

**BCH 6206: ANALYSIS OF METABOLIC CONTROL  
FALL 2018**

**Tentative Schedule**

**M, W, F - Period 2 (8:30 AM - 9:20 AM), Room R3-265**

In this course, we will discuss metabolism at a more advanced level than in the introductory courses, with a focus on "how we know, what we know". Students are expected to have performed with a B or better in an introductory course in Biochemistry. Courses such as BCH 4204, CHM 4207, CHM 3218, BCH 3025 or GMS 6001 are considered appropriate introductory courses for BCH 6206.

The text, "Biochemistry" by Voet and Voet (4<sup>th</sup> Edition), will serve as a general reference. This is available in the Health Science Center Bookstore. Older versions are also acceptable, although the pages of interest may be somewhat different from the 4<sup>th</sup> edition. Outside reading in primary journals, reviews, and special monographs will be assigned when appropriate. There will be a heavy reliance on class notes throughout the course.

Each lecture title (syllabus is on e-learning in ) represents the general area to be covered. The first five weeks or so are devoted to discussing the tools that we use to study metabolism. The second five weeks or so are devoted to signaling, and carbohydrate and lipid catabolism. The final five weeks are devoted to selected topics in lipid/steroid synthesis, and amino acid and nucleic acid metabolism.

**EXAMINATION SCHEDULE**

There will be three (3) - three hour examinations. All three will be composed of essay, short answer, and other question types. Reviews will be scheduled throughout the semester.

				<u>Room</u>
Thursday	10/2	6:00 - 9:00 PM	(Lectures 8/22 - 9/26)	(C1-4)
Tuesday	10/30	6:00 - 9:00 PM	(Lectures 9/28 - 10/24)	(C1-4)
Monday	12/10	9:00 AM - 12:00 PM	(Lectures 10/26 - 12/5)	(C1-4)

**CORE INSTRUCTORS**

Dr. Susan Frost, Professor (Course Director)	R3-216A	<a href="mailto:sfrost@ufl.edu">sfrost@ufl.edu</a>	392-3207
Dr. Daniel Purich, Professor (Biochemistry)	R3-126	<a href="mailto:dlpurich@ufl.edu">dlpurich@ufl.edu</a>	392-6878
Dr. Matthew Merritt, Associate Professor (Biochemistry)	R3-226B	<a href="mailto:matthewmerritt@ufl.edu">matthewmerritt@ufl.edu</a>	392-4535
Dr. Brian Cain, Professor (Biochemistry)	R3-254	<a href="mailto:bcain@ufl.edu">bcain@ufl.edu</a>	392-6473
Dr. Michelle Gumz, Associate Professor (Medicine)	CG-92B	<a href="mailto:michelle.gumz@medicine.ufl.edu">michelle.gumz@medicine.ufl.edu</a>	273-6887

E-learning in Canvas: <http://lss.at.ufl.edu>

Click on Canvas and enter your gatorlink user name and password; go to BCH 6206.

## 2018 Tentative Lecture Topics for BCH 6206

	<b>Date</b>	<b>Topic</b>	<b>Instructor</b>
<b>WEEK 1</b>	W 8/22	Tools of Metabolism	Frost
	F 8/24	Membrane structure: lipid	Frost
<b>WEEK 2</b>	<b>M 8/27</b>	Membrane structure: proteins	Frost
	W 8/29	Facilitate nutrient transport	Frost
	F 8/31	Active nutrient transport	Frost
<b>WEEK 3</b>	<b>M 9/3</b>	<b>Labor Day, no classes</b>	
	W 9/5	Enzyme Kinetics	Purich
	F 9/7	Enzyme cooperativity and allosteric transitions	Purich
<b>WEEK 4</b>	M 9/10	Metabolic Inhibitors I: Rational Design	Purich
	W 9/12	Metabolic Inhibitors II: Pathway analysis	Purich
	F 9/14	Radioactive tracers: Pathway kinetics & protein turnover	Purich
<b>WEEK 5</b>	M 9/17	Metabolic Control Analysis: Pathway flux, pacemakers, etc.	Purich
	W 9/19	Introduction to metabolomics: Basic concepts	Merritt
	F 9/21	Metabolomics techniques: Instrumentation	Merritt
<b>WEEK 6</b>	M 9/24	Metabolomics data, forms, formats, and uses	Merritt
	W 9/26	Metabolomics research overview	Merritt
	F 9/28	Signaling: G-protein receptors	<b>Frost (this and following lectures will be on the 2<sup>nd</sup> exam)</b>
<b>WEEK 7</b>	M 10/1	Signaling: tyrosine kinase receptors	Frost
	<b>Tu 10/2</b>	<b>First Exam (6-9 PM) (includes the first 15 lectures: 8/22-9/26)</b>	

	<b>Date</b>	<b>Topic</b>	<b>Instructor</b>
	W 10/3	Signaling: lipid receptors	Frost
	F 10/5	Lipid rafts as signaling platforms	Frost
<b>WEEK 8</b>	M 10/8	Nutrients as signaling molecules	Frost
	W 10/10	Regulation of glycolysis	Frost
	F 10/12	Regulation of gluconeogenesis	Frost
<b>WEEK 9</b>	M 10/15	Regulation of glycogen turnover	Frost
	W 10/17	Glycogen storage disease	Frost
	F 10/19	Regulation of the TCA cycle	Frost
<b>WEEK 10</b>	M 10/22	Energy conservation	Frost
	W 10/24	F <sub>1</sub> F <sub>0</sub> ATP synthase	Cain
	F 10/26	Circadian rhythms and central pathway regulation	Gumz ( <b>this and following lectures will be on 3<sup>rd</sup> exam</b> )
<b>WEEK 11</b>	M 10/29	Fatty acid oxidation	Gumz
	<b>T 10/30</b>	<b>Second Exam (6-9 PM) (includes 14 lectures: 9/28-10/24)</b>	
	W 10/31	Fatty acid biosynthesis	Gumz
	<b>F 11/2</b>	<b>Homecoming, no classes</b>	
<b>WEEK 12</b>	M 11/5	Prostaglandin metabolism	Gumz
	W 11/7	Cholesterol metabolism	Gumz
	F 11/9	Lipoprotein metabolism	Gumz
<b>WEEK 13</b>	<b>M 11/12</b>	<b>Veteran's Day, no classes</b>	
	W 11/14	Nitrogen homeostasis	Purich
	F 11/16	Amino acid metabolism: part 1 AA assimilation & degradation	Purich
<b>WEEK 14</b>	<b>M 11/19</b>	Amino acid metabolism: part 2 Urea cycle	Purich
	<b>W-F 11/21-24</b>	<b>Thanksgiving Holiday, no Classes</b>	

	<b>Date</b>	<b>Topic</b>	<b>Instructor</b>
<b>WEEK 15</b>	<b>M 11/26</b>	Amino acid metabolism: part 3 Formation of nonessential AA's	Purich
	W 11/28	Amino acid metabolism: part 4 Specialized AA's and heme biosynthesis	Purich
	F 11/30	Purine biosynthesis, turnover, and and salvage	Purich
<b>WEEK 16</b>	<b>M 12/3</b>	Pyrimidine biosynthesis, One-carbon metabolism, & ribonucleotide reductase	Purich
	M 12/5	Amino Acid and Nucleotide Homeostasis	Purich
<b>WEEK 17</b>	<b>M 12/10</b>	<b>Third Exam (9AM-12PM)</b> <b>(includes 14 lectures:10/26-12/5)</b>	