

**BCH 6415**  
**Advanced Molecular and Cell Biology**  
**3 Credits**  
**Spring Semester 2017**

This course is designed for advanced graduate students and highly advanced undergraduates who already have taken a one semester graduate level survey course in molecular biology (such as BCH 5413, or the COM IDP core course) and desire a course on current aspects of molecular biology. Lectures and discussions will be based entirely upon the current scientific literature on nuclear structure and organization, transcription, RNA processing, protein synthesis, post-translational regulation, DNA replication, DNA repair, and DNA recombination, and emphasize experimental approaches to understanding these cellular processes. Students should have a good working knowledge of molecular biology and be able to comprehend articles on these topics in journals such as *Cell*, *Science*, *Nature*, *Genes and Development*, etc. No general molecular biology textbook covers topics in this course in sufficient detail and depth, though introductory background information may be available in textbooks such as:

Lodish et al., *Molecular Cell Biology*                      Alberts et al., *Molecular Biology of the Cell*  
Cox et al., *Molecular Biology: Principles & Practice*      Weaver, *Molecular Biology*

Ample use will be made of handouts and reading lists of relevant scientific articles throughout the course; much of the material in handouts will be taken from articles in the current scientific literature. Each instructor lectures in areas of his/her research expertise. Whenever possible, instructors will provide handouts of their lectures, but students are responsible for obtaining their own copies of the assigned (and optional) reading from scientific journals. The slides from each lecture will be available on the UF e-Learning Canvas website under "BCH6415".

Formal lectures and discussions will be held 5<sup>th</sup> period in Room R3-265 in the Academic Research Building on Monday, Wednesday, and Friday, 11:45 am to 12:35 p.m.

**COURSE INSTRUCTORS:**

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**EXAMS:**

Three examinations periods are scheduled during the semester for **Thurs February 9** and **Wed March 22** at **6:00 – 8:00 pm** in Room R3-265 of the Academic Research Building, plus the **Final Exam** on **Mon April 24**. The final exam is NOT cumulative. Please arrange your schedules to enable you to attend these sessions. There will be NO make-up exams. Review sessions for Exams 1 and 2 are scheduled for **Wed Feb 8**, and **Mon March 20** from 5-6 pm in Rm. R3-265.

**GRADES:**

Grades will be based on the three exams which will be worth 100 points each. The final exam is **NOT** cumulative and will cover only the material from the final third of the course.

# BCH 6415 – Spring 2017

## Lecture Schedule

<u>DATE</u>	<u>DAY</u>	<u>TOPIC</u>	<u>INSTRUCTOR</u>
Jan 4	Wed	Technology/Methodology	Dr. Yang
Jan 6	Fri	Nucleosomes & Chromatin I	Dr. Yang
Jan 9	Mon	Nucleosomes & Chromatin II	Dr. Yang
Jan 11	Wed	Basal Transcription	Dr. Huang
Jan 13	Fri	Chromatin Remodeling I	Dr. Yang
Jan 16	Mon	<b>NO CLASSES – MARTIN LUTHER KING DAY</b>	
Jan 18	Wed	Chromatin Remodeling II	Dr. Yang
Jan 20	Fri	Chromatin Remodeling III	Dr. Yang
Jan 23	Mon	Histone Modification I	Dr. Huang
Jan 25	Wed	Histone Modification II	Dr. Huang
Jan 27	Fri	Co-Activators/Co-Repressors	Dr. Huang
Jan 30	Mon	Activation of Transcription	Dr. Huang
Feb 1	Wed	Transcription Elongation I	Dr. Yang
Feb 3	Fri	Transcription Elongation II	Dr. Yang
Feb 6	Mon	RNA Processing I	Dr. Yang
Feb 8	Wed	RNA Processing II	Dr. Yang
<b>Feb 8</b>	<b>Wed</b>	<b>Review Session for Exam 1</b>	
<b>Feb 9</b>	<b>Thurs</b>	<b><i>EXAM 1 – 6:00-8:00 p.m.; Lectures through 2/3</i></b>	
Feb 10	Fri	MAR's, Insulators, Transvection	Dr. Huang
Feb 13	Mon	Nuclear Organization, Transcription Factories	Dr. Huang
Feb 15	Wed	Locus Control Regions	Dr. Huang
Feb 17	Fri	Gene Regulation by Long Non-Coding RNA's	Dr. Huang
Feb 20	Mon	Pol I and III Transcription	Dr. Huang
Feb 22	Wed	RNA Splicing I	Dr. Berglund
Feb 24	Fri	RNA Splicing II	Dr. Berglund
Feb 27	Mon	Protein Synthesis I	Dr. Gumz
March 1	Wed	Protein Synthesis II	Dr. Gumz
March 3	Fri	Post-Translational Regulation	Dr. Gumz
<b>MARCH 6 – 10</b>		<b><i>SPRING BREAK</i></b>	
March 13	Mon	RNAi & Micro RNA's	Dr. Xie
March 15	Wed	DNA Methylation & Epigenetic Regulation	Dr. Yang
March 17	Fri	DNA Topology	Dr. Bloom
March 20	Mon	DNA Replication: Initiation & Origins	Dr. Bloom
<b>March 20</b>	<b>Mon</b>	<b>Review Session for Exam 2</b>	
March 22	Wed	DNA Replication – Mechanisms I	Dr. Bloom
<b>March 22</b>	<b>Wed</b>	<b><i>EXAM 2 – 6:00-8:00 p.m.; Lectures through 3/17</i></b>	
March 24	Fri	DNA Replication – Mechanisms II	Dr. Bloom
March 27	Mon	DNA Replication: Fidelity	Dr. Bloom
March 29	Wed	Completing Replication & Telomeres	Dr. Bloom
March 31	Fri	DNA Damage & Excision Repair	Dr. Bloom
April 3	Mon	Mismatch Repair	Dr. Brown
April 5	Wed	Mechanisms of DNA DSB Repair	Dr. Brown
April 7	Fri	Damage Response I	Dr. Brown
April 10	Mon	Damage Response II	Dr. Brown
April 12	Wed	Homologous Recombination	Dr. Bloom
April 14	Fri	Lesion Bypass	Dr. Bloom
April 17	Mon	Viral Replication I	Dr. Flanagan
April 19	Wed	Viral Replication II	Dr. Flanagan
<b>April 24</b>	<b>Mon</b>	<b>FINAL EXAM (Non-Cumulative)</b>	