

Term Information

Effective Term Spring 2020
Previous Value Autumn 2018

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

Dr. Jane Jackman and Dr. Venkat Gopalan, co-instructors for the Biochemistry 7766.01 course (Advanced Nucleic acids), are requesting a change in the credit hours for the course from 2.0 cr hr to 1.5 cr hr, effective in Spring 2020.

What is the rationale for the proposed change(s)?

The course was originally offered as a 1.5 cr hr course when Drs. Jackman and Gopalan began teaching it in Autumn 2013. It was then changed to the 2.0 cr hr format starting Autumn 2016. The change to 2 cr hr had been requested primarily in order to better align the course with a companion course being taught in the Department of Microbiology (MICRO 8050) that was being taught as a 2 cr hr course. However, the decision has been recently made in the Department of Chemistry and Biochemistry to change to a Spring semester offering for this course, where it will be offered as a 7-week elective to complement several other elective courses also being offered in Biochemistry. Therefore, in order to maintain consistency between the different elective courses being offered, we request that Biochem 7766.01 be changed back to the 1.5 cr hr format.

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

This change will not have a significant effect on the course content or objectives, since the additional class time built in upon the change to 2 cr hr was used for additional group paper discussions, and some of this work can be built into class assignments to be conducted at least partially outside of class.

Is approval of the request contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Biochemistry
Fiscal Unit/Academic Org	Chemistry - D0628
College/Academic Group	Arts and Sciences
Level/Career	Graduate
Course Number/Catalog	7766.01
Course Title	Advanced Biochemistry: Nucleic Acids
Transcript Abbreviation	AdvBiochm-NuclAcid
Course Description	Advanced understanding of the structure and function of nucleic acids, their interactions with other biological molecules, and of the techniques for detailed mechanistic investigation of nucleic acid structure and function.
Semester Credit Hours/Units	Fixed: 1.5
<i>Previous Value</i>	<i>Fixed: 2</i>

Offering Information

Length Of Course	8 Week, 7 Week, 6 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade

Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	Prereq: 6761 (761), 6701, or 702; or permission of instructor.
Exclusions	Not open to students with credit for 7766.02 (766), Chem 766, or MolBioch 766.
Electronically Enforced	Yes
<i>Previous Value</i>	No

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	26.0202
Subsidy Level	Doctoral Course
Intended Rank	Masters, Doctoral

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes	<ul style="list-style-type: none">• 1. Provide students with the necessary knowledge of biochemical processes that provide the underpinnings for the RNA world.2. Equip students with a theoretical and practical understanding of biochemical techniques used to study RNA that will al
Content Topic List	<ul style="list-style-type: none">• Course content may emphasize all or some of the following topics to different extents depending on student interest, course structure, and format:• Naturally occurring modified nucleosides: detection, sequencing of polynucleotides• Synthesis and biosynthesis of nucleosides• Mechanisms and intermediates in nucleic acid folding• Non-natural modified nucleosides: incorporation, use as structural probes, NAIM• Library methods for selecting nucleic acids with desired function (SELEX)• Advances in single molecule studies of nucleic acids• Advanced spectroscopy of nucleic acids (NMR, FRET)• Advanced studies of mechanisms of RNA and DNA catalysis• Advanced analysis of protein-nucleic acid interactions

Sought Concurrence
Previous Value

No

Attachments

- BCH7766 syllabus - 1.5 CREDIT HOUR VERSION.pdf
(Syllabus. Owner: Hambach,Jennifer Lynn)
- BCH7766 syllabus - 2.0 CREDIT HOUR VERSION.pdf
(Other Supporting Documentation. Owner: Hambach,Jennifer Lynn)
- BIOCHEM7766 credit change 10-05-19.pdf: PETITION
(Appeal. Owner: Hambach,Jennifer Lynn)

Comments

- 10/03/19: Please change the effective date to Summer 2020 or later. The deadline for course changes for Spring 2020 had been September 1.

Also, please consider checking "Yes" if you want the prereqs and exclusions enforced. *(by Haddad,Deborah Moore on 10/03/2019 12:11 PM)*

- Both the current 2.0 cr hr version of the syllabus and a 1.5 cr hr version of the syllabus are attached. *(by Hambach,Jennifer Lynn on 10/03/2019 10:09 AM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Hambach,Jennifer Lynn	10/03/2019 10:10 AM	Submitted for Approval
Approved	Gustafson,Terry Lee	10/03/2019 11:10 AM	Unit Approval
Revision Requested	Haddad,Deborah Moore	10/03/2019 12:12 PM	College Approval
Submitted	Hambach,Jennifer Lynn	10/06/2019 09:18 AM	Submitted for Approval
Approved	Gustafson,Terry Lee	10/06/2019 10:27 AM	Unit Approval
Approved	Haddad,Deborah Moore	10/06/2019 12:37 PM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Oldroyd,Shelby Quinn Vankeerbergen,Bernadette Chantal	10/06/2019 12:37 PM	ASCCAO Approval

BIOCHEMISTRY 7766.01: ADVANCED NUCLEIC ACIDS, FALL 2013

10:20-11:15 MWF; 684 Biological Sciences Building (BioSci)

Instructors

Venkat Gopalan (gopalan.5@osu.edu), 774 BioSci

Jane E. Jackman (jackman.14@osu.edu), 740 BioSci

Course Format

Each topic will be introduced during an overview lecture presented by the instructor, usually on the first meeting of each week. The following two meetings will be student presentations/discussion focused on assigned papers covering the week's topics.

Grading

The course will be graded using letter grades. The final grade will be decided based on two criteria: assigned paper presentation (50 pts) and classroom participation, i.e., class discussion, including questions/comments (50 pts). Further details are provided below for each of these headers.

Paper Presentations: Each student will be assigned to present one paper during the course of the semester. Although the student presenter will be responsible for introducing the paper and leading the discussion, all students in the class are responsible for reading the papers before class and will be called on randomly to participate in the paper discussion. Specific details related to paper presentations will be provided by the instructors on the first day of class. The presentations will be evaluated on the basis of: 1) clarity, 2) quality of slides, and 3) ability to answer questions from peers/instructors. The following guidelines will be used while assigning the grades for the presentations.

A range: The presentation enlightens the audience by including materials that go beyond the assigned paper. The slides are of excellent graphic quality and clear to follow. The presenter is in complete control of the presentation and topic and finishes within the allocated time.

B range: The presentation is clear but does not provide any new insights into the topic. The presentation either runs overtime or is too brief.

C range: The presentation is disorganized and not completed within the assigned time. In addition, the presenter is unable to answer questions relevant to the topic and is unsure about the scientific underpinnings of the work being discussed.

Classroom Participation: Students are encouraged to actively participate during the paper discussions. The instructors will keep a record of such participation during the semester.

Student responsibilities

Attendance will be strictly required, unless an acceptable excuse (i.e. medical emergency) is provided by the student with appropriate documentation (i.e. doctor's note). Failure to attend a class, without prior notice/consent, will result in the student's final grade being dropped to the next grade tier (e.g. from A to A-, A- to B+, etc). All students are required to read the assigned papers prior to the class discussion. In addition, all students are strongly encouraged to read assigned review papers on each topic covered in the class.

Office hours

Based on discussions with students, instructors will hold an office hour each week at a designated time. Students are welcome to also request by email separate meeting times.

Syllabus

Week 1-2: RNA as a tool (customized ribozymes/RNAi)

Wed 8/21: Course Introduction; paper presentation pointers

Fri 8/23: Lecture 1

Mon 8/26: Lecture 2

Wed 8/28: Paper #1A

Fri 8/30: Paper #1B

Week 2-3: RNA-protein interactions: affinity and MS approaches

Mon 9/2: **NO CLASS (Labor Day)**

Wed 9/4: Paper #2A

Fri 9/6: Paper #2B

Week 4: Labeling and modification of RNA to elucidate function

Mon 9/9: Lecture 3

Wed 9/11: Paper #3A

Fri 9/13: Paper #3B

Week 5: RNAseq and transcriptomics

Mon 9/16: Lecture 4

Wed 9/18: Paper #4A

Fri 9/20: Paper #4B

Week 6: RNA-protein interactions: genome-wide (CLIP)

Mon 9/23: Lecture 5

Wed 9/25: Paper #5A

Fri 9/27: Paper #5B

Week 7: *In vivo* RNA structure/footprinting

Mon 9/30: Lecture 6

Wed 10/2: Paper #6A

Fri 10/4: Paper #6B

Mon 10/7: Guest lecture on *miRNA therapeutics* by Dr. Gianpiero Di Leva, OSUMC

BIOCHEMISTRY 7766.01: ADVANCED NUCLEIC ACIDS, FALL 2017

10:20-11:15 AM (Mon, Wed), 10:20 AM-12:10 PM (Fri); 676 Biological Sciences Building

Instructors

Venkat Gopalan (gopalan.5@osu.edu), 774 BioSci

Jane E. Jackman (jackman.14@osu.edu), 740 BioSci

Instructors are available to assist students on an individual basis outside of class hours by appointment.

Course Format

The first five weeks will consist of interactive lectures presented by the instructors. The subsequent course meeting(s) will consist of student presentations/discussions, focused on assigned papers covering these topics.

Grading

The course will be graded using letter grades. The final grade will be decided based on three criteria: assigned **paper presentation** (50 pts), **classroom participation** (30 pts), i.e., class discussion, including questions/comments, and a final **written report** (20 pts). Further details are provided below.

Paper Presentations: Each student will be assigned to present one paper during the course of the semester. Although the student presenter will be responsible for introducing the paper and leading the discussion, all students in the class are responsible for reading the papers before class and will be called on randomly to participate in the paper discussion. *Specific details related to paper presentations will be provided by the instructors on the first day of class.* The presentations will be evaluated on the basis of: 1) clarity, 2) quality of slides, and 3) ability to lead the discussion following questions/ comments from peers/instructors.

Classroom Participation: Students are encouraged to actively participate during lectures and paper discussions. The instructors will keep a record of such participation during the entire course.

Written report: The overarching goal of our course is to provide students with the practical knowledge necessary to successfully apply cutting-edge techniques to advance their own research goals. The written report will consist of a description of how **one of** the experimental approaches described during the semester could be applied to each student's research projects. The report should include a short introductory paragraph with basic background information relevant to the project, a clear statement of the important outstanding question that the student is trying to address, and a description of how the approach selected by the student will be applied to this specific research problem. A final paragraph should address expected outcomes and potential pitfalls of the planned approach. Include illustrations as appropriate. The report should be a **maximum** of two double-spaced pages with one-inch margins and 12-point font size, and is due at the beginning of the final day of class (October 9, 2017). References are not included in the two-page limit.

Student responsibilities

Attendance is strictly required, unless an acceptable excuse (i.e. medical emergency) is provided by the student with appropriate documentation (i.e. doctor's note). Failure to attend a class, without prior notice/consent, will result in the student's final grade being dropped to the next grade tier (e.g. from A to A-, A- to B+, etc.). All students are required to read the assigned papers prior to the class discussion. In addition, all students are expected to read assigned review papers on each topic covered in the class.

Syllabus

- 8/23 (W):** Course introduction and overview
- 8/25 (F):** Gopalan Lecture 1: Synthesis and purification of RNA and RNA-protein (RNP) complexes
(2nd hour: Paper presentation sign-up; paper presentation pointers)
- 8/28 (M):** Gopalan Lecture 2: Synthesis and purification of RNA and RNP complexes
- 8/30 (W):** Gopalan Lecture 3: Characterization of RNP complexes; mapping subcellular locale of RNA and RNP complexes
- 9/1 (F):** Gopalan Lecture 4: Mapping RNA structure and RNA-protein interactions
(2nd hour: Sample paper presentation)
- 9/4 (M):** **Labor Day (NO class)**
- 9/6 (W):** Gopalan Lecture 5: Mapping RNA structure and RNA-protein interactions
- 9/8 (F):** Gopalan Lecture 6: Use of RNA as a tool to manipulate gene expression
(2nd hour: Lecture wrap-up, Gopalan)
- 9/11 (M):** Jackman Lecture 1- RNA/Protein world/RNAseq fundamentals
- 9/13 (W):** Jackman Lecture 2- RNAseq and transcriptomics
- 9/15 (F):** Jackman Lecture 3- RNAseq and validation
(2nd hour: Paper presentation preparation meetings with individual instructors)
- 9/18 (M):** Jackman Lecture 4- RNA-macromolecule interactions: genome-wide
- 9/20 (W):** Jackman Lecture 5- RNA-macromolecule interactions: cross-linking
- 9/22 (F):** Jackman Lecture 6- In vivo approaches to study RNA structure and function
(2nd hour: Lecture wrap-up, Jackman)
- All paper discussion sessions will start promptly at **10:15 AM** to allow 30 min for each student presenter.*
- 9/25 (M):** Paper #1 and #2
- 9/27 (W):** Paper #3 and #4
- 9/29 (F):** **NO CLASS**
- 10/2 (M):** Paper #5 and #6
- 10/4 (W):** Paper #7 and #8
- 10/6 (F):** Paper #9 and #10 (2nd hour: Presentation feedback, papers 1-6)
- 10/9 (M):** Paper #11 and #12 (**Written report due in class**)
Presentation feedback meetings for papers 7-12 will be scheduled during final exam day

Statements on Disabilities, Academic Misconduct and Diversity

Disabilities

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

Academic Misconduct

All work submitted for this class is expected to be your sole effort and should not include **ANY** material copied directly from papers or abstracts that have been published or submitted for publication. No form of academic misconduct will be tolerated. Suspected cases will be referred to the Committee on Academic Misconduct according to standard university procedures. Any falsification or improper alteration of grades, marks, answers or university forms will be dealt with severely. You will also be held to a high standard of treating your instructor, TA and peers with the utmost respect.

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

Diversity

The Ohio State University and the Department of Chemistry and Biochemistry affirm the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited



**RE: Petition to the Registrar for BIOCHEM 7766.01
course credit change**

October 5, 2019

Dear Registrar,

This is a petition for an exception to the deadline for submitting course change requests for Spring 2020. The petition was submitted earlier (before the deadline) but changes in the Office of the Vice-Chair for Graduate Studies in the Department of Chemistry prevented our timely submission of the original request.

I am writing as one of the co-instructors (along with Venkat Gopalan) for the Biochemistry 7766.01 course (Advanced Nucleic acids) to request a change in the credit hours for the course from 2.0 cr hr to 1.5 cr hr, effective in Spring 2020.

The course was originally offered as a 1.5 cr hr course when we began teaching it in Autumn 2013, then changed to the 2.0 cr hr format starting Autumn 2016. The change to 2 cr hr had been requested primarily in order to better align the course with a companion course being taught in the Department of Microbiology (MICRO 8050) that was being taught as a 2 cr hr course. However, the decision has been recently made in the Department of Chemistry and Biochemistry to change to a Spring semester offering for this course, where it will be offered as a 7-week elective to complement several other elective courses also being offered in Biochemistry. Therefore, in order to maintain consistency between the different elective courses being offered, we request that Biochem 7766.01 be changed back to the 1.5 cr hr format.

This change will not have a significant effect on the course content or objectives, since the additional class time built in upon the change to 2 cr hr was used for additional group paper discussions, and some of this work can be built into class assignments to be conducted at least partially outside of class.

We appreciate the consideration of our request. Please let us know if you require any additional information from us to process the change request, and we look forward to hearing from you about it soon.

Sincerely,

Jane E. Jackman
Professor of Chemistry and Biochemistry
Director and Graduate Studies Committee Chair, The Ohio State Biochemistry Program
The Ohio State University