## LECTURE SCHEDULE (more or less)

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Topic</th>
<th>Chapter from Oxtoby</th>
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<tbody>
<tr>
<td>1.</td>
<td>Th</td>
<td>1/6 Enthalpy and Thermochemistry/Nutrition</td>
<td>Chapter 12</td>
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<td>977-81</td>
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<td>2.</td>
<td>Tu</td>
<td>1/10 Enthalpy and Thermochemistry/Metabolic pathways</td>
<td>Chapter 12</td>
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<td>3.</td>
<td>Wed</td>
<td>1/11 Quiz 1</td>
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<td>4.</td>
<td>Th</td>
<td>1/12 Enthalpy and Thermochemistry/metabolic pathways</td>
<td>Chapter 12</td>
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<td>5.</td>
<td>Tu</td>
<td>1/17 Enthalpy and Thermochemistry/glycolysis</td>
<td>Chapter 12</td>
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<td>180-86</td>
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<td>6.</td>
<td>Wed</td>
<td>1/18 Quiz 2; and Pamela Bagley, from the Biomedical Libraries</td>
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<td>7.</td>
<td>Th</td>
<td>1/19 Enthalpy and Thermochemistry/pentose phosphate pathway</td>
<td>Chapter 12</td>
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<td>8.</td>
<td>Tu</td>
<td>1/24 Entropy/small group class discussion</td>
<td>Chapter 13 (1-3)</td>
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<td>9.</td>
<td>Wed</td>
<td>1/25 Quiz 3</td>
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<td>10.</td>
<td>Th</td>
<td>1/26 Entropy/ Krebs Cycle</td>
<td>Chapter 13 (1-3)</td>
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<td>187-99</td>
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<td>11.</td>
<td>Tu</td>
<td>1/31 Free Energy/Photosynthesis</td>
<td>Chapter 13 (5-6)</td>
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<td>12.</td>
<td>Wed</td>
<td>2/1 Quiz 4</td>
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<td>13.</td>
<td>Th</td>
<td>2/2 Free Energy/Photosynthesis, more details</td>
<td>Chapter 13 (5-6)</td>
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**MIDTERM, MONDAY EVENING 6 FEBRUARY, on the material covered in classes 1-13; 6 – 9 PM in Oopik**

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<thead>
<tr>
<th>Lecture</th>
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<tbody>
<tr>
<td>14.</td>
<td>Tu</td>
<td>2/7 Free Energy/Evolution</td>
<td>Chapter 13 (7)</td>
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<td>15.</td>
<td>Wed</td>
<td>2/8 Quiz 5</td>
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<td>16.</td>
<td>Th</td>
<td>2/9 Free Energy/DNA replication</td>
<td>Chapter 13 (7)</td>
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<td>495-513</td>
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17. Tu 2/14  Thermodynamic K/PCR  Chapter 14 (3, 7) 495-513
18. Wed 2/15  Quiz 6

19. Th 2/16  Thermodynamic K/ RNA World  Chapter 14 (3, 7) 74-88
F 2/17  FIRST WRITING ASSIGNMENT DUE, 5PM

20. Tu 2/21  Redox reactions/ Chemical Evolution  Chapter 11 (4) 74-88

21. Wed 2/22  Quiz 7

22. Th 2/23  Electrochemistry/ Bacteria, Archaea, electron acceptors  Chapter 17 (1-3) 590-605

23. Tu 2/28  Bacteria, Archaea, electron acceptors  590-605
24. Wed 2/29  Quiz 8

25. Th 3/1  Electrochemistry  Chapter 17 (4-5)
F 3/2  SECOND WRITING ASSIGNMENT DUE, 5PM

26. Tu 3/6  Wrap/catch up

**Office Hours**

There are two types of office hours this term. In addition to the traditional type of individual faculty office hours (see below), we will also hold joint office hours:

**Joint office hours:** Tuesday, 3 – 4 PM, 201 LSC. The purpose of joint office hours is to answer questions and discuss lecture related material brought to office hours by students. Thus, the give and take will occur in a communal sort of fashion, with both faculty and students taking part. Come and ask questions, or simply come and listen to the other questions being asked and answered.

**More formal office hours:** These times are reserved for students who may either not want to ask a question in front of a large group or might wish to discuss a more private, course related matter (like how am I doing considering my performance on the last test?). Also, specific, lecture related questions should be brought to the course faculty person responsible for the lecture topic (see syllabus):

Prof. Kull, office hours:  Mondays, 9-10 AM and 2-3 PM

Prof. Sloboda, office hours:  Wednesday, 4 – 5 PM & Friday, 2 – 4 PM, 222 LSC

**Textbook**
There will be two sources of reading assignments during the term. The first will be from an assigned textbook and the second will be from a textbook placed on reserve in Dana Library.

[1] Required text: Principles of Modern Chemistry, 6th Edition, by Oxtoby, Gillis and Campion. A number of copies of the Oxtoby textbook are on reserve at Kresge library. Also, if you feel you need some brushing up on math skills that apply to chemistry, there are several copies of a very good book called Maths for Chemistry – A chemist’s toolkit of calculations, which could be very useful. Both of these are available for 2 hour loan periods.

[2] Text on reserve, Dana Library: Biological Science, 2nd edition, by Scott Freeman and contributors. This is a general Biology text that will provide background information pertinent to the subjects we will cover during the term. For most but not all lectures, we will indicate appropriate reading from the text. Because the background of students in the course is expected to be quite diverse, we are NOT requiring that students purchase this textbook. There are five copies on two hour reserve at DANA library. If you have a general biology text book of your own, this will likely suffice for background information as well.

**Information about grades and exams**

As before, you are not competing against each other for grades in Bio/Chem 9. Let us be very clear about that and reiterate this point: *You are not competing for grades in this class with anyone but yourself.* All grades, up until the final letter grades are decided, are recorded as numerical grades, from 0% to 100%. Here are three important points about grades in Bio/Chem 9:

[i] A grade of 90% or above will always be at least an A-. No one is ever penalized for learning what we teach them. Thus, it is entirely possible for everyone in the class to receive a grade of A- or better. However, our experience suggests to us that this will never happen. But believe us: if everyone achieves a grade of 90% or greater, then everyone will receive at least an A-.

[ii] In order to receive a D, you have to achieve a final grade of at least 50%. In other words, a final grade less than 50% is an E.

[iii] The median grade in Bio/Chem 9 will be a B. This means if the median of an exam were 62%, then a grade of 62% for that exam is a B. If the median were 29%, then a grade of 29% for that exam is a B (hence negating rule [ii] above). If the median grade were 94% then a grade of 94% for that exam is an A/A- (see rule [i] above). Sorry to sound so trivial but many students have a really tough time interpreting the phrase “the median grade will be a B.”

**Grading Policy For Exams**

The following points summarize the grading procedures with respect to the mid term exam:

[1] After the exam has been graded and returned, a copy of the answer key will be posted on Blackboard. Review this answer key and be sure to understand the errors in your exam and why you made them.
If, after reviewing your answers and comparing them to the posted answer key before the announced deadline (see below), you find an arithmetic error or detect an omission by the grader for one of the questions, you must observe the following procedures for error correction (note that this is not a regarding exercise; we will only re-examine suspected errors in grading):

a) Do not write on the exam. Exams that have been written on will NOT be corrected. Any alteration of the answers between the time when the graded papers were returned to the student and the time when the paper was submitted for re-grading constitutes a breach of the Academic Honor Principle. To deter this practice, we scan exams before grading them.

b) Prepare a typed cover page with your name and HB number.

c) If you find an addition error, indicate on the cover page that an addition error has occurred. Specify the page and question numbers.

d) If you determine that your answer contains all of the information indicated in the key, but you did not receive full credit, simply indicate the number of the question to be re-evaluated and state in one or two short, descriptive sentences (typed) what makes your answer correct. The citation of a text page, diagram, or reference to a lecture date/number will also be helpful.

e) Attach the typed cover sheet to your complete exam and return it to the Bio/Chem 9 drop box outside 304 Burke before the announced deadline. We will not accept questions regarding errors in grading after these deadlines. The error correction process will take a few days. You will be notified of the place and time to pick up exams after the re-evaluation is completed.

Error correction requests must be hand-delivered to one of us or your TA before :12:00PM (Noon) on Tuesday, 21 February 2012.

We will not accept questions about grading errors after this deadlines. The error correction process will take a few days. You will be notified of the place and time to pick up exams after the re-evaluation is completed. Also, because of the nature of the quizzes, we will not entertain error correction requests unless the error is one of arithmetic, or we missed something you wrote in the margin, etc.

Academic Honor Principle

The Dartmouth College Student Handbook states "Fundamental to the principle of independent learning are the requirements of honesty and integrity in the performance of academic assignments, both in the classroom and outside. Dartmouth operates on the principle of academic honor, without proctoring of examinations. Students who submit work which is not their own or who commit other acts of academic dishonesty forfeit the opportunity to continue at Dartmouth."
There are a number of situations in which a student in Bio/Chem 9 might find themselves tempted to violate the Academic Honor Principle. These situations include (but are not limited to) the following:

a) Examinations must be completed without reference to written materials other than those provided with the exam paper and must be completed without communication with anyone else (the only permissible exception is that students may request clarification of any exam question from the course instructors who are present expressly for that purpose). The answers that you provide must be entirely your own work.

b) Our policy permits requests for error correction by the instructor. Any alteration of or addition to the answers on an exam between the time when the graded papers were returned to the student and the time when the paper was submitted for error correction constitute a clear and premeditated violation of the Academic Honor Principle. To deter this practice, we scan exams before grading them.

c) Laboratory experiments are performed in pairs or groups, and we encourage collaborative analysis of the data. However, any report submitted for grading must represent the original words of the student submitting that report. Do not share computer files of work (including text, graphs, tables, etc.) to be submitted for grading! The student misrepresenting the work of another as his or her own is in violation of the Academic Honor Principle, as is likely the student who loaned that information. Thus, it is possible that the Committee on Standards will find the student providing the original file also to be in violation of the Honor Principle.

Honesty is the foundation of the academic pursuit of knowledge. In recognition of this, the faculty and staff in Bio/Chem 9 will not overlook any violations of the Academic Honor Principle. Indeed, the Faculty Handbook of Dartmouth College states explicitly that faculty are obligated to report violations of the Academic Honor Principle to the Dartmouth College Committee on Standards.

**Clickers**

Before class on Tuesday the 10th, you each need to go to the Computer Store and obtain a personal response device (a ‘clicker’). This will be used on and off for in class interactions and assessments during the term. The Computer Store will take your name and charge your DASH card $30. At the end of the term, if you return the clicker to the Store in working order you will receive a $20 credit to your account. If the battery fails during the term, or the clicker stops working, return to the store and they will either give you a new clicker or insert a new battery. Once you obtain a clicker you must register the serial number on Blackboard. Your clicker responses will be used to assess class participation (25 points). Note, however, that we will not be tracking whether you answered a question right or wrong, only whether or not you provided an answer by clicking. With respect to the Honor Principle, it is a clear violation of the Honor Principle to bring someone else’s clicker to class for them and use it to provide answers (clicks) as if they were present.

**Pencasts/Quizzes/Podcasts:**
Prof. K. will make the bulk of each lecture available via Blackboard as pencasts. This will allow you to hear, see, and think about the material ahead of time, thereby freeing up precious lecture time for exploring topics in more depth, working on problem solving strategies, interactive exercises, demonstrations, and answering questions. The goal is to devote lecture time to help you learn the material, not simply transmit information.

There will be a short, online quiz on Blackboard that will focus on simple topics from the pencasts. These are designed to gauge what makes sense, what is confusing, and what I should focus on clarifying in the subsequent lectures. The quizzes must be completed by 4am on the morning of the lecture. As these are a mechanism for formative assessment, they will not be individually graded. However, you must complete them and they will count towards part of your grade (25 points).

Prof. S. will place all of his lecture material on BB sometime prior to the class period (usually by the evening before). He will also record each lecture on Camtasia, and make that available after class as well. This means the slides, accompanied by the audio portion of class, will be placed on Blackboard for you to review when you are studying. No on-line quizzes will be associated with this material, however.

**Cell Phones:**

Please be sure all cell phones are turned off or the ring/beep/music/jingle/whatever function is disabled before class starts. The first time it happens, we will assume it is an accident. The second time it happens, you will be asked to leave the classroom.

**Students with Physical or Learning Disabilities:**

We encourage students with disabilities, including invisible disabilities such as chronic illnesses and learning disabilities, to arrange for accommodations that might be helpful to them. Please meet with Professor Kull or Sloboda soon, preferably during the first week of classes, to discuss possible accommodations. Also, we will need to see a copy of your disability registration form. All discussions will be confidential, although the Student Accessibility Services office may be consulted to discuss things further.

**Religious Observances:**

We are aware that some students may wish to take part in religious observances that may conflict with some activities related to Bio/Chem 9. Should you find that you have a religious conflict that affects your participation in the course, please speak to either Prof. Kull or Sloboda no later than the end of the second week of the term to discuss the matter.

**Final Grade:**

Your performance in class this term will be assessed based on the following:
Bio/Chem 8 Syllabus, F11

One mid-term exam 100 points
Final exam 100
Weekly quizzes 100
Laboratory 100
Two writing assignments 50
Class participation (clickers/on-line quizzes) 50

Total 500 points

HOW TO BE SUCCESSFUL IN BI0/CHEM 9:

1) PREVIEW each reading assignment the night before class. Look at the figures, read the figure legends, and get a general feel for the vocabulary to be introduced and the topics to be covered in the upcoming lecture. Jot down any questions you have to focus your attention in lecture. If a pencast is posted, listen to it and take the quiz.

2) ATTEND LECTURES ON TIME (class will start promptly at 10:00 AM), take notes on the material presented in lecture, and ask questions about the things you do not understand. Make sure you have answers to the questions you wrote down the previous night.

3) RE-READ the reading assignment as well as your notes and the pencast that very same afternoon or evening after the lecture, when it is still fresh in your mind. Correct or add points to your notes as you go along.

4) REVIEW the notes and reading assignments from the previous week’s classes sometime during the weekend.

5) BE CURIOUS and ask questions in class, in office hours, in lab and with fellow students. Also ask YOURSELF questions and try to challenge yourself to decide if you really understand the material.

6) ATTEND the optional REVIEW SESSIONS.
Laboratory Exercises:

There are four lab sections this term; each is capped at a max of 20 students per section, due to equipment limitations. The times are as follows:

Monday and Thursday, 2:00 PM – 6:00 PM  
Wednesday and Thursday, 6:00 PM-10:00 PM

Please fill out the laboratory request form on Blackboard prior to noon on Tuesday, 10 Jan.

Laboratory counts for 100 out of 500 points of your Bio/Chem 9 grade. Failure to attend a lab section at the scheduled time will result in a grade of zero for that particular lab. No arrangements exist for make-up labs. Attendance at ALL of your assigned lab dates is mandatory.

NOTE: failure to complete the lab section of the class will result in failing the course (i.e. grade of E), regardless of your performance on exams.

The lab schedule:

Week of 23 January  
Calorimetry

Week of 30 January  
Calorimetry

Week of 13 February  
DNA amplification by PCR

Week of 20 February  
DNA sequencing and analysis