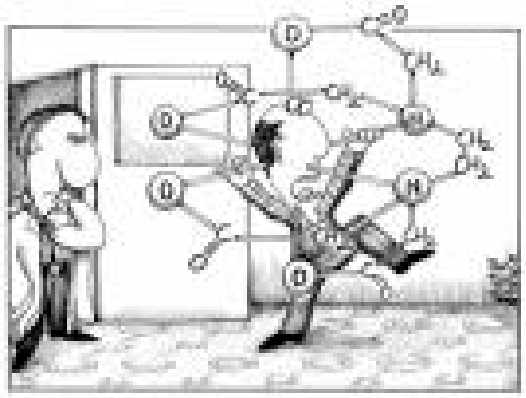
MATC

Introductory Biochemistry

Natural Science 186

Fall 2011
Tuesday A235 10:00-12:55 pm
Thursday A235 10:00-12:00

August 25, 2011 to December 20, 2011



*****Note: The following is a <u>tentative syllabus only</u>.*****

I. General Information

A. Instructor's name: Brenda E. Wingard-Haynes, MS
B. Instructor's office number and hours: LAS Office A211 TBA
C. Instructor's telephone number: 262-238-2280
D. Instructor's e-mail: wingardb@matc.edu. (Please use the message board on BB to send e-mails. Use the MATC e-mail only for emergencies)
E. Science Center (course related assistance): C-271 (Academic Support Center)
F. Texts:
   1. Lecture Texts: TBA
   2. Lab Text: Nat Sci 186/209 Lab Experiments by Bettelheim, et. al. (you may share with your lab partner)

G. Other useful items: Calculator for pH problems
H. Course Prerequisite: One year of high school chemistry or Natural Science 110 (passing grade of "B-/C" or better). A college level chemistry course is advisable.
I. COSMO ID and access to Blackboard (required)
J. Course Time Commitment: Approximately 1-2 hour outside time per contact hour to pass with a "B-" is the general rule of thumb. If you are unfamiliar with this general field of study, this course may require more of your time. If you have prior related study or experience, this course may require less time.

II. Types of Tests and Graded Events

A. Hour Exams:

There will be regular unit exams worth 100 pts. for each unit. Some may be administered through Blackboard; most will be administered in class. There will be no make-ups as students benefit from reviewing the test immediately after its administration. Thus, to accommodate the possibility of a missed exam, the lowest exam score will be dropped from your grade (note, you may not drop the metabolism unit exam and you may not drop the lab exam). There is no plan for a cumulative final exam in this course at this time.

B. Miscellaneous Graded Events:

Additional graded events such as quizzes, in class assignments, reports, final presentation etc. may be offered, as time and necessity permits. In support of the MATC core competencies and course outcome summary, students will have opportunities for group work, peer led discussions, etc. Homework is collected for points and represents part of the grade.

C. Extra Credit:

Occasional extra credit is offered and will be announced as the course progresses.

E. Labs and Lab Exam:

Labs are discussed in greater detail below. Lab exercises are primarily participatory, although pre-labs must be completed before a lab is begun. There will be a lab exam at the end of the semester, covering lab exercise content.

Course Procedure

The text is not programmed but contains sample problems and study checks in each section. In addition, each section and chapter concludes with a question and problem section. The answers to all study checks and to the odd numbered questions and problems are given at the end of the text. Details will be announced regarding HW specifics although the text will likely support a homework helper. Problem sets will count for token points to encourage students to do additional problems.

Students are encouraged to contact the instructor if they have questions. It is best to contact the instructor as soon as a problem arises so as to avoid falling behind in the course or failing a test.

Laboratory Guidelines and Safety

A. OSHA Hazard Communication Standard

In compliance with the Right-to-Know Law and OSHA Hazard Communication Standard, you will be appraised of the hazards of the chemicals you will use in the laboratory by:

A. The ***NFPA Warning System*** on all reagent bottles.
B. The ***Material Safety Data Sheets (MSDS)*** to be found in the back of the laboratory

B. Laboratory Attendance

It is expected that students arrive prepared and on time for a lab. If a student arrives after the instructor has discussed the experimental procedures, the student may not be allowed to do the lab. Similarly, as mentioned above, if students are not prepared for the lab, they will not be allowed to do the lab. You may not make up a lab. However, a make up activity will occur at the end of the semester.

C. Laboratory Exercises

Labs will be given individual scores of 20 points each, based on participation and effort. In this way, the lab questions can be assessed immediately. At the end of the semester, a lab exam will be given covering the labs completed in the course. The lab exam will be worth 100 points and will cover the labs that were completed during the semester; this exam will occur via the computer as there are many pictures that accompany a lab exam; you will be given class time to complete this exam. You will be advised of the labs and due dates in the course schedule which appears as a different document. In addition, some labs have pre-lab assignments; it is your responsibility to determine which labs have a pre-lab and to complete them before lab. This is to ensure preparedness and improve safety in the lab. Hence, if you are not prepared, you may be asked to leave the lab. Some labs can be done at home and will be announced.

D. Laboratory Safety

This course does include a laboratory utilizing volatile organic solvents. Students who are pregnant or become pregnant during the semester must provide permission from her physician to attend/complete the course. Safety shall be covered in another laboratory event, but please recall that **NO OPEN TOED SHOES WILL BE ALLOWED ON LAB DAYS IN WHICH VOLATILE ORGANIC SOLVENTS ARE USED.**
Strict adherence to laboratory safety rules shall be observed at all times. Many of the chemicals in organic and biochemistry labs are toxic and/or suspected carcinogens. Goggles will be worn at all times that reagents are on the bench tops, gloves will be work when chemicals in use warrant them. Many chemicals are to be used under the hood. Students shall be removed from the lab and/or have points deducted for not adhering to safety rules.

Again, **students who are pregnant or who become pregnant throughout the semester must inform the instructor immediately of her status. Permission to continue must be provided by her physician.**

Attendance and Missing Work Policy

A. Attendance—Attendance is not a quantitative part of the course grade (meaning there are no attendance points assigned). Furthermore, a course syllabus attendance supplement is provided which students are required to sign and turn in before leaving the first class of the semester. Students are expected to attend class and to arrive on time. Chronic tardiness may result in lost points and/or disciplinary action. When possible, students should notify the instructor in advance that they will be absent or tardy. The responsibility for any missed material lies with the student. If a student misses three consecutive classes, the instructor reserves the right to withdraw the student from the course**. The instructor may withdraw students up to the no-refund date. After that time, it is the student's responsibility to withdraw themselves from the course should he/she decide to no longer come to class.**

B. **Make-up Exams**—No make up exams will be given. The lowest exam score will be dropped (except the metabolism unit and lab exams—these exams cannot be dropped)

C. **Make-up Labs**—All labs are to be completed on the day they are assigned. No labs can be made up per se. Please see the instructor if you need specifics.

D. You must pass the labs to receive a passing grade in the course.

Grading Policy

A. Grading scale (tentative) :

90—100 is an A; 80—89 is a B; 70—79 is a C; 60—69 is a D; Below 60 is failing

Note: + or – grades will be assigned.

B. Typically, a clustered or bell-curve distribution of grades are achieved. Curving or scores will occur if necessary to achieve a distribution of grades.

C. Incomplete marks (I) are given only when the course has been carried until the end of the semester, when only a relatively small percent of the required work for a course remains to be completed, and when arrangements have been made with the instructor for the completion of course requirements in the following semester. An incomplete mark affects the grade point average of a student just like a "U" grade until it is removed. If it is not removed within the indicated time, a permanent grade of "U" will be assigned. Note, I do not recommend this option and virtually never approve an incomplete. Please see me if you feel you are not able to complete the course.

D. Students may generally withdraw themselves up to **two weeks prior** to the end of the semester. To withdraw, obtain a withdrawal form in the Liberal Arts and Sciences office (Rm. 214) or the Registration and Records office (S 115). After the first class meeting, the student must obtain the signature of the instructor, the Associate Dean (Rm. 214), or their advisor on the form.

Please refer to the withdraw policy above. Do note that students who do not withdraw themselves risk earning a grade of "U" at the end of the semester.

E. It is a department policy not to return, on a permanent basis, exams submitted by the student. The following provisions will be followed:

1. All tests, reports, and assignments will be handed in and checked or graded by the instructor.
2. The student may inspect the material in the classroom or the instructor's office.
3. After inspection the material must be returned to the instructor.
4. At no time may the student remove material from the classroom, lab, or office.
5.

F. Any pre-lab assignments will be collected at the start of class with the grade incorporated in the grade on the experiment. Conversely, points will be deducted if the pre-lab is not complete and/or the student will not be allowed to complete the lab. See lab policies above.

H. There will be no retests in the course. See make-up policy above.

J. **No academic dishonesty will be tolerated in the class. Students are to be familiar with the student code of conduct. Academic dishonesty includes, but is not limited to, cheating, collaborating with another, plagiarizing, stealing the work of another, falsifying records of work, and assisting another student in any of the above conduct. Academic dishonesty will not be tolerated and disciplinary action will be taken. The first incidence will result in a "0" for the graded event. The second incidence may result in a meeting with the instructor, the instructional chair, and/or the associate dean. It may result in disciplinary action from the Office of Student Life. Consult the MATC student handbook for further details.**

VII. ADA Statement

If you have a disability that impacts your classroom performance and wish to request an accommodation, contact the Center for Special Needs (297-6838). They may require documentation regarding your disability to enable them to comply with your request. Admission of a disability is voluntary and will be handled in a confidential manner. MATC does not discriminate against individuals with disabilities and fully complies with the American with Disabilities Act.

VIII. Complaint Procedure

A. Any student in this class who experiences any problems with any aspect of this course or with the instructor should follow the steps listed below:

1. An attempt should be made to resolve the problem by the student discussing it with the instructor.
2. If you and the teacher are unable to resolve the problem, then it should be discussed with the Instructional Chair.
3. If the problem is unresolved, then it should be discussed with the Associate Dean.
4. If the Associate Dean is unable to resolve the problem, then the issue should be discussed with the Dean of General Education.
5. If the Dean does not resolve the problem, then you should enlist the aid of the Student Senate, Office of Student Affairs, and/or MATC's Office of Affirmative Action.

IX. MATC Core Abilities

The Core Abilities are skills that allow students to continually adapt and learn. This is especially important in a blended course of this type. Your success will be directly related to your ability to do many of these things. They have been called "employability skills," soft skills, and professional attributes. You may not be tested for all of the Core Abilities directly, but you will demonstrate or apply them to complete lessons or to improve skills. Then Core Abilities and indicators are listed below:

A. Communicate Effectively

1. Use effective oral communication skills and use effective written communication skills
2. Apply standard rules of language structure, including grammar and spelling
3. Listen actively to others
4. Derive meaning from text and communicate in a bias-free manner
5. Support viewpoints with evidence

B. Collaborate with Others

1. Demonstrate respect in relating to people
2. Cooperate and resolve conflicts effectively and participate in shared problem solving

C. Respect Diversity

1. Acknowledge personal prejudices and biases
2. Appreciate perspectives of people outside own background/culture
3. Work collaboratively with persons from other backgrounds/cultures
4. Demonstrate sensitivity to global issues

D. Demonstrate Responsibility

1. Attend classes as scheduled and turn in quality work. Adhere to safety rules and regulations
2. Act professionally to fulfill job duties within chosen field
3. Demonstrate flexibility and self-directedness in learning and practice environmental sensitivity

E. Think Critically

1. Differentiate between fact and fiction. Consider other viewpoints and perspectives
2. Present logical arguments. Evaluate sources of information to solve problems

F. Utilize Technology

1. Use technology to communicate. Solve problems using technology
2. Use appropriate technology to manage information
3. Recognize the impacts of technology

G. Apply Math and Science

1. Apply math concepts and principles appropriately
2. Apply scientific concepts and principles appropriately
3. Interpret meaning from quantitative data. Interpret meaning from scientific data

X. Other Class Policies

A. Pagers and cell phone must be turned off and put away. Under no circumstances will a cell phone be allowed to take the place of a calculator during a graded event. Similarly, Game Boys, walkmans, iPods, etc. will not be allowed during class time. Text messaging and/or taking pictures during class is also prohibited.

B. Reading of newspapers, magazines, sleeping, distracting conversations, etc. shall be reserved for time other than class time. Students wishing to participate in these activities may do so, but not in the classroom.

C. Students are expected to remain in the classroom for the duration of the class. Attendance records will be kept.

D. If MATC is closed due to weather or other emergency, official announcements regarding cancellation of classes will be made on Channel 10. Emergency closing information will also be provided in a pre-recorded telephone message at 414-297-6561.

X. Course Objectives

The course outcome summary will be posted directly on Blackboard. Please take a look at this document so you will be familiar with the State of Wisconsin requirements. This lengthy document outlines the goals and objectives of the course. Also, the MATC Core Abilities are goals and objectives of every MATC course; they are listed above.

The tentative schedule, including labs, appears on the next page. Please see that document for scheduling specifics.

Course Time Table
Introduction to Biochemistry (NATSCI 186)
Fall 2011

<u>Tuesdays & Thursdays</u> = In-Class Instruction and Interactive Exercises
<u>Wednesdays</u> = Laboratory Experiments

Course material listed is provided as a tentative guideline only -- anticipate deviation!

Date	***Exams***	*Course Material*	***Lab Experiment***
Aug 25		Syllabus **<u>START UNIT 1</u>: Atoms & Compounds** Atoms and the Periodic Table	
Aug 30		Elements vs. Compounds Ionic Compounds	
Aug 31			**pH AND BUFFER SOLUTIONS** ***Safety & Check-in***
Sept 1		Mixtures Acids, Bases & Buffers	
Sept 6	**EXAM 1**		
Sept 7			**TBA**
Sept 8		**<u>START UNIT 2</u>: Covalent Compounds** Covalent Bonds, Molecules & Formulas Organic Molecules	
Sept 13		Expanded & Condensed Structures; Line Drawings Molecular Shape	
Sept 14			**MOLECULAR MODELING**
Sept 15		Hydrocarbons Structural & Cis-Trans Isomers	
Sept 20	**EXAM 2**		
Sept 21			**TBA**
Sept 22		**<u>START UNIT 3</u>: Alcohols and Such** Organic Functional Groups Alcohol Classification (1°, 2° & 3°)	
Sept 27		Naming Identification of Organic Functional Groups	
Sept 28			**SOLUBILITY AND SOLUTION**
Sept 29		Polarity Hydrogen Bonding Reactions of alcohols, aldehydes & ketones	

Oct 4	**EXAM 3**		
Oct 5			**PREPARATION OF ASPIRIN**
Oct 6		**START UNIT 4: Chirality & Carbohydrates** Chiral carbons and chiral molecules Enantiomers	
Oct 11		Monosaccharides Aldose vs. Ketose Ring formation	
Oct 12			**CARBOHYDRATE LAB**
Oct 13		Disaccharides and glycosidic bonds Polysaccharides (starch, glycogen & fiber)	
Oct 18	**EXAM 4**		
Oct 19			**MOVIE**
Oct 20		**START UNIT 5: Carboxylic Acids, Esters & Lipids** Carboxylic acids, carboxylates & carboxylate salts Ester identification and reactions	
Oct 25		Fatty acid identification via C=C Prostaglandins, essential fatty acids & trans fats Triglycerides (fats and oils)	
Oct 26			**WEB-LIPID**
Oct 27		Triglyceride reactions Phosphoglycerides & membranes Waxes, steroids, fat-soluble vitamins & others	
Nov 1	**EXAM 5**		
Nov 2			**SOAP**
Nov 3		**START UNIT 6: Amines, Amides & Proteins** Amine structure, properties & protonation Amide identification & reactions	
Nov 8		Amino acids and zwitterions Peptides and the peptide bond Protein structure (primary through quaternary)	
Nov 9			**AMINO ACID SEPARATION**
Nov 10		Denaturation Protein examples (collagen, insulin & hemoglobin)	

Nov 15	**EXAM 6**		
Nov 16			**ISOLATION OF CASEIN**
Nov 17		**START UNIT 7: Enzymes & Nucleic Acids** Enzyme classification Energy, kinetics & mechanisms	
Nov 22		Active site (lock & key model ; induced fit model) Inhibition Cofactors (vitamins, minerals & nutrition) Nucleotides	
Nov 23			**NO LAB – Thanksgiving**
Nov 24		**NO CLASS – Thanksgiving**	
Nov 29		Dinucleotides and the phosphodiester bond DNA vs RNA structure Replication, transcription & translation Mutations	
Nov 30			**ISOLATION OF ONION DNA**
Dec 1	**EXAM 7**		
Dec 6		**START UNIT 8 : Metabolism of Food** Stages of metabolism Important coenzymes Digestion Glycolysis Coupling reaction	
Dec 7			**ISOCITRATE DEHYDROGENASE Check Out**
Dec 8		Citric acid cycle Electron transport Proton pumping ATP synthesis	
Dec 13		Fatty acid metabolism (β oxidation, energy production & ketone bodies) Protein metabolism (transamination, urea cycle, carbon skeletons & diseases)	
Dec 14			**THE METABOLISM GAME**
Dec 15	**EXAM 8**	**Evaluation**	
Dec 20	**Make-Up Exam**		