

BIOLOGICAL SCIENCE 112 - EVOLUTION & ADAPTATION - SUMMER I 2022

PROFESSOR: BLAKE BARRON

BLAKE'S OFFICE: via Zoom/EBS 322

BLAKE'S OFFICE HOURS: via e-mail anytime or via ZOOM at times to be announced
or other office hours at a time by previously arranged by appointment

BLAKE'S E-MAIL ADDRESS: barron@sbcc.edu **BLAKE'S PHONE #:** 965 - 0581 x2444
Email is the best way to reach me quickly as my campus voicemail is not checked often during summer

INTRODUCTION: Welcome to Biological Science 112, Evolution and Adaptation!

This course is a fascinating and thought-provoking introductory exploration of biological evolution, evolutionary processes, and major events in the evolution of life on earth. The prominent biologist Theodosius Dobzhansky once said "Nothing in biology makes sense except in the light of evolution." Evolution is the core theme of biology - the idea that unifies the study of life and makes sense of our observations of diverse natural phenomena. This is a **3 unit lecture-only** course designed for non-majors and majors who may not have a formal background in biology. **Please note that this is a biological science course and not a philosophy, theology or religious studies course. It will present information in the context of scientific principles and thought. This is a fast paced course - although this course is entirely online, it is the complete BIO 112 course taught at SBCC, that is, in 6 weeks we will cover the same information at the same level of detail as the course that runs for 15 weeks during a regular face-to-face semester.** In order to reach your greatest potential in this course, you should **PLAN TO SPEND MANY, MANY HOURS EACH WEEK** reading, studying, preparing and writing for this course. **MOST STUDENTS SHOULD SPEND A MINIMUM OF 15 HOURS PER WEEK (OR MORE) DEDICATED TO JUST THIS COURSE.** This course satisfies Area 5B of IGETC and the SBCC General Education Requirement in the Sciences and this course is also transferable to the UC and CSU as a life science course without a laboratory. **Most students find this to be a somewhat challenging course.** There will be **many hours of study** each week required on your part to successfully complete this course and achieve the best possible grade you deserve to earn. **There is no laboratory component to this course.**



TEXTS: The required text is: *The Tangled Bank* (2nd edition, softback,) by Carl Zimmer. The text is available at the SBCC Bookstore and online via numerous retailers. **As this is an entirely online class you will find the textbook to be a CRITICAL resource that you will need to read thoroughly to learn the material, complete requisite assignments and perform well on exams.** The text will be supplemented with much required online content including lecture content on the course website, video lectures, weblinks, etc. which you will find useful in obtaining a greater understanding of biological evolution and adaptation.

LECTURES:

Required textbook reading, online lecture content, videos, vocabulary lists, review sheets, homework, quizzes, literature search paper and digital presentation guidelines are available from the course website at <http://www.biosciweb.net/bio112> and some will be available and required via CANVAS (CRN #20425)

Access to the course materials and specifics will be provided via email soon. **You must have full and daily access to a computer and the Internet/Web for the entire duration of the course. Check your equipment NOW to be sure it functions.**



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EXAMS, QUIZZES AND OTHER ASSIGNMENTS: Each of the exams and quizzes will consist of a varied combination of multiple choice, true-false, fill-in-the-blank, sentence completion, matching, short answer, essay, and diagram/graph interpretation questions. **Requisite homework assignments, the research paper and video presentation assignment guidelines will be posted on the course website.** All of the exams and quizzes will be on CANVAS with a specific deadline time for them to be completed posted in CANVAS and the course website. Failure to submit a completed exam or quiz by the deadline time will result in a significant point deduction or zero grade for that exam or quiz. You will need to use a TURNITIN.COM account or create one in order to submit some assignments for this course.

THE FINAL COURSE GRADE IS DETERMINED BY STUDENT COMPLETION AND PERFORMANCE OF THE FOLLOWING ASSIGNMENTS:

ASSIGNMENTS	DATE	POINTS	% of COURSE GRADE
Two Assessment	Friday, May 27 th at a time of your choosing	150	~13%
Exams:	Friday, June 10 th at a time of your choosing	150	~13%
One Final Exam:	Friday, June 24 th at a time of your choosing	200	~17%
Literature Search Paper:	1 paper @ 100 points due Friday, June 3	100	~8%
Digital Presentation:	1 presentation @ 75 points due Friday, June 17	75	~6%
Quizzes: (as scheduled & indicated each week)		210	~18%
Homework/Web-Based/Discussion Assignments: (to be assigned)		315	~26%
TOTAL:		1200	100%

Specific requirements for the three exams, quizzes and other assignments will be provided on the course website and via email on a regular basis each week during the semester.

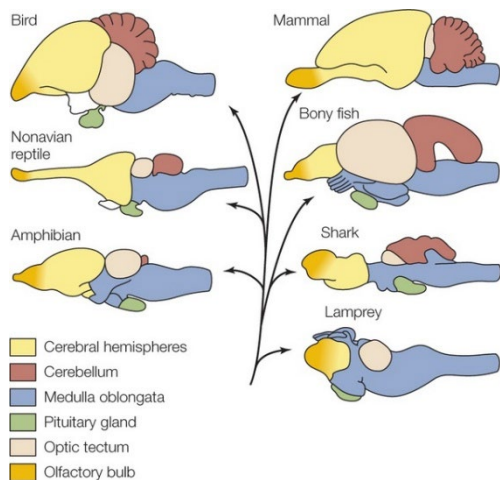
SPECIFICS RELEVANT TO EXAMS AND QUIZZES:

1. YOU MUST CHECK YOUR EMAIL **EVERYDAY** DURING THE SUMMER SESSION FOR COURSE ANNOUNCEMENTS AND IMPORTANT INFO RELATIVE TO EXAMS AND QUIZZES. YOU WILL RECEIVE AT LEAST TWO DIFFERENT EMAILS FROM ME EACH WEEK, USUALLY NEAR THE BEGINNING AND END OF THE WEEK. FAILURE TO STAY IN REGULAR CONTACT WITH ME OVER THE SEMESTER WILL RESULT IN YOU BEING DROPPED FROM THE COURSE.
2. THERE WILL BE AT LEAST 2 QUIZZES (TBA) DURING THE FIRST WEEK TO ENSURE STUDENT PARTICIPATION IN THE COURSE. **FAILURE TO SUBMIT ANY QUIZ BY THE DEADLINE TIME DURING THE FIRST WEEK WILL RESULT IN YOU IMMEDIATELY BEING DROPPED FROM THE COURSE FOR LACK OF ATTENDANCE.**
3. AFTER THE FIRST WEEK, THERE WILL USUALLY BE A MINIMUM OF TWO QUIZZES AND AT LEAST ONE ASSIGNMENT DUE PER WEEK.
4. THE TWO ASSESSMENT EXAMS WILL **NOT** BE CUMULATIVE AND YOU WILL HAVE 3 HOURS TO COMPLETE EACH EXAM. YOU WILL BE ABLE TO TAKE THE EXAMS AT ANY TIME ON EXAM DAYS BUT EXAMS MUST BE SUBMITTED ABSOLUTELY NO LATER THAN 11:59 PM.
5. THE FINAL EXAMINATION WILL BE SIMILAR TO THE OTHER ASSESSMENT EXAMS, BUT THE FINAL EXAM **WILL HAVE** A CUMULATIVE AND COMPREHENSIVE COMPONENT. YOU WILL HAVE 4 HOURS TO COMPLETE THE FINAL EXAM. YOU WILL BE ABLE TO TAKE THE FINAL EXAM AT ANY TIME ON FINAL EXAM DAY BUT THE FINAL EXAM MUST BE SUBMITTED ABSOLUTELY NO LATER THAN 11:59 PM.



6. A MISSED EXAM WILL LIKELY LOWER YOUR COURSE GRADE BY ONE LETTER GRADE. IF YOU MISS THE FIRST EXAM, YOU WILL AUTOMATICALLY BE DROPPED FROM THE COURSE FOR LACK OF ATTENDANCE.
7. NONE OF THE EXAMS OR QUIZZES WILL BE DROPPED. ALL EXAMS SCORES WILL COUNT TOWARD THE FINAL COURSE GRADE.
8. THE QUIZZES AND ASSIGNMENTS WILL VARY IN THE ACTUAL NUMBER OF POINTS AND LENGTH DEPENDING ON THE MATERIAL COVERED THAT WEEK BUT WILL GENERALLY BE AROUND 35 POINTS TOTAL FOR QUIZZES EACH WEEK AND AROUND 40-50 POINTS FOR ASSIGNMENTS EACH WEEK. THE QUIZZES ARE DESIGNED TO HELP YOU KEEP PACE WITH YOUR STUDIES AND REVIEW THE REQUIRED COURSE INFORMATION IN PREPARATION FOR THE EXAMS.

VERTEBRATE BRAIN EVOLUTION



9. QUIZZES AND ASSIGNMENTS WILL BE POSTED ON CANVAS AND THE COURSE WEBSITE. YOU WILL ALWAYS HAVE A MINIMUM OF 24 HOURS TO COMPLETE AND SUBMIT EACH QUIZ AND USUALLY MUCH LONGER. I WILL ANNOUNCE THE SPECIFIC DAYS FOR QUIZZES AND ASSIGNMENTS IN MY REGULAR WEEKLY EMAILS.

10. THERE WILL BE ABSOLUTELY NO QUIZ MAKEUPS EXCEPT FOR ONE MAKEUP QUIZ GIVEN DURING THE FINAL WEEK OF THE SEMESTER. THIS ONE MAKEUP QUIZ WILL REPLACE ONE MISSED QUIZ OR YOUR LOWEST QUIZ SCORE IF YOU TAKE ALL THE QUIZZES AND SCORE HIGHER ON THE MAKEUP QUIZ THAN A PREVIOUS QUIZ.

REQUIRED WEEKLY READING ASSIGNMENTS IN THE TEXT ARE LISTED BELOW

Read these chapters in the Zimmer text by the END of each indicated week. If you follow this reading schedule, you will stay ahead in your reading as you should be doing for class. Each week the exact assignments, quizzes or exams that are due with due dates, reading in the text you should be doing and the content you should be working on will be posted on the course website and emailed & announced directly to you.

LECTURE AND CONTENT SCHEDULE

THIS SCHEDULE MAY BE MODIFIED DURING THE COURSE AT MY DISCRETION

WEEK	DATES	LECTURE & DISCUSSION TOPICS
1	MAY 16 - 22	COURSE INTRODUCTION, SETUP AND EXPECTATIONS; WHAT IS EVOLUTION? & BASIC EVOLUTIONARY PRINCIPLES; SCIENTIFIC INQUIRY AND THE SCIENTIFIC METHOD; FOUNDATIONAL PRINCIPLES OF BIOLOGY; BIOMOLECULES & BASIC CELL BIOLOGY & HISTORY OF EVOLUTIONARY BIOLOGY & THOUGHT TEXT READING ASSIGNMENT: CHAPTERS 1 & 2

- 2 MAY 23 - 29 HISTORY OF EVOLUTIONARY BIOLOGY & THOUGHT;
PALEOBIOLOGY: BIODIVERSITY & THE FOSSIL RECORD;
ORIGIN & HISTORY OF LIFE; THE TREE OF LIFE;
TAXONOMY & CLASSIFICATION;
DNA & THE MOLECULAR BIOLOGY OF THE GENE;
READING ASSIGNMENT: CHAPTERS 3, 4 & 5

FRIDAY MAY 27 FIRST ASSESSMENT EXAMINATION

- 3 MAY 30 - GENETICS & HEREDITY; POPULATION GENETICS;
JUNE 5 MECHANISMS OF EVOLUTION: MUTATION, NATURAL SELECTION,
SEXUAL SELECTION, GENETIC DRIFT
READING ASSIGNMENT: CHAPTERS 5, 6 & 7

**EDITED FINAL COPY OF LITERATURE SEARCH ASSIGNMENT
IS DUE FRIDAY, JUNE 3 - I WILL ACCEPT LATE PAPERS, HOWEVER,
LATE PAPERS CANNOT EARN ABOVE AN 85% TOTAL MAX SCORE**

- 4 JUNE 6 - 12 ADAPTATIONS & SPECIATION; MORE ON SELECTION;
THE IMPORTANCE & EVOLUTION OF SEX;
RELATIONSHIPS & LIFE HISTORY
READING ASSIGNMENT: CHAPTERS 8, 9 & 10

FRIDAY JUNE 10 SECOND ASSESSMENT EXAMINATION

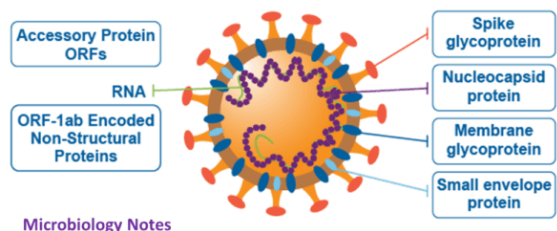
- 5 JUNE 13 - 19 MACROEVOLUTION: RADIATIONS & EXTINCTIONS
COEVOLUTION & THE EVOLUTION OF BEHAVIOR
READING ASSIGNMENT: CHAPTERS 11, 12 & 13

**DIGITAL PRESENTATION ASSIGNMENT IS DUE FRIDAY, JUNE 17
(NO LATE PRESENTATIONS ACCEPTED - NO EXCUSES/EXCEPTIONS!)**

- 6 JUNE 20 - 24 HUMAN EVOLUTION; EVOLUTION & DISEASE;
FRONTIERS IN EVOLUTIONARY BIOLOGY & MEDICINE
READING ASSIGNMENT: CHAPTERS: 14 & 15

**FINAL EXAMINATION:
FRIDAY, JUNE 24TH
AT A TIME OF YOUR CHOICE**

SARS: Evolution of a Virus



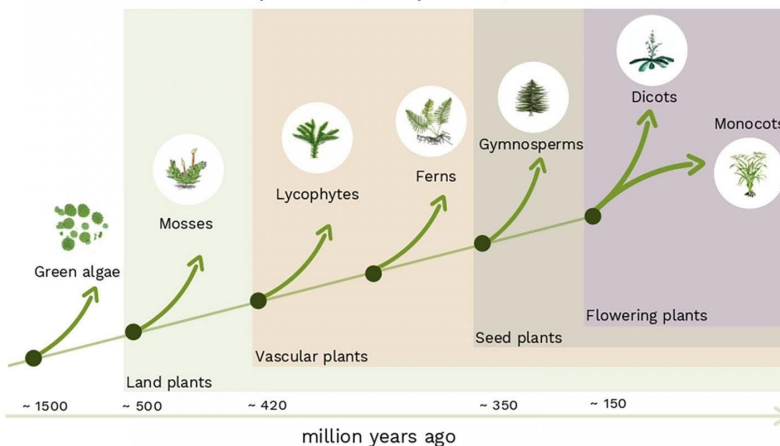
Microbiology Notes

Student Learning Outcomes
Biological Sciences 112 - Evolution and Adaptation

After successful completion of this course, a student will be able to:

1. Describe principles of evolution.
2. Correlate historical events with advances in the understanding of evolutionary processes.
3. Describe the underlying genetic basis of inherited characteristics.
4. Solve elementary problems of Mendelian genetics and population genetics.
5. Explain the underlying bases of classification and taxonomy.
6. Describe the functional design of major taxa of each of five kingdoms with special emphasis on trends of vertebrate evolution.
7. Describe the trends of evolution within the major lineages.
8. Describe the chemical evolution of Universe & scientific theories relating to the origin of life.
9. Provide an annotated time scale of the history of life on Earth.

Evolution of land plants (simplified)



GRADE POLICY IS BELOW

I WELCOME AND HIGHLY ENCOURAGE YOU TO ASK ME QUESTIONS VIA EMAIL AND DURING OPEN OFFICE HOURS.

POLICY ON GRADES - READ THESE PAGES VERY THOROUGHLY AND CAREFULLY!

As we progress through the course and you complete each of the exams, quizzes and assignments, you will accrue points towards a final letter grade for the course. **Specific letter grades will not be given after each lecture exam or quiz, but you will receive a percentile score and I will give you a general idea of where you stand in the course after each lecture exam with reference to the rest of the class.** Generally, I have found that letter grades given for each exam can be misleading for some students. Often students will attempt to "figure out" their grade based simply on the letter grade they received for each exam or assignment (e.g. "I got an A on one test and a C on another test, so I probably have a B"). Since your course grade is based on your cumulative score for all your work, this can be an inaccurate method of determining your true course grade (although you may have a B, your cumulative percentile may be closer to an A or a C). Additionally, by giving letter grades for each exam, the focus tends to be on "getting the grade" instead of learning the subject matter. I will do everything in my power to prevent this learning from becoming an arduous and boring task for you, but it does require studious effort on your part. Your percentile score on each exam is a more accurate depiction of how much of the course material you truly understand and have learned.

It is important that you realize that your grade is the result of your learned performance on the exams, quizzes, and assignments. Some students may understand the material very well, but perform poorly on any particular exam while other students may not have a complete grasp of the information and perform more adeptly on a particular exam. I can

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only evaluate you and assign grades based on your "performances" for each of the exams, quizzes, and other assignments. I make every attempt to grade fairly and impartially. **Each exam will include both objective (scantron) type questions and questions of the fill-in-the-blank or short answer or diagram drawing/labeling/interpretation type.** You will **not** need a scantron nor a blue/green book for each exam. You will complete and submit all the exams and quizzes directly in CANVAS as explained in my regular email updates and via the course website.

A student who earns an **A grade** has performed excellent, exemplary work and completed all course assignments, while a student who earns a **C grade** has performed only adequate work in the course but still completed all course assignments. A student who earns a **B grade** has performed well in the course and completed all course assignments, while a student who earns a **D grade** has performed inadequate work, but has shown effort and completed most course assignments. An **F grade** is earned when a student performs at an unacceptably low level usually due to a poor attendance record, lack of diligent study effort and study time and/or incomplete course assignments.

THE FOLLOWING SCALE WILL BE USED FOR DETERMINING FINAL COURSE GRADES:

Anyone who earns above 90% in this class is guaranteed an A- or higher grade. Anyone who earns above 80% in this course is guaranteed at least a B- grade or higher. Likewise, any student who earns at least 65% in this course is guaranteed at least a C grade. **Do not allow yourself to settle for merely passing this course, each of you deserves the best grade that you can achieve.** Email me or come talk to me in office hours if you are finding yourself lost, confused, overwhelmed, bored or scared about your grade or any of the information presented **at the earliest possible sign that you are having difficulty.**

GRADE	TOTAL OVERALL PERCENTAGE	TOTAL POINTS ACCRUED
A+	98% - 100%	1165 - 1200
A	93% - 97%	1105 - 1164
A-	90% - 92%	1069 - 1104
B+	88% - 89%	1045 - 1068
B	83% - 87%	985 - 1044
B-	80% - 82%	949 - 984
C+	78% - 79%	925 - 948
C	65% - 77%	769 - 924
D	55% - 64%	649 - 768
F	0% - 54%	0 - 648

ONLINE ATTENDANCE - YOU MUST BE YOUR OWN MONITOR!

In my experience, those students who do not study DAILY are the students who do not fulfill their potential regardless of their level of understanding for any course. Medical, legal and other scheduled appointments should NOT be scheduled on exam days and these will not be considered as excused absences. **Medical or personal emergencies will require a written notice of the specific problem signed by an appropriately qualified individual.** Regular study of the course website and asynchronous video content is not optional and participation in the course and discussion forum will be the first criteria considered when determining "borderline grades". Keep yourself on a regular schedule and I expect you to be fully prepared to view and learn from the course webpages and online videos each week. Fortunately, parking on campus will not be a problem for you for this class for this semester 😊

CHEATING:

Absolutely no form of academic dishonesty or plagiarism will be tolerated. It is unethical, unfair, and a violation of your own intelligence as well as being lame, slimy, vile, and pathetic. **Anyone caught cheating or plagiarizing will be subjected to the most severe academic penalties.** **More than ever, most academic institutions and professors are acutely aware that this is a serious and unfortunately all too common issue.** No two students are allowed to submit exactly the same quiz, exam, paper, digital presentation or other assignments.

MAKEUP EXAMS:

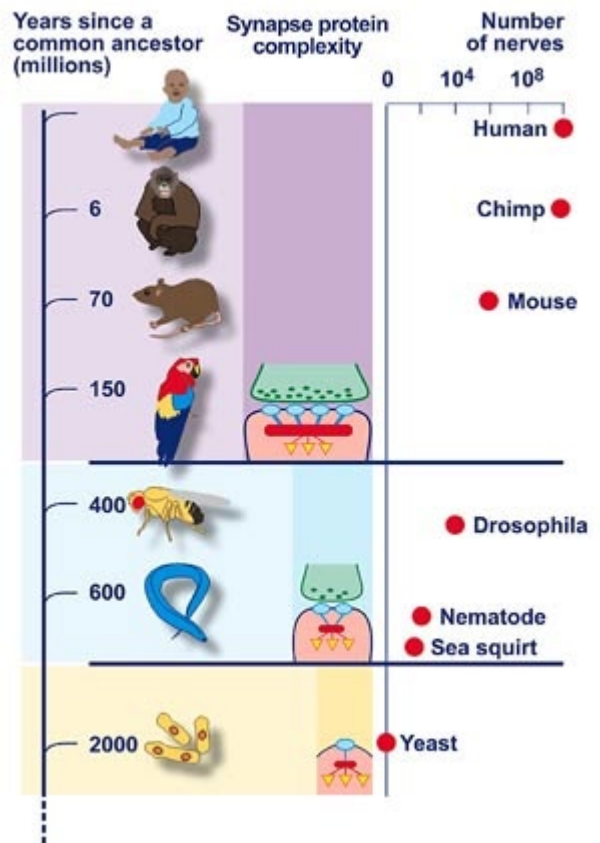
There will be no makeup exams except in the case of death/illness of a family member or death/illness of you. If you are sick for an exam or quiz, a written medical excuse will be required. It is your responsibility to make sure that you have no conflicts with the exam schedule. In the case of some unforeseen personal crisis, a makeup will only be granted with my specific consent and only for a verifiable reason.

EXTRA CREDIT ASSIGNMENTS:

Put simply, do not rely on this! There will be some extra available points here and there on some assessments and additional assignments. **DO THE REAL WORK!** Stay focused and put an effort into your studies early on and you will not care about extra credit. If you are having trouble in the course, you certainly do not need more to study - which is what extra credit entails!

WITHDRAWAL AND YOUR CONCERNS ABOUT YOUR GRADE:

May 18th is the last day to drop the course and receive a refund. The last day to withdraw from the course (without a refund and with a "W") is June 8th. See CRN/Class Schedule for the last day to petition for Pass/No Pass status. IF YOU ARE CONCERNED ABOUT YOUR GRADE, PLEASE EMAIL ME AT THE EARLIEST POSSIBLE TIME SO THAT WE CAN DISCUSS YOUR OPTIONS. It is to your great advantage to discuss with me (I don't bite!) any problems you are having early in the semester so that I can try and assist you as much as possible. If you do decide to withdraw, please tell me so that I will be aware of what happened to you and remember IT IS YOUR PERSONAL RESPONSIBILITY TO OFFICIALLY WITHDRAW SO THAT YOUR TRANSCRIPT RECORD WILL NOT BE ADVERSELY AFFECTED.



DSPS STUDENTS:

Disabled Student Programs and Services (DSPS) coordinates all academic accommodations for students with documented disabilities at Santa Barbara City College. If you have, or think you might have, a disability that impacts your educational experience in this class please contact DSPS to determine your eligibility for accommodations. DSPS is located in the Student Services (SS) Building, Room 162. Their phone number is 805-730-4164. If you are already registered with DSPS please submit your accommodation requests via the 'DSPS Online Services Student Portal' as soon as possible. Once submitted and confirmed please visit with me about your specific accommodations. Please complete this process in a timely manner to allow adequate time to provide accommodation. Contact Blake by email to barron@sbcc.edu if you have questions or concerns about your status.

Reproductive Isolation Mechanisms

Pre Zygotic

➤ Behavioral



➤ Temporal



➤ Mechanical



STUDY DISTRACTIONS: Contrary to what many people believe, much solid scientific data clearly shows that **the human brain is NOT effective at multitasking**. Instead, **your brain task shifts**. If you have too many things going on around you (cell phone, Snapchat, Discord, web videos, messaging, etc.) while you are trying to study - particularly for an online course - then you will not be as successful as you would be if you were focused only on the study tasks at hand. **Stay focused and diligent on a DAILY basis**. See the Study Skills links and our study skills discussion in the first week for further details.

TAKING ONLINE EXAMS AND QUIZZES: I fully recognize that you are likely to utilize the course website, your textbook and the internet/web during exams and quizzes. Given this, **realize that I have high expectations of you**. There will be a significant short answer writing portion to each exam. You will have limited time to complete each exam and quiz, if you do not study regularly and prepare for these assessments similar to how you would for a traditional course, then you will not perform at your optimum during the course. "Open book/note/web" exams are not easier - they are usually more challenging. **We will NOT be using PROCTORIO for our exams**.

FEEL FREE TO EMAIL ME ANYTIME WITH ANY QUESTIONS REGARDING THE MATERIAL OR COURSE.

