

Recommended Class Syllabus

for use with

Boyer's *Concepts in Biochemistry*, 2/e

The following class syllabus has been designed for use with the book, ***Concepts in Biochemistry***, second edition, by Rodney Boyer (Wiley, 2002). The syllabus is prepared to offer assistance to instructors because the topic organization of the book is different from the traditional order.

The primary change in the book is the recognition of the central roles played by the nucleic acids, and therefore, to move forward their coverage. The topics of DNA, RNA, and protein synthesis are presented in Chapters 2, and 10-13 rather than in the last chapters as is often the case in other biochemistry texts. By introducing students earlier to the functions of the nucleic acids, it is possible to present metabolism in a more contemporary manner emphasizing gene regulation and integration. More reasons for the change of topic order are given in the Preface to the book.

Several assumptions were made in the design of the syllabus. It is assumed that a semester has the standard 15 weeks of classes and one week of final exams. Therefore a typical three-credit hour course would have 42 class meetings. It is also assumed that all 20 chapters in the book are covered. Slots for four exams have been incorporated into the syllabus. This leaves a total of 38 class periods to be used for lectures, discussions, forms of active learning, student presentations, working problems, quizzes, review, etc.

No single syllabus will work perfectly for all one-semester biochemistry classes. A syllabus must be designed to fit in with the local environment at the college/university and must take into account factors such as student majors, student academic preparation, and student expectations. Since such courses usually service other majors besides biochemistry, an instructor must also respond to the demands from other campus programs. Therefore, a model syllabus must be flexible in its design. There is flexibility in the syllabus presented here so that instructors can cover some topics as they wish. For example, since Chapter 1 is a review of introductory biology and chemistry, students may be asked to read it on their own and the instructor not discuss it in class or use only a portion of a class period. The DNA/RNA section of Chapter 2 may be delayed until coverage of Chapters 10-13. Since it is unlikely that instructors will cover all 20 chapters, there is the option to add topics of their own choosing if chapters or topics are deleted.

Boyer, *Concepts in Biochemistry*, 2/e

Class	Subject(s)	Chapter	Pages
1	What is biochemistry?	1	4-28
2	Flow of information	2	30-46
3	Biomolecules in water	3	48-55
4	Bonding, pK, buffers	3	55-68
5	Amino acids	4	70-79
6	Peptides, proteins, 1 structure	4	79-94
7	Proteins, 2 and 3 structure	5	98-110
8	Proteins, 4 structure, examples	5	110-124
9	EXAM I		
10	Enzymes, intro, kinetics	6	126-136
11	Enzymes, reactions, inhibition	6	136-154
12	Enzymes, coenzymes, regulation	7	156-166
13	Other biocatalysts	7	167-178
14	Carbohydrates, mono-, di-	8	180-192
15	Carbohydrates, poly-, glycoproteins	8	192-205
16	Lipids, structure, function	9	208-219
17	Lipids, membranes	9	219-229
18	Membrane transport	9	229-240
19	EXAM II		
20	DNA, RNA, structure I	10	244-257
21	DNA, RNA, structure II	10	258-270
22	DNA replication	11	272-287
23	Transcription	11	287-303
24	Translation I	12	306-319
25	Translation II	12	320-336
26	Recombinant DNA technology	13	338-361
27	EXAM III		
28	Introduction to Metabolism	14	366-379
29	Bioenergetics	14	379-391
30	Carbohydrate metabolism I	15	394-413
31	Carbo. metabolism II, PDHase	15,16	413-433
32	Citric acid cycle, NADH prod.	16	433-448
33	Electron transport	17	450-463
34	Oxidative phosphorylation	17	463-473
35	Photosynthesis	17	473-486
36	EXAM IV		
37	Lipid metabolism I	18	488-501
38	Lipid met. II, cholesterol	18	502-521
39	Nitrogen, amino acid metabolism	19	524-538
40	Amino acids, urea cycle	19	538-556
41	Integration of metabolism I	20	558-566
42	Integration of metabolism II	20	566-576