu
office: Hudson Building (formerly Building 25), Room 207
student hours: Mondays and Wednesdays from 2:30 to 4 pm in my office
Fridays from 2:30 pm to 4 pm – this is an optional discussion/review session – room TBA

If these hours are inconvenient, we can make other arrangements. I'm always available at the email address listed above and respond to emails promptly.

When you email, please help me identify you by writing your name and 'Eco 111 – 10:25 class' in the subject line of your email. If you do, I won't have to fish around to figure out who you are, and it will allow me to respond to your questions a lot faster.

Prerequisite(s): A ECO 110.

Course Overview

Economics is the social science that deals with the allocation of limited resources to satisfy unlimited human wants. Broadly speaking, economics has two branches, microeconomics and macroeconomics.

In microeconomics, we study the behavior of individual economic actors -- consumers, producers, or workers. We also examine the behavior of these actors grouped together into households, industries, and markets.

Macroeconomics is very different. In macro, we study the behavior of large groups (usually, the behavior of entire economies or nations).

In macro, we examine the big topics:

- what makes an economy grow?
- what data do economists concern themselves with?
- how do groupings of economic actors - such as households, industries, and markets - behave?

- what causes unemployment? What causes inflation?
- how does the monetary system work?
- what "shocks" can affect the economy in the short run, and how?

Ultimately, we'll try to answer questions such as:

- why is the U.S. unemployment rate where it is? What can we do to lower it?
- how can policymakers make the U.S.'s GDP grow?
- does the level of saving and/or government spending affect GDP, both now and in the future?

After you complete this course, you should be:

- familiar with general macroeconomic concepts;
- able to use graphs and basic math to analyze economic problems; and
- able to think critically about economic issues that you may come across in the real world.

This course will also allow you to develop the tools you will need to do more advanced work in economics, political science, accounting, and business.

This course has been approved for the Social Sciences category of U Albany's General Education Program.

Required Materials

You'll need the following materials:

- access to the textbook *Principles of Economics*, by N. Gregory Mankiw (8th edition, Cengage Publishers). Note that the publisher has established a website for this textbook. Check it for useful information, at http://login.cengage.com/cd/login.htm.
- access to the online homework system (MindTap). You MUST access MindTap through our class BlackBoard page.

For those students who took Principles of Microeconomics (Eco 110) last semester, we'll be using the same textbook. Your old MindTap code will still work too, so long as you bought a full year's access.

Homeworks

We'll have weekly (more or less) homework assignments. You must access, complete, and submit all homework through an on-line platform called "MindTap."

Some thoughts on homeworks:

- our first homework assignment is due by Sunday, February 2, at 11 pm (this is a strict deadline, even if you add the class late). As I indicated above, all assignments must be submitted through MindTap [which means you'll need to register for it by then];

- MindTap allows you a little flexibility. When you submit an answer through MindTap, the system informs you immediately whether the answer is right or wrong and gives you an explanation for incorrect answers. If you're wrong, the system allows you to answer a different version of the same question. A particular homework problem (or a version thereof) can be repeated up to three times to get it correct. Your MindTap score on each problem will be the highest of all your attempts – so there is an incentive to try again!

- once the due date has passed, whatever grade you have earned up to that point will be recorded and you will be shut out of answering any more questions. The system will be closed and you won't be able to complete the assignment after that time. The moral of the story - MindTap assignments must be completed by the due date – there are no exceptions to this rule. DON'T ASK FOR EXTENSIONS! I will say 'no!'

- after the first homework, assignments will be due, more or less, every Sunday at 11 PM (subject to change). Note that some weeks may have multiple assignments or an assignment may be due midweek (and we skip a few weeks, too);

- sometimes the homework will cover material that we have not covered in class. These are designed to see how well you can apply the general concepts we learn in class to new and unfamiliar situations;

- MindTap gives students fits – it causes what seems to me to be undue anxiety for students. To help ease that:
  - I'll hold a weekly discussion session on Friday afternoons. This is designed in part to help with MindTap homework; and
  - I will drop the lowest two homework grades during the semester.

- in addition to graded homework assignments, MindTap offers practice assignments that use the questions at the end of the chapters. These practice assignments are optional and are not graded. NOTE – just because

they are not graded, it doesn't mean that they are not useful. I suggest you do them – they will help you!

Grading

The course is graded A-E. Final grades will be distributed in accordance with Economics Department policy. During the semester, you can view your grades on for each exam on our course Blackboard website. I will also prepare a memo after each exam that offers some guidance as to your performance and standing in the class.

Your final grade will depend on the grades for your exams and MindTap homeworks, weighted as follows - exam dates are my best estimate, and may change depending on our progress:

Best out of three exams:		50%
First partial exam (chs 23 and 24)	Feb. 12	
Second partial exam (chs 25 thru 28)	Mar. 25	
Third partial exam (chs 29 and 30)	Apr. 15	
Fourth partial exam (chs 33 and 34)	May 1	
Final exam (cumulative)	May 7 3:30 to 5:30 pm	25%
MindTap homeworks	as described	25%

Exams

- in a new feature this semester, I will ONLY count the three highest grades from your partial exams. In essence, I will drop your lowest partial exam score. You MUST take the final exam.

- the downside to this is that I will NOT offer any makeup exams. If you miss an exam for any reason, that presumably will be your dropped exam.

- the partial exams will consist of 25 multiple-choice questions, and the final exam will have 50 multiple choice questions.

- I'll provide practice questions and have a review session and/or extra office hours before each exam;

- for each exam,
  - students must bring:
    - your UAlbany student ID;
    - a #2 pencil; and
    - a scientific or financial calculator if you wish to use one. It is important that you have a **calculator that does exponents**, as you will need one to do time value of money problems.
    - To anticipate some questions, graphing calculators are ok, but way more than you'll need. You may **not** use a large calculator that shows multiple lines of calculations or anything with a screen that you can store lecture slides or things like that on it. Believe it or not, people have tried that;
  - you may **not** use cellphones or iPods or earbuds;
  - you must know your Student ID # (available from MyUAlbany) and provide it accurately on the exams;

- I'll post exam grades as soon as possible on the Blackboard website, as well as a brief memo that explains the results.

- WARNING: I will strictly adhere to the policies on academic integrity listed in the Undergraduate Bulletin, and will make use of the penalties and procedures for violations of academic integrity listed there;

- make-up exams will be given at my discretion based on criteria listed in University regulations.

What are my responsibilities to you?

I will

- respect you as fellow members of the U Albany community;
- come to class on time, prepared, and ready to go;
- present the material as best I can, in what will hopefully be an interesting and enjoyable way;
- upload lecture slides to Blackboard at least 24 hours before we'll discuss them in class;
- make myself available as much as reasonably necessary to give you the best possible chance to succeed;
- be as transparent as I can about your performance and your standing in the class. This includes giving you timely feedback from exams and MindTap.

What are your responsibilities to the class?

You should

- first and foremost, conduct yourself with purpose and integrity, as befitting the future professional that you are;
- come to class before it starts and leave only after it ends;
- not text or use a cellphone in class;
- keep your copy of this syllabus handy so you do not need to ask questions that are answered on it;
- email me at kbulko@albany.edu instead of through the Blackboard site – much better!
- understand that you are responsible for text material not covered in class.

Take this class seriously – it's hard and requires some dedication to succeed.

Other matters

electronics

Cellphones, tablets, laptops, etc., are not conducive to a robust class discussion. Please turn them off and store them away during class, unless you use them to follow along with class notes. I reserve the right to take further action if usage of electronic devices gets out of hand.

academic integrity

Academic integrity is essential to fair and knowledge-based learning at U Albany. Academic dishonesty is a serious matter, from both a legal and economic point of view – it undermines the bonds of trust between members of our academic community; it degrades the value of your degree; it defrauds those who will eventually depend on your knowledge and training. More personally, if you need to cheat to succeed, you're just kidding yourself and delaying the inevitable.

I expect that you will be familiar with and abide by U Albany's Undergraduate Academic Regulations, especially the provisions relating to Standards of Academic Integrity.

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

I have experienced breaches of these Academic Standards in the past. Should similar breaches occur in this class, I will not hesitate to use the broad authority granted to me to ensure that students pay the consequences for academic dishonesty. If you witness instances of dishonesty, please tell me about them, so that I may take the appropriate action.

Welcome, and enjoy the class!

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

Principles of Economics II – Macroeconomics (ECO 111)
Class #1535
Class Schedule – Spring 2020

Tentative Course Schedule and Assignments:

A few notes:

- we'll cover Mankiw chapters, 23 through 30, and 33 and 34. If time permits, we'll also briefly cover chapters 35 and 36.
- I have broken up the material into four Units, and we'll have a partial exam after each.
- I have built considerable slack into this schedule – to allow for the possibility that the University may cancel classes for snow days, for example. Accordingly, I expect this schedule will change as we go along.

Welcome, and introduction to the class

Dates:	January 22
Reading:	none
Graded assignments:	none
Notes:	Students should register for MindTap this week (please see instructions – there is no need to pay yet if there is a chance that you may drop the course).

Unit I – the data of macroeconomics

Measuring a nation's income

Dates:	January 22, 27, 29, and 31
Reading:	Mankiw, Chapter 23
Graded Assignments:	(1) Measuring a nation's income

Due on February 2 at 11:00 pm

Measuring the cost of living

Dates:	February 3 and 5
Reading:	Mankiw, Chapter 24
Graded Assignments:	(1) Measuring the cost of living

Due on February 9 at 11:00 pm

Test for Unit I – scheduled for February 12

Unit II – the real economy in the long run

Production and growth

Dates:	February 7, 10 and 14
Reading:	Mankiw, Chapter 25
Graded Assignments:	(1) Production and growth

Due on February 16 at 11:00 pm

Savings, investment, and the financial system

Dates:	February 17, 19, and 21
Reading:	Mankiw, Chapter 26
Graded Assignments:	(1) Savings, investment, and the financial system

Due on February 23 at 11:00 pm

The basic tools of finance

Dates:	February 24, 26, 28, March 2, 4, and 6
Reading:	Mankiw, Chapter 27
Graded Assignments:	(1) The basic tools of finance

Due on March 8 at 11:00 pm

Unemployment

Dates:	March 9, 11, 23, and 25
Reading:	Mankiw, Chapter 28
Graded Assignments:	(1) Unemployment

Due on March 29 at 11:00 pm

Spring break – no classes on March 13, 16, 18 and 20.
Classes resume on March 23.

Test for Unit II – scheduled for March 25

Unit III – money and prices in the long run

The monetary system

Dates:	March 27 and 30, April 1
Reading:	Mankiw, Chapter 29
Graded Assignments:	(1) the monetary system

Due on April 5 at 11:00 pm

Money growth and inflation

Dates:	April 3 and 6
Reading:	Mankiw, Chapter 30
Graded Assignments:	1) money growth and inflation

Due on April 12 at 11:00 pm

Test for Unit III – scheduled for April 15

Unit IV – short-term economic fluctuations

Aggregate demand and supply

Dates:	April 8, 10, 13, and 17
Reading:	Mankiw, Chapter 33
Graded Assignments:	(1) aggregate demand and supply

Due on April 19 at 11:00 pm

The influence of monetary and fiscal policy on aggregate demand

Dates:	April 20, 22, 24 and 27
Reading:	Mankiw, Chapter 34
Graded Assignments:	(1) the influence of monetary and fiscal policy on aggregate demand

NONE!

Test for Unit IV – scheduled for May 1 [this is a Friday]

Some debates over macroeconomic theory

Dates:	if time permits
Reading:	Mankiw, Chapter 36
Graded Assignments:	NONE!

The short-run tradeoff between inflation and unemployment

Dates:	if time permits
Reading:	Mankiw, Chapter 35
Graded Assignments:	NONE!

Final exam on Thursday, May 7 from 3:30 pm to 5:30 pm

Intermediate Microeconomics, ECO 300

Credits: 3

Spring 2020

Instructor: Barış K. Yörük

Office: Hudson 209

Email: byoruk@albany.edu

Class Time and Place: TTH 8:45 AM-10:05 AM / HU 123

Course Web Site: www.albany.edu/~by872279/teaching.htm (Be sure to read the FAQ document!!!)

Office Hours: TTH 11:40 AM-12:40 PM

Teaching Assistant: Yaxu Zhang (yzhang43@albany.edu)

Information about SUNY-Wide General Education Program: This course fulfills the social science requirement of the SUNY-Wide General Education Program. The General Education Program as a whole has the following characteristics: (a) offers explicit understandings of the procedures and practices of disciplines and interdisciplinary fields (b) provides multiple perspectives on the subject matter, reflecting the intellectual and cultural diversity within and beyond the University (c) emphasizes active learning in an engaged environment that enables students to become producers as well as consumers of knowledge (d) promotes critical thinking about the assumptions, goals, and methods of various fields of academic study, and the interpretive, analytic, and evaluative competencies central to intellectual development.

Social Sciences courses enable students to demonstrate: (a) an understanding that human conduct and behavior more generally are subject to scientific inquiry (b) an understanding of the difference between rigorous and systematic thinking and uncritical thinking about social phenomena (c) an understanding of the kinds of questions social scientists ask and the ways they go about answering these questions (d) knowledge of the major concepts, models and issues of at least one discipline in the social sciences (e) an understanding of the methods social scientists use to explore social phenomena, such as observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, employment of mathematical analysis, employment interpretive analysis.

Prerequisites: The prerequisite(s) for Eco 300 are: Eco 110 with a grade of C or better; Eco 111; and Mat 101, 106, 111, 112, 118, or Eco 210. The Economics Department intends to deregister students whose Albany course records do not show that the required courses were completed with passing grades; concurrent enrollment is not sufficient. The deregistration may occur as late as the end of the semester, and students will be assigned a W grade by the Registrar. Individual exceptions to the prerequisite requirements require written permission of the instructor and approval by the Director of Undergraduate Studies in Economics during the drop/add period. Students who have taken a required course elsewhere that is not yet on their Albany records should ask for an exception.

Texts: (Recommended) *Intermediate Microeconomics and Its Application, 12th Edition*, by W. Nicholson and C. Snyder, South-Western, 2015.
(Recommended) *Intermediate Microeconomics: A Modern Approach, 9th Edition*, by H. Varian, W.W. Norton & Company, 2014.

Requirements and Grading: There will be five problem sets (25%), two midterm exams (25% each) and a final (25%). The dates of the midterm exams are March 3 (Tuesday) and April 7 (Tuesday). The date of the final exam will later be announced.

The problem sets range in difficulty from elementary to difficult. In some cases, they may require that you go beyond the material presented in class and consider various extensions. You are encouraged to discuss the problem sets in groups or during office hours. However, each student must turn in his/her own answers. The problem sets will be graded by the teaching assistant. Problem sets must be submitted in class the day they are due. Late problem sets will not be accepted.

Make-up exams will be given only in accordance with University policy. Absences must be approved by the professor prior to the scheduled exam time. Unexcused absences will result in a grade of zero. Violations of academic integrity will be referred to the University Judicial Review Board and subject to sanctions and/or failure.

Course Outline and Learning Objectives:

I. Introduction and Review: The Scope and Method of Economics Chapter 1

In this course we will develop and study the basic tools employed in economic analysis. But what is the scope of economics? What sorts of problems do we seek to resolve? What are the relevant aspects of such problems and how do we incorporate them into our analysis?

II. The Consumer: Choice and Demand Chapters 2-3

In this section of the course we develop a theory of consumer decision-making in order to explain individual market behavior.

III. The Firm: Production, Costs and Supply Chapters 6-8

Next, we turn to the production or supply side of the economy, and we develop a theory of firm behavior analogous to that of section II.

IV. Perfectly Competitive Markets: Partial Equilibrium Chapter 9

In this section we complete the model of a perfectly competitive market. That is, we draw the supply and demand sides together in order to explain how prices are determined and how they serve to direct the allocation of resources.

V. Imperfect Competition Chapter 11-12

In Sections II-IV we studied perfectly competitive markets involving a large number of demanders and suppliers. We now consider the case in which agents have market power, that is, they are able to affect price. First, we consider a monopoly or a market with a single supplier. We wish to know how a monopoly works, how well it works, and how it differs from a competitive market. We turn to models of duopoly, or two sellers, and we consider the strategic interaction between firms.

VI. General Equilibrium and Welfare Chapter 10

Returning to the case of perfect competition, we now consider the economy as a whole, or all markets at once. In the time remaining, we focus on an economy in which consumers are endowed with initial resources and they engage in trade but no production takes place. We are interested in determining how such an economy would function and how well.

Academic Integrity

Every student has the responsibility to become familiar with the standards of academic integrity at the University. Faculty members must specify in their syllabi information about academic integrity, and may refer students to this policy for more information. Nonetheless, student claims of ignorance, unintentional error, or personal or academic pressures cannot be excuses for violation of academic integrity. Students are responsible for familiarizing themselves with the standards and behaving accordingly, and UAlbany faculty are responsible for teaching, modeling and upholding them. Anything less undermines the worth and value of our intellectual work, and the reputation and credibility of the University at Albany degree. University's Standards of Integrity: (http://www.albany.edu/undergraduate_bulletin/regulations.html)

Reasonable Accommodations

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. (http://www.albany.edu/eltl/accommodating_disabilities.php)

Absence Policies

Students are to attend all classes, take all examinations and complete all course requirements on time. Students will not be excused except in cases of extreme emergencies. (http://www.albany.edu/undergraduate_bulletin/regulations.html and http://www.albany.edu/health_center/medicalexcuse.shtml)

GRADING SCALE

Grade Scale	Grade Conversion	Grade Scale	Grade Conversion
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+	Grade < 60	E

AECO 301 Intermediate Macroeconomics

Credits: 3

Spring 2020

Section Information

Class Number:	1541	3904
Location:	**HU 123**	**HU123**
Time:	**MWF 9:20-10:15**	**MWF 10:25-11:20**

Professor: Yue Li

Office: Building 25 241

Email: yli49@albany.edu

Website: https://sites.google.com/site/yueliecon/

Office Hour: Wednesday 8:00-9:00 am and 12:00-1:00 PM, and by appointment

Teaching Assistance: TBA

In addition to the listed office hours, the Department of Economics provides *free* tutoring assistance to students of Econ 301, please find information by clicking the following link:

https://www.albany.edu/economics/tutors.shtml

Please bring a copy of the textbook when you use the tutoring service.

Course Description:

This course will use macroeconomic models to study issues of economic growth and business cycles. In particular, we will introduce the concept of general equilibrium, and study how government policies and external shocks to the economy affect economic outcomes.

Textbook

Macroeconomics by Abel, Bernanke, and Croushore, 9th edition. *The 7th and 8th edition are also acceptable.*

The book is required, and is useful for you to review the concepts we learned in class.

Prerequisite:

The prerequisites for this course are: AEco 110; AEco 111 with a grade of C or better and AMat 101, 106, 111, 112 or 118 or AEco 210. The Economics Department intends to deregister students whose Albany course records do not show that the required courses were completed with passing/required grades; concurrent enrollment is not sufficient. The deregistration may occur as late as the end of the semester, and students will be assigned a W grade by the Registrar. Individual exceptions to the prerequisite requirements require written permission of the instructor and approval by the Director of Undergraduate Studies in Economics during the drop/add period. Students who have taken a required course elsewhere that is not yet on their Albany records should ask for an exception.

Webpage and UAlbany Email

1. Announcements, lecture slides, assignments, and grades will be posted on the Blackboard course webpage. Announcements will also be sent to UAlbany email.
2. It is students' responsibility to check the webpage and UAlbany email account at least once a week.

Grading Policy and Requirement

1. Attendance (10 points)
2. Problem Sets (20 points)
3. Two Mid-term Exam (20*2=40 points)
4. Final Exam (30 points + 10 extra points)

Grade	Conversion	Grade	Conversion
93+	A	73-76	C
90-92	A-	70-72	C-
87-89	B+	65-69	D+
83-86	B	60-64	D
80-82	B-	55-59	D-
77-79	C+	54-	E

The final grade will be assigned based on your total points, and the above grading scale. No adjustment will be made. You are encouraged to reach out to me throughout the semester for suggestions to improve your grade.

If you have a problem with grading, write a statement clearly explaining why your problem sets or exam deserves a better grade, and submit the statement to me or the TA. **All appeals about**

attendance, assignment, extra credits, and midterm exams need to be submitted BEFORE the READING DAY. Late appeals are not accepted.

Exams

1. There will be two mid-terms and one final exam.
2. There will be no make-up exams unless a letter from the Office of the Vice Provost for Undergraduate Education is received. Absences must be approved by the professor PRIOR TO THE SCHEDULED EXAM TIME. Unexcused absences will result in a grade of zero.
3. The **first mid-term exam** is on 2/19 (Wednesday) **in class.**
4. The **second mid-term exam** is **cumulative** and it is on 3/1 (Wednesday) **in class**.
5. The **final exam** is **cumulative** and is in the lecture room on
   5/9 (Saturday) 3:30-5:30pm for the 9:20 AM session
   5/11 (Monday) 3:30-5:30pm for the 10:25 AM session
6. "Cumulative" means that materials covered in later part of the course requires a deep understanding with the materials covered in preceding parts.

Attendance

1. I recommend that you attend all classes, because in class I will teach you both the book materials and the economic reasoning/analysis tools that are helpful for your future work and lifetime planning. In-class discussion is also instrumental for you to develop analytical and communicative skills.
2. You will get the full attendance point, if you are absent for ***no more than six classes*** after the first two weeks of preparation. *For each additional class of absence, you will be deducted one point out of the total 10 points*. The minimum attendance score is zero.
3. Attendance will only be adjusted for compelling reasons supported by sufficient documentation or a memorandum issued by the vice provost if you need to miss more than a week of classes. If the excuse is about hazard weather conditions, you must write an email and notify me BEFORE THE CLASS.

iClicker

1. Attendance grade will be based on iClicker responses. Students are responsible for bringing their iClickers and keeping them in working order, for instance, checking the battery of your iClicker. Failing to answer *any* of the IClicker questions in one session will be recorded as being absence, that means late arrival or early leaves could be counted as absence. Since it is understandable that sometimes people make mistakes, for **the first two times** when you failed to record attendance using iClicker, please talk to me **in person immediately after class** and I will manually adjust your attendance score. For students who lose their IClicker, you will have a week time to purchase, rent or borrow an IClicker.

2. It is a violation of academic integrity to use another person's clicker, or to allow another person to use your clicker.
3. To register your iClicker, so that your responses will be recognized and recorded, go to the **Blackboard** course webpage and then choose "iClicker registration" on the left. Enter the remote id that is on the back of your iClicker below the barcode. Registering it on the iClicker website will NOT work. If you change your iClicker during the semester, you need to register the new iClicker and inform me immediately. Otherwise, the attendance will not be recorded.
4. iClicker responses will be taken into grade after two weeks of preparation period (**starting on 2/5**). You are required to register your iClickers before that date.
5. More information can be found at https://wiki.albany.edu/display/public/askit/iClicker+for+Students

Problem Sets

You will have several regular problem sets, which are designed to help you review the materials of each chapter, and two bonus problem sets, which is designed to help you make a final review and also to make up the missed questions in the regular problem sets. These problem sets will be posted on the Blackboard course webpage. Problem sets need to be completed before the designated date and time. Late submissions are not acceptable unless a memorandum was issued by the vice provost for undergraduate studies. When submitting, please make sure that you click the "**Save and Submit**" button on the Blackboard, otherwise the problem set will be treated as unfinished. If you want to check whether you successfully submitted one problem set, please use the grade center on Blackboard: if you did not see a grade for this, the problem set is not submitted.

Your points received from problem sets will be:

Min(20, (questions you answered correctly for all regular problem sets+ questions you answered correctly for two bonus problem sets)/(the total number of questions in the regular problem sets)*20)

Note that the maximum points you can receive for this part is 20.

Problem Sets are good review materials for the exam. After submitting it for grading, you can still view it on the Blackboard using the following steps:

1. Click the assignment
2. Click the "begin" button
3. Click "view all attempts"
4. Click the blue number under the calculated grades

Academic Integrity

Scholastic dishonesty, defined as "any act that violates the rights of another student in academic work or that involves misrepresentation of a student's own work," include such transgressions as cheating during examinations and plagiarism. Academic misconduct means an "E" for the course and will be reported to the Vise Provost for Undergraduate Education. The most recent edition of the University's Undergraduate Academic Policy Reminders is online at: http://www.albany.edu/undergraduateeducation/policy_reminders.php

Topics

- Introduction to macroeconomics (Chapter 1)
- Measurement and structure of the national economy (Chapter 2)
- Productivity, output, and employment (Chapter 3)
- Consumption, saving, and investment (Chapter 4)
- Asset market, money and prices (Chapter 7)
- IS-LM model (Chapter 9)

If time permits, we will also cover Chapter 6 Long-Run Economic Growth. The covered material may be the basis for one bonus problem set and extra credits on the final.

*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. (University's Policy on Accommodating Disabilities: (http://www.albany.edu/eltl/accommodating_disabilities.php)

AECO 466 - International Macroeconomics

Financial Economics Spring 2020
AECO 466(#8204) Tu/Th 8:45 – 10:05 Earth Science and Mathematics (ES) Room 147
Credits: 3

Professor
Lewis Segal
lsegal2@albany.edu
917-478-6833

Office Hours
Hudson Building
Office 205 (second floor)
Tuesday 11:45 - 12:45 or by appointment

Graduate Assistant
Tingting Peng
tpeng2@albany.edu

Office Hours
Hudson Building
Office 226 (second floor)
Monday & Wednesday 1:00 - 3:00pm

Course Description (Undergraduate Bulletin)
Financial markets, efficient-market theory, financial panics, choice under uncertainty, risk aversion, portfolio choice, capital-asset pricing model, futures, options, flow of funds, saving and investment, financing economic development, government debt, international debt, term structure of interest rates, interest rate forecasting. Only one version of 466/466W may be taken for credit.

Prerequisites
Prior to enrolling in this course students should have completed ECO301 Intermediate Macroeconomics or ECO350 Money and Banking.

This is an upper level (400) course aimed at advanced students. The course uses mathematical concepts from probability and statistics (ECO 320 or AMAT 362/363), algebra, and basic calculus. Students should be comfortable calculating probabilities and expected values, solving simultaneous equations, and differentiating functions before taking this course. Students should be fluent in the use of Word and Excel. Knowledge of a programming language such as C++, Java, Python, or R is helpful but not necessary.

Course Overview
The course is an introduction to finance and investment from an **economics perspective**. The goal is to develop an understanding of the theoretical and practical issues of asset markets. Below is a list of planned topics for the course; as always, the agenda is subject to change based on time constraints and student interest.

1. Interest rates: impatience, inflation, and default (general equilibrium based on Irving Fisher's work and comparative statics, spots/forwards, zeros, carry-trades)
2. Risk and uncertainty (Von Neumann-Morgenstern utility, Knightian uncertainty, Black Swan events)
3. Gordon growth model of equity valuation
4. Arbitrage and the law of one price (Modigliani-Miller theorem of capital structure)
5. Valuing derivatives (binomial trees and risk-neutral probability)
6. From trees to the forest (lognormal distribution and the Black-Scholes formula)

7. Portfolio math and equilibria (Capital Asset Pricing Model, Arbitrage Pricing Model)
8. Does any of this work (extensions, failures, crises, behavioral economics) and what is next? (cashless society, virtual currency, robo portfolios, artificial intelligence)

Course Objectives

By the end of the semester, students should be able to:

- Define the key models and terminology of finance (Fisher model of spot/forward/real interest rates, Gordon constant growth dividend discount model, Modigliani-Miller Theorem, binomial tree and Black-Scholes models of derivative valuation, Capital Asset Pricing Model, Arbitrage Pricing Theory, Purchasing Power Parity applied to bonds and foreign exchange, etc.).
- Explain the economic forces underlying these models (impatience, Law of One Price, replication, risk-neutrality, market efficiency, Arrow-Debreu securities, market micro-structure, etc.).
- Analyze/critique investments and financial decisions in a rigorous, structured, well-articulated way.

Required Materials

- *Textbooks and readings*

This course requires two texts. The first text is "Financial Economics" by Frank Fabozzi, Edwin Neave, and Guofu Zhou (2012), John Wiley & Sons. The second text is "Misbehaving: The Making of Behavioral Economic" by Richard Thaler (2016), W. W. Norton & Company.

Books are available at the UAlbany bookstore, Amazon, Half.com and other retailers. Copies are on reserve at the University Library. Additional readings will be available on Blackboard, Dropbox, in-library Reserves, or electronic reserves.

- *Calculators*

Students should bring a calculator to class every day and be familiar with its use. Graphing, scientific and financial calculators are acceptable; phones and tablets are not allowed during exams. Calculators should support log, ln, exp, power, and root calculations.

- *Blackboard and Dropbox Websites*

Students should regularly check these websites for course information. Grades will be available from the Blackboard site (https://blackboard.albany.edu/), and course materials will be available on Dropbox. There is a link to Dropbox on Blackboard.

- *Microsoft Office*

Students must have access to a computer with a current version of Microsoft Office 365 (or Office 2016). You will also need internet connectivity and the ability to print in black/white. These software and services are available on the University computers in the library and other locations.

UAlbany faculty, staff, and students are entitled to a subscription license for Office 365 ProPlus at no charge. Students are encouraged to install this software on their personal computers. See https://wiki.albany.edu/display/public/askit/Office+365+ProPlus+Subscription+License for details.

Grading

The course score for undergraduate students (AECO 466) has four components: two midterm exams, one final exam, and frequent homework and quizzes (in-class and possibly unannounced). Each component of the grade is worth 100 points. The course score is the sum of the components. Thus, there are 400 possible points and the following scale converts the score to a letter grade.

A (400-372)	A- (371-360)	B+ (359-348)	B (347-332)	B- (331-320)	C+ (319-308)
C (307-292)	C- (291-280)	D+ (279-268)	D (267-252)	D- (251-240)	E/F (below 240)

We will review the homework, quizzes, and exams in class and post grades to Blackboard. Students have one week to review their grades and address any issues with the professor; grades become final after the one week.

In general, late work and email submissions are not accepted. There are no make-up exams or extra-credit assignments.

- *Homework and Quizzes (100 points)*

There will be 8-12 assignments/quizzes. Assignments should be completed, printed, and brought to class on the due date. We allow for one excused absence by automatically dropping the assignment/quiz (just one) with the lowest score.

An average grade of 75 or more is required on the homework to pass the course. I repeat, anyone with an average homework grade below 75 will automatically receive a grade of E/F.

- *Examinations (2 midterm exams, 1 final exam, 100 points each for a total of 300 points)*

Exams are cumulative; they draw from all segments of the course. Some exam questions come from the textbook and assigned readings, while others connect more closely to the lectures. Thus, students should attend all classes and actively participate in the discussion. Exams are "curved" to an average score of 80 based on the undergraduate students in the course.

- *Schedule for Final Exam*

The final exam will follow the schedule published by the registrar. The date and time are non-negotiable. Please register for another course if you are unable or unwilling to adhere to this policy.

Academic Integrity
Students are encouraged to support each other when working on assignments but at the same time, each student is responsible for their own work. Cheating, plagiarism, unauthorized collaboration, and any other form of academic dishonesty will result in a failing grade.

Students are responsible for familiarizing themselves with the University's Standards of Integrity and behaving accordingly. UAlbany faculty are responsible for teaching and upholding the standards. Anything less undermines the worth and value of our intellectual work and the reputation/credibility of the University at Albany degree. The standards are available at http://www.albany.edu/undergraduate_bulletin/regulations.html.

Reasonable Accommodations
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. The policy is available at http://www.albany.edu/eltl/accommodating_disabilities.php.

Absence Policies
Students are to attend all classes, complete all assignments on time, and take all examinations. Students will not be excused except in rare cases of extreme emergencies.

Student Responsibilities
- Attend all classes; arrive before class starts and leave only when class ends.
- Be involved in the class. Ask questions! If you do not understand something, it is very likely that others are confused on the same point. Refrain from texting and using phones in class except to access course material.
- Stay current on all readings; students are responsible for material even if not discussed.
- Review the lectures at least weekly; work all problems independently.
- Complete all assignments on time and in a professional manner.
- Come prepared and take exams at the scheduled times.
- Ask for help before the situation becomes desperate.
- Treat all class members professionally and respectfully.

Important Dates (subject to change)

Thursday Jan 23	First day of this class
Thursday Feb 20	**First midterm exam (no makeup exam)**
Tuesday Mar 17	Spring break – no classes
Thursday Mar 19	Spring break – no classes
Monday Mar 23	Last day for graduate students to withdraw
Tuesday Mar 31	**Second midterm exam (no makeup exam)**
Monday Apr 6	Last day for undergraduate students to withdraw
Tuesday May 5	Last day of this class
Tuesday May 12	**Final exam 10:30 – 12:30 regular classroom**

Frequently Asked Questions

Do I need to buy the books?
You do not need to buy the texts, but you will need to READ them and understand them.

Do I need to take notes? Will you post slides?
You should take notes on every reading and every lecture. I will distribute some slides, but they are incomplete and do not have full explanations. They are notes to help me present the material.

Are your lectures always this organized (disorganized)?
Yes. Part of it is an attempt to incrementally develop important concepts with repetition to help you learn and retain the information. Part of is that I cannot read my own writing.

What happens if I do not do the homework?
An average homework score of 75 or higher is required to pass the course.

Will the exams look like the assignments?
Portions of the exams will come from the assignments. However, the assignments also build skills in analysis, modeling, software, and writing that are distinct from the exams.

What do I do if I hate computers and am not fluent in Excel/Word?
- Install the current software on your computer immediately; get this done before the first assignment.
- Consider taking the short courses offered by ITS
https://wiki.albany.edu/display/public/askit/On-line+ITS+Computer+Classes
https://wiki.albany.edu/display/public/askit/Computer+Applications+Classes+Schedule
- Start the assignment the day it is given and come to office hours for help.
- Ask for help even after the assignment; the work is cumulative so don't fall behind.

Is this class going to be hard? Do I need to know math?
This class is an upper-level college class. We assume you are fluent in basic mathematics (algebra, summations, equations, present value, exponents and logs, statistics, etc.)

Will there be a review session before the exams?
No. Every lecture is a review! Stay current and ask questions. I will remind you of the material covered in the exam, but I will not review it in detail unless you have questions.

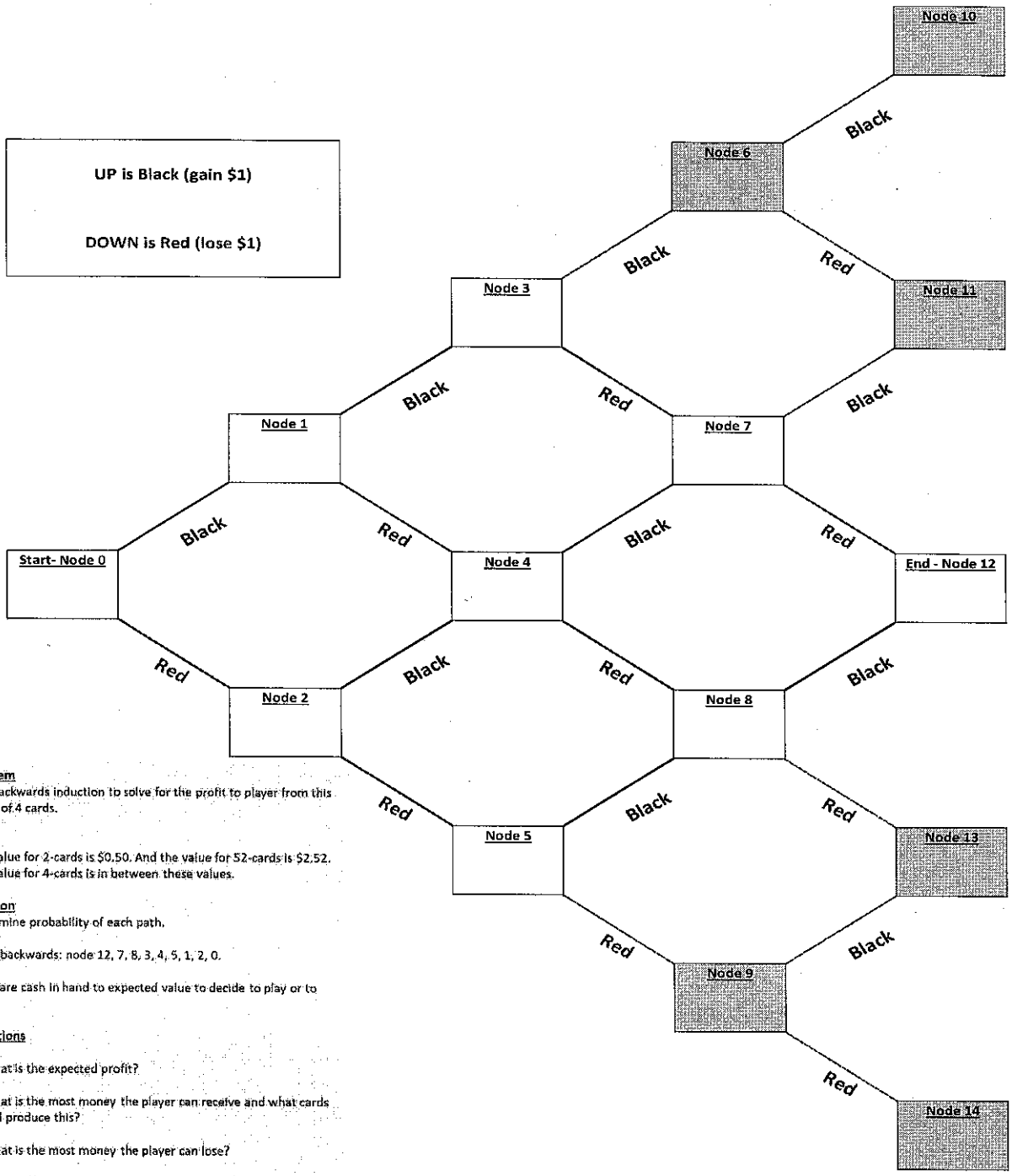
What happens if I miss an exam? Do students ever fail this course?
Missed exams receive a score of zero. Students do fail, especially if they do not complete the assignments, do not attend class, or skip an exam. Accommodations are rarely made.

Thurs Jan 23 Introduction and Overview
Reading: History of Finance

Tues Jan 25 Tree basics and 52 Pickup
Assignment 1: Tree Problems due next class

Thurs Jan 30 History of Finance
Assignment 2: Quiz on History of finance
Reading: FNZ Chapter 1 Finance in a Certainty World (skim)
Reading: FNZ Chapter 2 Consumer Financial Decisions (read carefully)

Tues Feb 4 Bonds, Trees, AER, Default
Assignment 3: Bond Trees due in a week



Problem
Use backwards induction to solve for the profit to player from this game of 4 cards.

Hint
The value for 2-cards is $0.50. And the value for 52-cards is $2.52. The value for 4-cards is in between these values.

Solution
Determine probability of each path.

Work backwards: node 12, 7, 8, 3, 4, 5, 1, 2, 0.

Compare cash in hand to expected value to decide to play or to stop.

Questions

1. What is the expected profit?

2. What is the most money the player can receive and what cards would produce this?

3. What is the most money the player can lose?

4. Where did we use iterated expectations?

5. Where did we use rational expectations?

6. What is the most you would pay to play this game?

AMAT/TMAT 218 Calculus of Several Variables - 4 Credits
Spring 2014, Class Number 8698/8699
MWF 9:20-10:15 BA 212, Th 9:10-10:05 ES 146
Prerequisite(s): A MAT 113
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

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.

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/TMAT 222: HONORS LINEAR ALGEBRA
SYLLABUS - FALL 2018
Credits: 3

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

Linear equations, matrices, determinants, finite dimensional vector spaces, linear transformations Euclidean spaces.

AMAT300 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: TBD
Credits: 3

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. Topics include basic logic, sets, functions, relations, mathematical induction, countable and uncountable sets, and elementary number theory

This course will require a significant amount of written and oral presentation.

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

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).

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

V. Course Description:

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

- Sept 15: § 4.4 Whole Life, Pure Endowment, Term Insurance
- Sept 17: § 4.5 Relating A--x,Ax,Ax(m) § 4.6 Variable Insurance
- Sept 22: Review Exam 1-100 pts

- Sept 24 :
- Sept 29: extra problems on life insurance: varying benefits

- Oct 1: extra problems on life insurance: aggregated life insurances
- Oct 6: extra problems on life insurance: problem with present value random variable
- Oct 8: extra problems on life insurance
- Oct 13: § 5.1-5.4 Annual Life Annutities, § 5.8 Deferred Annuities§ 5.9 Guaranteed Annuities
- Oct 15: § 5.1-5.4, §5.10 Increasing Annuities, § 5.7 Comparisons
- Oct 20: Review 5.11 Exam 2
- Oct 22: §Recursions
- Oct 27: § 6.1 -§ 6.4 The Present Value of Future Losses -Premium Calculations
- Oct 29: § 6.5 Net Premiums§ 6.6 Gross Premiums
- Nov 3: § 6.7 Profit§ 6.8 Portfolio Percentile Premium Principle
- Nov 5: §6.9 Extra Risks
- Nov 10: §7.3 Policy Values
- Nov 12: §7.3 Policy Values
- Nov 17: §7.5 Policy Values

- Nov 19: §7.5 Policy Values
- Nov 24: Last day § 8.2 & Review Exam 3

- Nov 26 Thanksgiving

Mathematics 404 Life Contingencies II - Spring, 2020

Class numbers: 9767
MWF 10:25 A.M. - 11:20 A.M. in ES 143.
Instructor: Professor Martin Hildebrand
Office: ES 137A
Office Hours: To be announced
Phone: 518-442-4016
E-mail: mhildebrand@albany.edu
Text: *Actuarial Mathematics for Life Contingent Risks*, 2nd ed, by Dickson, Hardy, and Waters.
Prerequisite: AMAT 403
Credits: 3

Overview of the Course

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* or the *Graduate Bulletin*; see

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

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.

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.

I. Course Title: AMAT 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 465 - Applied Statistics

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

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: (518) 442-4641 – Office

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

V. Course Description:

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

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

B. Students with Disabilities:
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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.

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XI. 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.

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 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: 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.

D. Typical Point Scale and Examination Dates:
Exam 1, 2 & 3: 100 points each (300 pts total 50%)
Quizzes, projects, assignments, other: 200 pts (33%)
Final Project 100 pts (17%)
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.

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 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 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: Oct 1; **Exam 2:** Nov 5; **Exam 3:** Dec 27
Final Project: Dec 5.

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.
Week 10: Exam 2 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.

AMAT 502—Modern Computing for Mathematicians—Spring 2022 Syllabus

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 pro-gramming 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. (3 Credits)

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/UC3HHUGPjUfyH0YmkYXfFMbQ
- 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/UC3HHUGPjUfyH0YmkYXfFMbQ

- 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

SCHOOL OF BUSINESS
UNIVERSITY AT ALBANY
State University of New York

from opportunity impact

School of Business – Finance

Course Syllabus – BFIN 300 –Financial Management– Spring 2021- 3 Credits

I. Basic Course Information

Meeting Place and Times: Sections 2453 & 2454, asynchronous, online delivery

Web Site: https://blackboard.albany.edu/
https://www.tophat.com

Description: This is an introductory course that covers the basic concepts essential for a comprehensive understanding of business and personal finance. Topics to be covered include time value of money; valuation of bonds and stocks; financial statements and ratios; risk and return; and capital budgeting. The emphasis in this course will be to apply key concepts to the type of realistic problems you will face in your personal and professional lives.

Class Format: Class will be a mixture of video lecture and problem solving through homework and quizzes. The course's dual focus on content and problem solving will be accomplished by dividing class sessions between the concept and topics in finance (which is primarily lecture-based) and related quantitative problems, evaluated through the homework and questions included in the readings.

Prerequisite: ACC211 (this is NOT a co-requisite)

Required Course Texts and Materials: **Customized text via TopHat**

Please note that the textbook is a specially priced package for e-book access. This access may be purchased at the UAlbany Bookstore or through TopHat. We will be using the custom-built interactive textbook Financial Management within Top Hat for this class.

An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting our course website: https://app.tophat.com/e/128679
Note: our Course Join Code is 128679

Should you require assistance with Top Hat Pro at any time please contact their Support Team directly by way of email (support@tophat.com), the in app support button, or by calling 1-888-663-5491. Specific user information may be required by their technical support team when troubleshooting issues.

Note that TopHat offers free trial access for 7 days via the "Free Trial" link for students who do not have an access code or who have not yet secured tuition funds to purchase access. However, after the 7 days when the open access period ends, you will be asked to provide either the access code on the card or a credit card for payment. If you fail to provide one of these at that time, you will no longer be able to access TopHat.

Calculator: You may wish to have a financial calculator for this course. A financial calculator is one that has PV (present value) and FV (future value) keys and can perform present/future value calculations. The Hewlett Packard HP 10B II or TI BAII Plus will do for

You are responsible for the contents and policies described in the syllabus. Failure to comply with these polices may result in penalties, including lost points for assignments and receiving no points for tests or exams, at the discretion of the instructor.

most. It is available at the bookstore or Best Buy, Staples, Target, etc. You may use a spreadsheet program as well.

II. Professor Information

Mary H. Wladkowski, PhD, CFA, CAIA, FRM
Office: Business Building 345
Office Hours: via ZOOM, Mondays & Wednesdays 10:00 am – 12:00 pm, or by appointment
Email: mwladkowski@albany.edu
Phone: 518-956-8346

III. Teaching Assistants

Sterzia Ampofo & Victoria Tiranno
Office: Graduate Assistant Office, BB322 1st floor, Business Building – Office Hours via ZOOM
Office Hours:
Sterzia: M & W; 3:00 – 5:00 pm, or by appointment
Vic: M, 10:00 am – 12:00 pm, Th, 6:00 – 8:00 pm, or by appointment
Email: sampofo@albany.edu; vtiranno@albany.edu

IV. Course Policies

Personal Responsibility Policy:

Each student is responsible for understanding the contents of—and complying with—this syllabus.

Students must be prepared at all times to contribute informed input to the class.

All assignments are due by 10:00 pm on the stated dates; all assignments are due on Mondays and Wednesdays.

Ethics and Professional Standards Policy:

The University's policies on academic integrity are fully in effect in this course. All exams, Tests, case write-ups, assignments, and other deliverables submitted in this course must be entirely your own work. This means no plagiarism of any sort, and no collaboration with anyone else, including others registered for and not registered for the class. In the case of an ethical violation (even the "first one"), expect a grade of "E" for the entire course and referral to the campus judicial board.

Grade Determination (details for each category below):

Participation	120 points (80 for readings, 40 for lecture videos)
Performance	320 points (40 for readings, 280 for assignments)
Quizzes	560 points
	1000 points

Grade Distribution

A	930 points or more
A-	900 - <930 points

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B+	870 - <900 points
B	830 - <870 points
B-	800 - <830 points
C+	770 - <800 points
C	730 - <770 points
C-	700 - <730 points
D+	670 - <700 points
D	630 - <670 points
D-	600 - <630 points
E	less than 600 points

There will be no incompletes (grades of "I") given so all students must remain continuously up to date with their work.

It is your responsibility to keep track of your grades, do not expect the TA or the instructor to assist you with this. At any time, Blackboard will display total points earned as well as the number of possible points to date; simple division will tell you where you are and subtraction will tell you how many points may still be earned.

Grading:

Participation - 12% of grade

Each chapter in the e-text has 5 questions, and students will earn two point for each question they answer (80 points total). There will be approximately 40 short video lectures and students can earn 1 point for every video completed (at least 40 points).

Performance – 32% of Grade

Each chapter in the e-text has 5 questions, and students will earn one point for each correct answer. You have two attempts at answering the book questions correctly (40 points). There are 7 homework assignments (via Blackboard) at 40 points each (280 points). You have two attempts and the highest grade is ALWAYS the grade you earn.

Quizzes – 56% of Grade

There are 7 quizzes at 80 points each (560 points). Quizzes are similar to homework (via Blackboard) but will only be available at certain times and are timed. Once you begin a quiz, it must be finished in one sitting and the quiz will automatically save any answers and self-submit at the end of the timed period or when the due date and time arrive.

Extra Credit

Several bonus assignments will be available over the semester and a bonus quiz will be available during the final exam period.

Highest grade earned: For all regular assignments and extra credit, the instructor always takes the highest grade earned, even if a second attempt results in a lower score. The highest score is applied towards the student's grade always.

You are responsible for the contents and policies described in the syllabus. Failure to comply with these polices may result in penalties, including lost points for assignments and receiving no points for tests or exams, at the discretion of the instructor.

V. Class Schedule

As an asynchronous, online class, students are expected to keep up with the assigned material. The following topics are covered with due dates for readings, videos, assignments, and quizzes as listed. Please note, videos are not listed individually, but under broad topic categories; refer to Blackboard for specific due dates for each video lecture.

Topic	Ch	Reading	Video Lectures	Assignments	Quizzes
Introduction to Finance	1	2/8			
Intro to TVM	2	2/15	2/8	2/15	
Continued TVM	2		2/15	2/22	2/24
Bonds & Interest Rates	3	3/1	3/1	3/8	3/10
Stocks and Valuation	4	3/8	3/8	3/15	3/17
Capital Markets & Risk	5	3/22	3/24 & 3/31	4/5	4/7
Financial Ratio Analysis	6	4/12	4/12	4/19	4/21
Capital Budgeting	7	4/19	4/19	4/26	4/28
Returning Funds to Shareholders	8	5/3	5/3		5/5
Bonus					5/10

Homework, quizzes, and videos are assigned through Blackboard. Readings are assigned through TopHat. ***All readings, videos, assignments, and quizzes are due by 10 pm.***

Important reminder about career resources: Whether you are planning for an internship, full-time employment, or graduate school, take advantage of state-of-the-art resources of the School of Business John S. Levato Office of Career Services. Go online and access them using your UAlbany email address: (1) Vault Career Intelligence system; (2) VMock resume critique system, and (3) Big Interview practice system. More details are here.

You are responsible for the contents and policies described in the syllabus. Failure to comply with these polices may result in penalties, including lost points for assignments and receiving no points for tests or exams, at the discretion of the instructor.

ITM 215 – Information Technology for Business – Fall 2019
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

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:

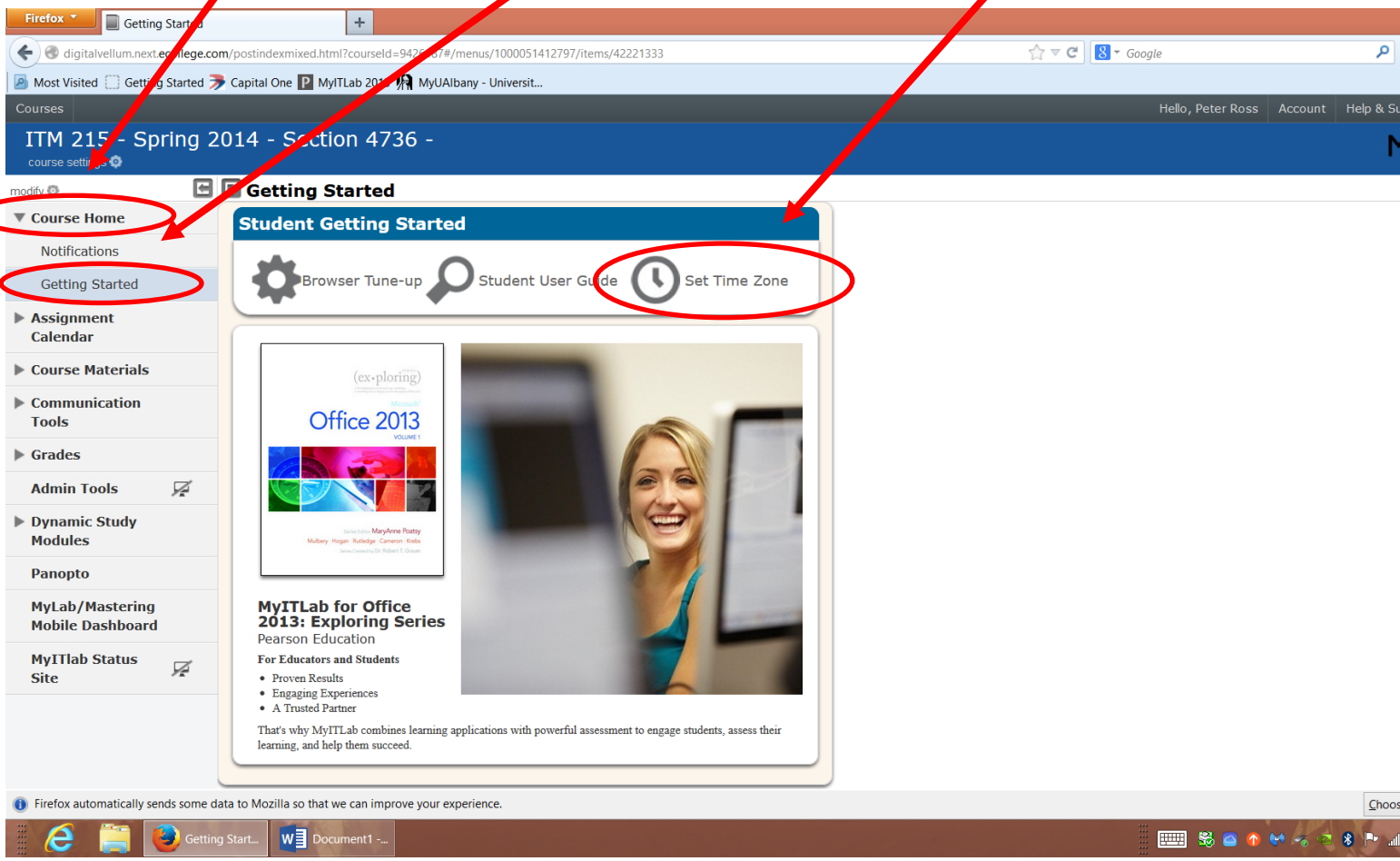
1. Go to pearsonmylabandmastering.com.
2. Click **Sign in**.
3. Enter your Pearson account username and password. Click **Sign in**.
4. Under MyLab & Mastering New Design on the left, click **BITM 215 Fall 2019 Section 2677** to start your work.

Entering your NetID into MyITLab.

Sign into MyITLab and select Course Home.

Select Getting Started.

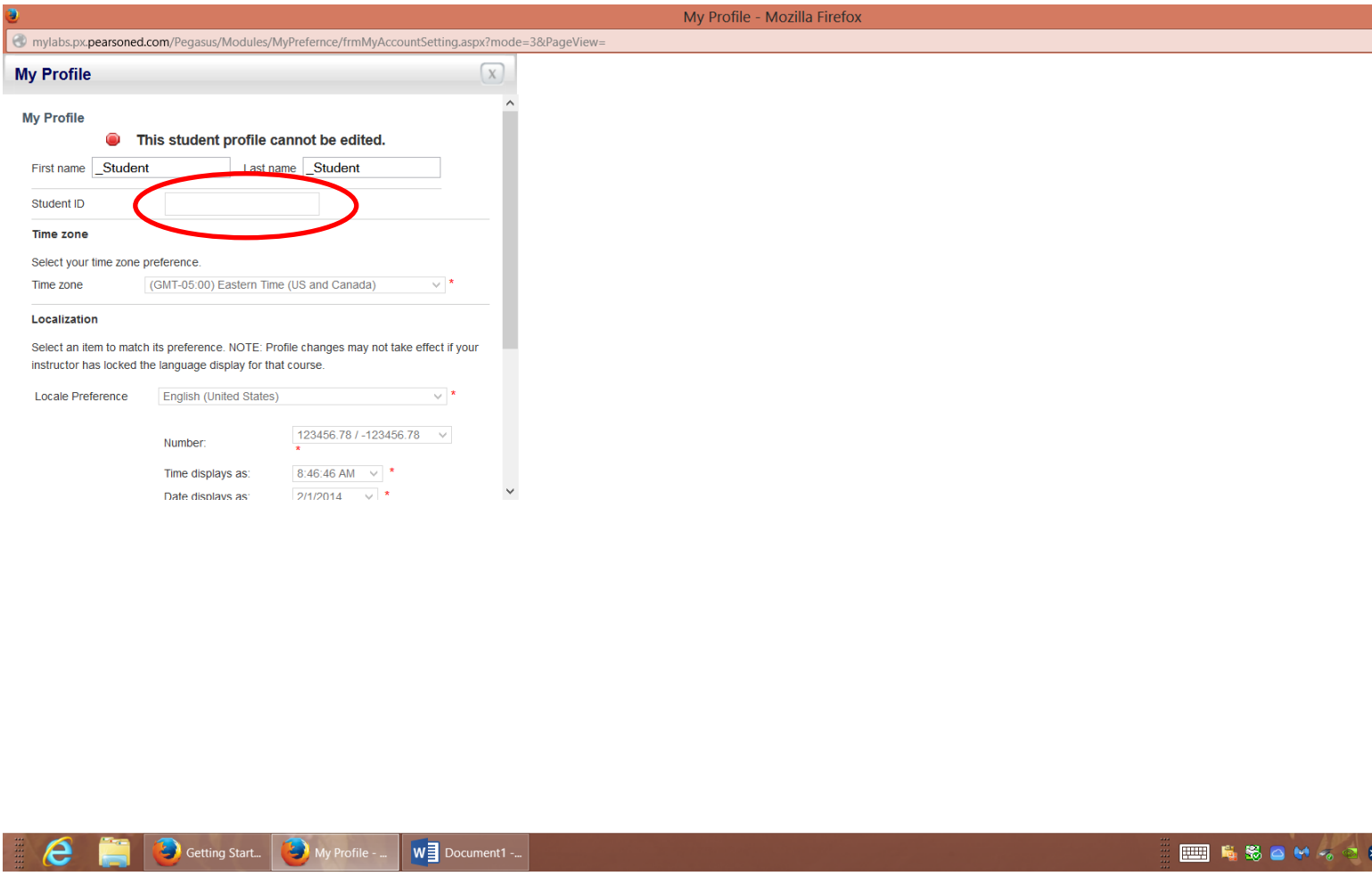
Then Click Set Time Zone.



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<= 3**00** 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

UNIVERSITY AT ALBANY
State University of New York

College of Engineering and Applied Sciences
Department of Computer Science

ICSI 213 Section 003 / IECE 213 Section 002 Data Structures - 3 Credits
Spring 2021
Class Meeting Time: 9:00 – 10:20 AM TTH
Class Lab Meeting Time(Hosted by TA):
Location: Zoom
Prerequisite(s): None

Instructor

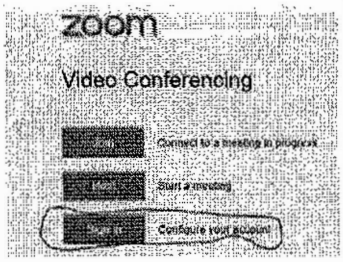
Instructor's name: Qi Wang
Instructor's title: Lecturer
Office location: on Zoom*
Office hours: 2:30 – 4:00 PM TTH
E-mail address: gwang3@albany.edu

Teaching Assistants

TA's name:
TA's office location: on Zoom*
TA's office hours:
TA's e-mail addresses:

University Zoom Account (Required):

- First(You only need to do this once.), students must configure their UALBANY Zoom account here https://albany.zoom.us/. Sign in to configure your account.



- And then, when it is time to attend lectures or labs, **go to Blackboard to sign in with SSO** (Single sign-on).
  For lectures: Go to COURSE CONTENT/ LECTURE ZOOM LINK.

  It is required that students must use their UAlbany credentials and sign in with SSO (the first method in the video) to attend the class. Please watch the first part of the video here (ends at 2:14), not the second method. More information from ITS page is shown below:

  1. If you are not prompted to sign in, open the menu in the top right of Zoom and click **Sign In** or **Switch Account**
  2. Choose **Sign in with SSO**
  3. Enter **albany** as the company domain and press **go**
  4. Log in with your UAlbany NetID and password

5. Choose **Open** when prompted from your browser
6. You will be redirected to the Zoom app and you can now use Zoom with your UAlbany licensed account

For labs: Go to COURSE CONTENT /Contact Information/TA rows on Blackboard.

- All participants will be muted. If you have any questions, use the *RaiseHand* feature.
- To protect you and others, please don't share the meeting links and other materials such as the recordings with others.
- **There have been many Zoom bombing incidences. We hope this will never happen in our classes with all the precautionary measures. If this occurs to us, the host will immediately end the meeting and report to UAlbany ITS immediately.** The host will send an announcement to the class afterwards.
- **Please follow all the netiquette rules for online learning! Most importantly, BE RESPECTFUL!**

Textbook, Software, and supplies

Textbook:
Starting out with Java from Control Structures through Data Structures, 4th Edition By Tony Gaddis
ISBN: 9780134787961 (Hard copy) or ISBN: 9780134757179 (e-Book)
Note: You don't have to purchase this textbook if you already have a good Object-Oriented Programming book in Java.

Software:
[1] Java SE Development Kit 8
http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html
Eclipse IDE for Java Developers
https://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/neon3

[2] UML Editor:
Violet UML Editor(Windows): http://alexdp.free.fr/violetumleditor/page.php.
StarUML(Windows and Mac OS): http://staruml.io/download

[3] Java API Specification (Java Library): An online resource/reference.
http://docs.oracle.com/javase/8/docs/api/index.html

[4] Microsoft Office Lens|PDF Scan App
Go to the App Store on your phone to download this app for free. This comes with your university Microsoft account. You are required to learn/practice how to scan MULTIPLE pages into ONE PDF since this is a requirement for you to submit some of the work as PDF files on Blackboard.

The technical support information can be found here:
Android:
https://support.microsoft.com/en-us/office/microsoft-office-lens-for-android-ec124207-0049-4201-afaf-b5874a8e6f2b
Windows:

https://support.microsoft.com/en-us/office/office-lens-for-windows-577ec09d-8da2-4029-8bb7-12f8114f472a

Important Supply: Back up your files!!!
A portable drive you will need to back up all your work. A crashed computer is not an acceptable excuse for not being able to submit work on time. Be proactive! Back up your files daily!

Course Description

This course covers commonly used abstract data structures such as lists, stacks, queues, trees and graphs. The implementation and time-space analysis of these data structures is discussed in the context of recursion, sorting and searching algorithms. Prerequisite(s): Grade of C or better in I CSI/I ECE 201 or I ECE 141.

Learning Objectives /Outcomes

Learning Objectives:

- Design and write documented programs using data structures.
- Incorporate arrays, stacks, queues, lists, trees, and graphs.
- Use searching, sorting, traversal, and recursion techniques.
- Time complexity algorithm analysis.

Students Learning Outcomes:
After completion of this course, students will understand and be able to apply in the following topics:

1. Recursive programming
2. Commonly used abstract data structures and their implementation
3. Interfaces and how interfaces are used to implement each data structure
4. How to implement singly Linked lists using arrays
5. How to implement Linked lists (singly linked, doubly linked, circular) using references
6. Time Complexity and Algorithm Analysis
7. How to use Stacks, Queues, Binary trees, and Graphs
8. Sorting algorithms such as bubble sort, insertion sort, selection sort, bubble sort, quick sort, and merge sort
9. Binary search
10. Java Collections
11. Effectively communicate programming solutions in a written and oral format.

Course Website and Blackboard

Blackboard will be used to provide essential course materials, the most current syllabus, and assignment documents and no separate course website will be maintained.

Assessments And Policies

Projects	240 points	≈ 63%
Group presentation	20 points	
Lab work	10 points	
Midterm Final	80 points 80 points	≈ 37%
Others		
Total	**430 points**	
Note: This may be subject to change.		

Grade Scale (%)	Grade Conversion	Note
93-100	A	
90-92	A-	
87-89	B+	
83-86	B	
80-82	B-	
77-79	C+	
73-76	**C**	**S/U option:** C is required for S.
70-72	C-	
67-69	D+	
63-66	D	
60-62	D-	
< 60	E	

- Students must complete all requirements in order to pass the course.
- Work must be submitted with all required documents included on *Blackboard* on time. Work will be rejected with no credit if
  - The work is late.
  - The work is not submitted properly (Blurry, wrong files, not in required format, crashed files, etc.).
  - The work is a copy or partial copy of others' work (such as work from another person or the Internet).
- An advance notice is required for a make-up test. Only **one** make-up test can be given per student through the entire semester if the student has notified the instructor earlier or within 24 hours of missing the exam, has a valid reason, and can provide official documentation if required (e.g. accident report, medical note, etc., NOT letters written by family members, etc.) to prove his/her absence. All make-up tests must be completed before next class meeting.
- To succeed, students should
  - Practice every day, this is the only way to learn.
  - Pre-read the lecture notes.
  - Watch recorded lectures, ask questions, and take notes.
  - Read textbook, study lecture notes, examples and other resources.
  - Start the work earlier.
  - Get help.
  - Engage in other learning activities.
- Students should keep their course work till the end of the semester in case of any recording errors.
- Upon the department's approval, an "I" grade can only be given if a student misses the final exam or the final project due to emergencies such as unexpected illness.

General Education Competency

This course provides several opportunities for students to develop advanced writing, critical thinking, information literacy, and oral disclosure. In the mandatory homework, students are required to write a report that presents analysis to evaluate efficiency of solution to the problem addressed in the homework. Through this homework, students will acquire many

general education competencies, such as Advanced Writing, Critical Thinking, Information Literacy and Oral Discourse. In the written report, students will not only demonstrate increasingly sophisticated writing according to the conventions of computer science, but also able to communicate clearly in writing, employing fundamental rules of usage, style, and mechanics in the context of computer science (Advanced Writing). The students will be required to present their work (in the mandatory homework) in the discussion class.

Attendance/Use of computer

Attendance:
Class participation is an important aspect of learning. Please think twice before skipping classes. If extra credit activities are given in class, they can't be made up. It is students' responsibility to keep up with the class and check on announcements made while they were absent. Only activities regarding this class are allowed during the class session. **Note:** The midterm is scheduled to be taken during the lecture time. The final exam is scheduled during the university final exam time.
The University's Medical Excuse Policy is included here:
http://www.albany.edu/health_center/medicalexcuse.shtml

Withdrawal: Once enrolled, it is the student's responsibility to withdraw if desired. Otherwise an earned grade will be assigned at the end of the semester.

Cell Phones and other devices: All the cell phones and other electronic devices MUST be turned off while in class. **Laptops are allowed if only if they are used to take class notes.**

Food and Drink: With the delicate nature of the technology in our classroom and to be fair to others there will be absolutely no eating and no drinking in the classroom.

Responsible Computing

Students are required to read the University at Albany Policy for the Responsible Use of Information Technology (https://www.albany.edu/its/its_policies.htm). Students will be expected to apply the policies discussed in this document to all computing and electronic communications in the course.

Students With Disabilities

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 130, 442-5490). That office will provide the course instructor 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).

Academic Dishonesty and Overall Regulations

Every student has the responsibility to become familiar with the standards of academic integrity at the University. Faculty members must specify in their syllabi information about academic integrity, and may refer students to this policy for more information. Nonetheless, student claims of ignorance, unintentional error, or personal or academic pressures cannot be excuses for violation of academic integrity. Students are responsible for familiarizing themselves with the standards and behaving accordingly, and UAlbany faculty are responsible for teaching, modeling and upholding them. Anything less undermines the worth and value of our intellectual work, and the reputation and credibility of the University at Albany degree. Plagiarism and other acts of academic dishonesty will be punished. Read the Standards of Academic Integrity and policies in the University Bulletin (https://www.albany.edu/undergraduate_bulletin/regulations.html).

CAUTION AND A STRONG WORD OF WARNING!!!! Plagiarism and other acts of academic dishonesty will be punished. Students are expected to submit original work. While you may discuss a problem with another student, the work you submit must be your own. Any student who submits copied work or any student that provides work for copying will earn a zero grade for that assignment. If there is more than one copying incident, the student mayl be graded an E for the class. As per college policy, cheating activity, including cheating in exams, quizzes, projects, etc., WILL be written up in a Violation of Academic Integrity Report (VAIR) reported to the college administration, which includes the Computer Science Chair, the College of Engineering and Applied Sciences Dean, and the Vice Provost of Undergraduate Studies. This will become a part of your permanent record. Multiple incidents will result in being expelled from the college.

Tentative List of Topics

- **Abstract Data Type - ADT**
  - Interface and Polymorphism(Review)
  - Abstract Data Types
  - Linked Lists
  - Stacks and Queues
  - Trees
  - Graphs
- **Design and Implementation of ADT:**
  - Recursion
  - Generics
- **Java Abstract Data Types***
  - Collections
- **Sorting and Searching**
  - Sorting, Searching, and Algorithm Analysis

The study schedule is subject to change in the event of extenuating circumstances.

Week	Topics
1	Syllabus Chapter 10 Interface and Polymorphism (review)
2	Chapter 10 Interface and Polymorphism (review) Abstract Data Type (See lecture notes.)
3	Chapter 19 Linked Lists
4	Chapter 19 Linked Lists
5	Chapter 19 Linked Lists Chapter 15: Recursion
6	Chapter 17 Generics
7	Chapter 20 Stacks and Queues
8	Chapter 20 Stacks and Queues
9	Chapter 16: Sorting, Searching, and Algorithm Analysis
10	Chapter 16: Sorting, Searching, and Algorithm Analysis
11	Chapter 21 Trees Introduction to Trees
12	Chapter 21 Trees Design and Implementation of ADT Binary Trees
13	Chapter 21 Trees Binary Search Trees: Search, Insert, and Delete
14	Graphs (See lecture notes.)

Note: Java Collections(Presentation)

ICSI 431: Data Mining
3 Credits, Fall 2019
Class Time: Tue/Thur 2:45PM – 4:05PM

Instructor:
Instructor: Petko Bogdanov
(pbogdanov@albany.edu) Office**:** UAB 416
Office Hours: Monday 12PM-1PM, Wednesday 1PM-2PM or by appointment
Email: **please use Blackboard mailing system**, usually you can rely on a 24-hour turnaround on your questions, as the account will be checked daily.

Prerequisite(s): A MAT 220. Familiarity with Python (or similar scripting language) as well as elementary statistics (e.g. A MAT 370) is also necessary.

Textbook:
DATA MINING AND ANALYSIS: Fundamental Concepts and Algorithms, M. J. Zaki and W. Meira Jr. (PDFs available at the book's webpage: http://www.dataminingbook.info/pmwiki.php).

Learning Objectives:
- Be familiar with the fundamental data mining (DM) and DA problems
- Acquire working knowledge with data preparation and analysis
- Have working knowledge of main algorithmic solutions and their application to different data types

Goals: By the end of this course, you will:
- Be familiar with the fundamental data mining (DM) and DA problems
- Acquire working knowledge with data preparation and analysis
- Have working knowledge of main algorithmic solutions and their application to different data types

Grading
50% - Homeworks
15% - Exam I
15% - Exam II
15% - Exam III
5% - Attendance and class participation
Extra Credit: up to 5% for in-class and Blackboard participation

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

Course Topics

- Data analysis (DA) foundations: data types, dimensionality and preprocessing
- Frequent patterns: item sets, sequences and graphs
- Clustering: representatives, hierarchical, density and spectral methods
- Classification: probabilistic, decision trees, SVM

Tentative Plan:

Aug 27	Data Mining and Analysis: Intro + Linear Algebra (refresher)	Chapter 1+Refreshers
Aug 29	Algebraic and Probabilistic Views (refresher)	Chapter 1+Refreshers
Sep 3	Numeric Attributes	Chapter 2
Sep 5	Numeric Attributes	Chapter 2
Sep 10	High Dimensional Data Analysis	Chapter 6
Sep 12	Dimensionality Reduction I	Chapter 7
Sep 17	Dimensionality Reduction II	Chapter 7
Sep 19	Kernels	Chapter 5
Sep 24	Kernels continued + kernel-PCA	Chapter 5 & 7
Sep 26	Classification: Bayes Classifier and KNN	Chapter 18
Oct 1	Bayes Classifier	Chapter 18
Oct 3	Linear Discriminant Analysis	Chapter 20

Information Literacy in Mathematics and Statistics
UNL 299
Syllabus sample

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:
Credit: 1
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/AMAT 299 meets the requirements for Information Literacy in the mathematics and statistics major. Please see the end of the syllabus for more details.

Prerequisite(s): Mathematics major; one of A MAT 113, 119, 214 or 218 with a grade of C or better.
Corequisite: A MAT 299

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.