

## CHM 6203 | Chemical Biology of Nucleic Acids. Spring 2022

### 1. Course Information

#### a. Instructor-

- i. Prof. Michael E Harris, PhD
  1. Office - 302F CCB
  2. Email - [harris@chem.ufl.edu](mailto:harris@chem.ufl.edu); Or use Canvas email
  3. Phone - 352-392-0541
- ii. Office Hours – Tuesday and Thursday, 2-3pm
  1. I will be available for in person office hours, or if you would like to meet by zoom just let me know in advance
  2. If you cannot meet at this time please contact me for an appointment

#### b. Meeting time and place

- i. Period 7 (1:55 PM - 2:45 PM)
- ii. In Person classes will meet in FLI0109
- iii. Zoom Meeting ID: [REDACTED]  
Passcode: [REDACTED]

### 2. Learning Objectives

- a. Recognize the chemical structures and functional properties of nucleosides, nucleotides, and their analogs
- b. Describe differences in the three forms of nucleic acid helical structure and their chemical origin
- c. Identify the major classes of coding and non-coding RNAs in eukaryotes and describe their roles in cellular function.
- d. Describe the general chemical structure of eukaryotic and bacterial mRNA and identify similarities and differences
- e. Diagram the basic processes of pre-mRNA splicing, translation, mRNA turnover
- f. Define the basic structure of mRNA vaccines and current applications in medicine
- g. Gain a general understanding of basic methods and applications for nucleic acids chemical biology research (nucleotide analog synthesis, chemical modification and probing, small molecule screening) and molecular methods (molecular cloning, next generation sequencing, selex, crispr).
- h. Understand and outline how CRISPR is used in genome editing and its adaptations of other biomedical and research applications.
- i. Outline the basic structure and mechanism in gene regulation by riboswitches.
- j. Recognize the major classes of RNA binding motifs and principles of specificity in RNA binding proteins

### 3. Modality (*i.e.* how the course will be taught)

- a. Both online and in person, *non-simultaneously* (some meetings in person, some online).

- i. The course will be a combination of both *online* class meeting (by zoom) and *in person* meetings depending on the day and the curriculum.
    - ii. For those classes that are held *in person*, I will also present by zoom for those students who are not cleared for campus by UF Health.
    - iii. The default mode for the course is online by zoom. I will provide in class additional information on which specific days we will meeting in person.
  - b. Zoom meeting information
    - i. Meeting ID: [REDACTED]  
Passcode: [REDACTED]
    - ii. The participation portion of your grade for this class will be calculated on the basis of your attendance and your participation in class activities. Since the pedagogical approach of this course depends heavily on student engagement and interaction, you are required, at a minimum, to participate in class activities through the audio function of Zoom. Your video presence is invited as well.
- 4. **Attendance** Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>
- 5. **Accommodations** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.
- 6. **Course Materials** There is no single textbook for the material covered in this course. Primary instructional resources will be papers from the current literature, review articles and selected book chapters in the public domain. These resources will be provided online at the Canvas site for this course.
- 7. **Grading.**
  - a. Course grade will be based on:
    - i. participation in class discussion
    - ii. submitted answers to *Weekly Topic Questions* and *Paper Questions*
    - iii. presentations of answers to *Weekly Topic Questions* and *Paper Questions*
  - b. Current UF grading policies.
    - i. <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>
- 8. **Online course evaluation process** Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.
- 9. **Materials and Supplies Fees** None.