

**SYLLABUS  
ORGANIZATIONAL DETAILS**

Lecturers: Sheila S. Jaswal, Room 504 Merrill, x5153, sjaswal  
Office Hours: Monday 4-5 pm, Thursday 9-10AM, or by appointment  
Amy L. Springer, Room 424, LSB, x5341, aspringer  
Office Hours: Tuesday and Wednesday 10-11 am, or by appointment

Class Meetings: Lecture: MWF, 9:00 am; F, 2:00 pm, Merrill LR 4  
Laboratory: T, W, Th: 2:00 pm, Merrill Room 404

*During lectures: no cell phone calls or texting, phones and web browsers must be turned off.*

Required Text: Berg, Tymoczko, and Stryer; *Biochemistry, Sixth Edition* (W.H. Freeman, 2006, ISBN: 0-7167-8724-5). There will be a pre-class quiz on reading material before most lectures.

In addition, research papers from the biochemistry literature will be assigned.

Reference Texts: C. Branden & J. Tooze, *Introduction to Protein Structure, Second Edition* (Garland, 1999). On reserve in the science library.

Nelson, Cox, *Lehninger Principles of Biochemistry, Fifth Edition* (W.H. Freeman, 2008) On reserve in the science library.

Course Website: Course documents (schedules, lecture handouts, answer keys, etc.) will be posted on CMS. To access these documents, simply log in at the College's intranet site, select *My Amherst*, and choose *Biochemistry* under *My Courses*.

1. Problem sets: These are for your benefit and will not be graded. It will also be necessary for you to gain familiarity with molecular modeling programs and access protein and nucleic-acid coordinate sets that are available online.
2. Quizzes: There will be pre-class quizzes before most lectures, see the website for specific schedule. PRS units will periodically be used in class to foster class participation. There will be one short in-class quiz on amino acids:

Friday, Jan. 28 at 2pm.

3. Exams: There will be four exams, three during the semester and one during finals week. **If any exam time presents an unavoidable conflict, please contact Prof. Springer or Prof. Jaswal to schedule an alternate time. Rescheduled exams must take place prior to the scheduled exam time.** The scheduled exams are as follows:

**EXAM I: Protein Structure:**

Thursday, Feb. 17, 7:00–9:00 pm

**EXAM II: Membranes, Enzymes, Glycolysis**

Wednesday, March 23, 7:00–9:00 pm

**EXAM III: Metabolism, Bioenergetics, DNA structure**

Self scheduled two hours, between April 20-27

**EXAM IV: NA-protein interactions, Signaling, and Proteomics**

TBD (finals period)

The three-hour EXAM IV, *which will cover only the final three weeks of the course*, will be held during the regular final-exam period, in the time slot to be announced. Exam questions are drawn from reading (including assigned papers), lectures, laboratories, and material presented on molecular modeling. Exams will be open book (open texts and notes).

4. Laboratory: Successful completion of the laboratory section of this course is required. Instructions for lab experiments will be handed out in class and posted on the lab website. Laboratory Write-ups: Lab notebooks will be collected and graded at various times throughout the semester, formats for lab write-ups will be specified in the lab instructions. Format instructions should be strictly followed, see the Biochemistry lab schedule handout for details.
5. Overall Evaluation: Your final course grade will be determined by the quality of your laboratory work and reports (approximately 30%) and your performance on the quiz and four exams (approximately 65%), and pre-class reading and participation in in-class activities (approximately 5%).

### **INTELLECTUAL RESPONSIBILITY**

Any work submitted under your name is to be your work alone. This rule applies, of course, to all exams and to your laboratory notebook, except that throughout the course each student will have occasion to exchange experimental details and data with his/her two lab partners. In other words, although you will be discussing your experimental results with your lab partners (and perhaps other students in the class) and will be exchanging data with your lab partners, you need to acknowledge any sources you used, and **YOU MUST WRITE UP YOUR LAB NOTEBOOK ON YOUR OWN.**

Please see Amherst College's *Statement of Intellectual Responsibility*, *Statement of Respect for Persons*, and *Statement of Freedom of Expression and Dissent*:  
<https://www.amherst.edu/65945>

*Biochemistry 30      Lecture schedule for Spring 2011*

| <b>Week</b> | <b>Dates</b> | <b>Topic</b>   | <b>Readings</b>                          | <b>Exam</b>                   |
|-------------|--------------|--|--|-------------------------------|
| 1           | 24-Jan       | Polypeptides: Primary and secondary structure (SSJ)  | Ch. 1-2.3; 3.4 (B & T Ch 1-2)            | amino acid quiz               |
| 2           | 31-Jan       | Protein structure: folding and design (SSJ)          | Ch 2.4-3.1; 3.5 (B & T Ch 3-5, pp89-100) |                               |
| 3           | 7-Feb        | Protein function, Selected examples (SSJ)            | Ch 33; 3.3 (B & T Ch 15), TBA            |                               |
| 4           | 14-Feb       | Membranes and membrane protein structure (ALS)       | Ch 12                                    | Exam 1 (weeks 1-3)            |
| 5           | 21-Feb       | Membrane transport (ALS)                             | Ch 13                                    |                               |
| 6           | 28-Feb       | Enzymes: Catalysis and regulation (SSJ)              | Ch 8, 9.1; 10.1-10.2                     |                               |
| 7           | 7-Mar        | Glycolysis and gluconeogenesis (SSJ)                 | Ch 15-16                                 |                               |
|             | 15-Mar       | <b>BREAK</b>   | --                                       |                               |
| 8           | 21-Mar       | Krebs cycle, electron transport (ALS)                | Ch 18.1-18.3                             | Exam 2 (weeks 4-7)            |
| 9           | 28-Mar       | Ox phos (cont.), chemiosmosis and the ATPase (ALS)   | Ch 18.4-18.6                             |                               |
| 10          | 4-Apr        | Photophosphorylation, Photosynthesis (ALS)           | Ch 20, 19                                |                               |
| 11          | 11-Apr       | Nucleic acid structure and sequence, ribozymes (ALS) | Ch 4.1-4.2; 29.4; 30.1; 30.3             |                               |
| 12          | 18-Apr       | Protein Nucleic Acid interactions (SSJ)              | Ch 30.2; 31.1-31.3 (B & T pp 166-202)    | Exam 3 (weeks 8-11) take-home |
| 13          | 25-Apr       | Receptors and signaling (ALS)                        | Ch 14                                    |                               |
| 14          | 2-May        | Proteomics (SSJ)                                     | Ch 3.2; 3.5                              |                               |
| Finals      | 9-May        |  |  | Exam 4 (weeks 12-14)          |