

January 25, 2024

Melur K. Ramasubarmanian Ph.D.
Executive Vice Chancellor for Academic Affairs & Provost
State University of New York
System Administration
State University Plaza
Albany, NY 12246

Dear Dr. Ramasubarmanian:

On behalf of the faculty at the University at Albany, I am pleased to transmit the attached proposal for updated registration of our existing MS program in Biomedical Sciences, and the addition of distance education format. This proposal has been fully approved through campus governance.

We will be thankful for efforts by your staff in the Office of Program Review for timely review of this updated proposal and transmittal to the NYS Department of Education. Should there be any technical questions or the need for additional materials, please have inquiries directed to Colleen Davis, Assistant Dean of the Graduate School (cdavis@albany.edu). We thank you for your on-going support.

Sincerely,



Carol H. Kim
Provost and Senior Vice President for Academic Affairs

Enclosure

- c. Interim Dean Christine Wagner, Vice Provost & Dean of the Graduate School
- Interim Dean Erin Bell, Dean of the School of Public Health
- Celine LaValley, Staff Associate for Academic Affairs, Dean's Office, School of Public Health



Program Revision Proposal: Changes to an Existing Program

Form 3A
Version 2016-10-13

SUNY approval and SED registration are required for many changes to registered programs. To request a change to a registered program leading to an undergraduate degree, a graduate degree, or a certificate that does not involve the creation of a new program,¹ a Chief Executive or Chief Academic Officer must submit a **signed cover letter and this completed form** to the SUNY Provost at program.review@suny.edu.

Section 1. General Information	
a) Institutional Information	Institution's 6-digit SED Code : 210500
	Institution's Name: University at Albany
	Address: <i>1400 Washington Avenue, Albany NY 12222</i>
b) Program Locations	List each campus where the entire program will be offered (with each institutional or branch campus 6-digit SED Code): 210500
	List the name and address of off-campus locations (i.e., extension sites or extension centers) where courses will offered, or check here [X] if not applicable :
c) Registered Program to be Changed	Program Title: Biomedical Sciences
	SED Program Code : 85296
	Award(s) (e.g., A.A., B.S.): MS
	Number of Required Credits: Minimum [36] If tracks or options, largest minimum []
	HEGIS Code : 0499
	CIP 2010 Code : 26.0102
	Effective Date of Change: Spring 2024
	Effective Date of Completion ² : Spring 2026
d) Campus Contact	Name and title: Colleen Davis, Assistant Dean Telephone: (518)437-5063 e-mail: cdavis@albany.edu
e) Chief Executive or Chief Academic Officer Approval	Signature affirms that the proposal has met all applicable campus administrative and shared governance procedures for consultation, and the institution's commitment to support the proposed program. E-signatures are acceptable. Name and title: Carol H. Kim, Provost and Senior Vice President for Academic Affairs Signature and date: 1/25/2024
	If the program will be registered jointly³ with one or more other institutions, provide the following information for <u>each</u> institution:
	Partner institution's name and 6-digit SED Code : New York State Department of Health 000041 Name, title, and signature of partner institution's CEO (or append a signed letter indicating approval of this proposal): Please see partner letter, Appendix 3

¹ To propose changes that would create a new program, Form 3B, [Creating a New Program from Existing Program\(s\)](#), is required.
² If the current program(s) must remain registered until enrolled students have graduated, the anticipated effective date by which continuing students will have completed the current version of the program(s).
³ If the partner institution is non-degree-granting, see SED's [CEO Memo 94-04](#).

Section 2. Program Information

Section 2.1. Changes in Program Content

No changes in program content. *Proceed to Section 2.2.*

a) Check all that apply. Describe each proposed change and why it is proposed.

Cumulative change from SED's last approval of the registered program of one-third or more of the minimum credits required for the award (e.g., 20 credits for associate degree programs, 40 credits for bachelor's degree programs) Since the original registration of the program, courses and requirement structures have been added and/or revised to be consistent with emergent trends in the field and to maintain compliance with CEPH (Council on Education for Public Health) accreditation standards

Changes in a program's focus or design

Adding or eliminating one or more options, concentrations or tracks

Unique faculty ratio requirements for concentrations, set by the School's accrediting body (CEPH), are not sustainable. While formal concentrations have been removed, students still have options to take electives in areas of interest.

Eliminating a requirement for program completion (such as an internship, clinical placement, cooperative education, or other work or field-based experience). Adding such requirements must remain in compliance with SUNY credit cap limits.

Altering the liberal arts and science content in a way that changes the degree classification of an undergraduate program, as defined in [Section 3.47\(c\)\(1-4\) of Regents Rules](#)

b) Provide a side-by-side comparison of all the courses in the existing and proposed revised program that clearly indicates all new or significantly revised courses, and other changes.

Please see Appendix 1 for comparisons.

c) For each new or significantly revised course, provide a syllabus at the end of this form, and, on the *SUNY Faculty Table* provide the name, qualifications, and relevant experience of the faculty teaching each new or significantly revised course. NOTE: *Syllabi for all courses should be available upon request. Each syllabus should show that all work for credit is college level and of the appropriate rigor. Syllabi generally include a course description, prerequisites and corequisites, the number of lecture and/or other contact hours per week, credits allocated (consistent with [SUNY policy on credit/contact hours](#)), general course requirements, and expected student learning outcomes.*

Please see Appendix 2 for new or revised course syllabi.

d) What are the additional costs of the change, if any? If there are no anticipated costs, explain why.
No additional costs have resulted from these changes.

Section 2.2. Other Changes

Check all that apply. Describe each proposed change and why it is proposed.

Program title

Program award

[Mode of delivery](#)

NOTES: (1) If the change in delivery enables students to complete 50% or more of the program via distance education, submit a [Distance Education Format Proposal](#) as part of this proposal. (2) If the change involves adding an accelerated version of the program that impacts financial aid eligibility or licensure qualification, SED may register the version as a separate program.

- [] [Format change\(s\)](#) (e.g., from full-time to part-time), based on SED definitions, for the **entire** program
 - 1) State proposed format(s) and consider the consequences for financial aid
 - 2) Describe availability of courses and any change in faculty, resources, or support services.
- [] A change in the total number of credits in a certificate or advanced certificate program
- [] Any change to a registered licensure-qualifying program, or the addition of licensure qualification to an existing program. **Exception:** Small changes in the required number of credits in a licensure-qualifying program that do not involve a course or courses that satisfy one of the required content areas in the profession.

Section 3. Program Schedule and Curriculum

- a) For **undergraduate programs**, complete the *SUNY Undergraduate Program Schedule* to show the sequencing and scheduling of courses in the program. If the program has separate tracks or concentrations, complete a **Program Schedule** for each one.

NOTES: The *Undergraduate Schedule* must show **all curricular requirements** and demonstrate that the program conforms to SUNY's and SED's policies.

- It must show how a student can complete all program requirements within [SUNY credit limits](#), unless a longer period is selected as a format in Item 2.1(c): two years of full-time study (or the equivalent) and 64 credits for an associate degree, or four years of full-time study (or the equivalent) and 126 credits for a bachelor's degree. Bachelor's degree programs should have at least 45 credits of [upper division study](#), with 24 in the major.
- It must show how students in A.A., A.S. and bachelor's programs can complete, within the first two years of full-time study (or 60 credits), no fewer than 30 credits in [approved SUNY GER courses](#) in the categories of Basic Communication and Mathematics, and in at least 5 of the following 8 categories: Natural Science, Social Science, American History, Western Civilization, Other World Civilizations, Humanities, the Arts and Foreign Languages
- It must show how students can complete [Liberal Arts and Sciences \(LAS\) credits](#) appropriate for the degree.
- When a SUNY Transfer Path applies to the program, it must show how students can complete the number of SUNY Transfer Path courses shown in the [Transfer Path Requirement Summary](#) within the first two years of full-time study (or 60 credits), consistent with SUNY's [Student Seamless Transfer policy](#) and [MTP 2013-03](#).
- Requests for a program-level waiver of SUNY credit limits, SUNY GER and/or a SUNY Transfer Path require the campus to submit a [Waiver Request](#) –with compelling justification(s).

EXAMPLE FOR ONE TERM: Undergraduate Program Schedule

Term 2: Fall 20xx	Credits per classification					New	Prerequisite(s)
Course Number & Title	Cr	GER	LAS	Maj	TPath		
ACC 101 Principles of Accounting	4			4	4		
MAT 111 College Mathematics	3	M	3	3			MAT 110
CMP 101 Introduction to Computers	3						
HUM 110 Speech	3	BC	3			X	
ENG 113 English 102	3	BC	3				
Term credit total:	16	6	9	7	4		

- b) For **graduate programs**, complete the *SUNY Graduate Program Schedule*. If the program has separate tracks or concentrations, complete a **Program Schedule** for each one.

NOTE: The *Graduate Schedule* must include all curriculum requirements and demonstrate that expectations from [Part 52.2\(c\)\(8\) through \(10\) of the Regulations of the Commissioner of Education](#) are met.

SUNY Graduate Program Schedule OPTION: *You can insert an Excel version of this schedule AFTER this line, and delete the rest of this page.)*

Program/Track Title and Award: Biomedical Sciences MS

- a) Indicate **academic calendar** type: [] Semester [] Quarter [] Trimester [] Other (describe):
- b) **Label each term in sequence**, consistent with the institution's academic calendar (e.g., Fall 1, Spring 1, Fall 2)
- c) Use the table to show **how a typical student may progress through the program**; copy/expand the table as needed.
- d) Complete the last row to show program totals and comprehensive, culminating elements. **Complete all columns that apply to a course.**

Fall 1:				Spring 1:			
Course Number & Title	Credits	New	Co/Prerequisites	Course Number & Title	Credits	New	Co/Prerequisites
BMS 500 A-C Molecular Cell Biology	6	X		BMS 601 Biomedical Science Horizons	3	X	
BMS 590 Lab Rotations in BMS	3			BMS 665 Current Literature in BMS	1		
EPI 503 Principles of Public Health	3			BMS 699 Thesis Research	5		
				Elective 1 of 2	3		
Term credit total:	12			Term credit total:	12		
Fall 2:				Spring 2:			
Course Number & Title	Credits	New	Co/Prerequisites	Course Number & Title	Credits	New	Co/Prerequisites
BMS 670 Responsible Conduct of Scientific Research	1	X					
BMS 665 Current Literature in BMS	1						
BMS 699 Thesis Research	9						
Elective 2 of 2	1						
Term credit total:	12			Term credit total:			
Term 5:				Term 6:			
Course Number & Title	Credits	New	Co/Prerequisites	Course Number & Title	Credits	New	Co/Prerequisites
Term credit total:				Term credit total:			
Term 7:				Term 8:			
Course Number & Title	Credits	New	Co/Prerequisites	Course Number & Title	Credits	New	Co/Prerequisites
Term credit total:				Term credit total:			
Program Total:	Total Credits: 36	Identify the required comprehensive, culminating element(s), such as a thesis or examination, including course number(s), if applicable: BMS 699 Thesis Research					

New: X if new or revised course **Prerequisite(s):** list prerequisite(s) for the listed courses

Section 4. SUNY Faculty Table

- a) If applicable, provide information on faculty members who will be teaching new or significantly revised courses in the program. Expand the table as needed.
- b) **Append** at the end of this document position descriptions or announcements for each to-be-hired faculty member

(a)	(b)	(c)	(d)	(e)	(f)
Faculty Member Name and Title and/or Rank at the Institution (Include and identify Program Director.) Noted by *	% of Time Dedicated to This Program	Program Courses Which May Be Taught (Number and Title)	Highest and Other Applicable Earned Degrees (include College or University)	Discipline(s) of Highest and Other Applicable Earned Degrees	Additional Qualifications: List related certifications and licenses and professional experience in field.
PART 1. Full-Time Faculty					
Bum-Kyu Lee, Assistant Professor	100	BMS 500 A-C Molecular Cell Biology; BMS 665 Current Literature in BMS	PhD University of TX, Austin	Molecular Genetics and Microbiology	
Doug Conklin, Associate Professor	100	BMS 601 Biomedical Science Horizons	PhD University of WI, Madison	Cellular & Molecular Biology	
*Joseph Wade, Chair Dept of Biomedical Sciences; Associate Professor	.50	BMS 500 A-C Molecular Cell Biology; BMS 665 Current Literature in BMS	PhD University of Birmingham, United Kingdom	Biochemistry	
Part 2. Part-Time Faculty					
Kathy Yu-Fen Chou, Clinical Assistant Professor	.25	BMS 670 Responsible Conduct of Scientific Research	PhD UCLA	Biomedical Engineering	
Part 3. To-Be-Hired Faculty (List as TBH1, TBH2, etc., and provide expected hiring date instead of name.)					

University at Albany
Program Revision Proposal
Biomedical Sciences MS
Appendix 1

SIDE BY SIDE COMPARISON OF CHANGES

Appendix 1: Program Comparison

	A	B	C
1	Last Registered Program - 36 cr	Proposed Changes - 36 cr	
2	Specializations: Biochemistry, Molecular Biology, and Genetics; Molecular Pathogenesis; Immunobiology and Immunochemistry; Cell and Molecular Structure; Neuroscience		eliminate
3	Core Courses - 12 cr	Core Courses - 18 cr	increase overall core credits
4	Bms 601a Introduction to Biomedical Sciences	Bms 601 Biomedical Science Horizons	revised course
5	Bms 601b		eliminate
6		Bms 500A Molecular Cell Biology A (2)	new course
7		Bms 500B Molecular Cell Biology B (2)	new course
8		Bms 500C Molecular Cell Biology C (2)	new course
9	Bms 590 Laboratory Rotations in Biomedical Sciences	Bms 590 Laboratory Rotations in Biomedical Sciences (3)	
10		Bms 665 Current Literature in Biomedical Sciences (2)	existing course; new requirement
11		Bms 670 Responsible Conduct of Scientific Research (1)	new course
12		Epi 503 Principles of Public Health (3)	existing course; new requirement
13	One semester each of biochemistry and cell biology		eliminate
14	Supporting Courses in an area of specialization - 16 cr	Support courses - 4 cr	reduce credits and expand options
15	Master's Thesis Research (8 credits)	Bms 699 Master's Thesis Research (14 credits)	increase thesis credits
16	Satisfactory completion of a master's major field examination	Satisfactory completion of a master's major field examination	
17	Satisfactory oral seminar and defense based on approved master's thesis of laboratory research	Satisfactory oral seminar and defense based on approved master's thesis of laboratory research	

University at Albany
Program Revision Proposal
Biomedical Sciences MS
Appendix 1

SYLLABI OF NEW OR SIGNIFICANTLY REVISED COURSES

Biomedical Sciences

BMS 500 A - C Molecular Cell Biology

BMS 601 Biomedical Science Horizons

BMS 670/EHS 675 Responsible Conduct of Scientific Research

University at Albany
School of Public Health
Department of Biomedical Sciences

BMS 500 A, B, C - MOLECULAR CELL BIOLOGY

9:30-11:20 AM Monday, Wednesday, and Friday

Albany College of Pharmacy & Health Sciences, Room 2000, 150 New Scotland Avenue, Albany, NY 12208

Classes in * will be held in Room 2022, 150 New Scotland Avenue, Albany, NY 12208

FALL 2023

Course Coordinator:

Pallavi Ghosh, Assistant Professor

pghosh2@albany.edu

Center for Medical Science, Room 5241
150 New Scotland Avenue, Albany, NY 12208
518-402-2033

Instructors:

Janice Pata, Associate Professor

jpata@albany.edu

Center for Medical Science, Room 2009
150 New Scotland Avenue, Albany, NY 12208
518-402-2595

Pallavi Ghosh, Assistant Professor

pghosh2@albany.edu

Center for Medical Science, Room 5241
150 New Scotland Avenue, Albany, NY 12208
518-402-2033

Jon Paczkowski, Assistant Professor

jpaczowski@albany.edu

Center for Medical Science, Room 5221
150 New Scotland Avenue, Albany, NY 12208
518-486-3116

Bum Kyu Lee, Assistant Professor

blee6@albany.edu

Cancer Research Center, Room 304, Health Sciences Campus
1 Discovery Drive, Rensselaer, NY 12144
518-591-7200

Rajendra Agrawal, Professor
ragrawal@albany.edu
Biggs Laboratory, Room C450
Empire State Plaza, Albany, NY
518-486-5797

Nilesh Banavali, Assistant Professor
nbanavali@albany.edu
Biggs Laboratory, Room C419B
Empire State Plaza, Albany, NY
518-473-7553

Anil Ojha, Associate Professor
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518-402-2605

Haixin Sui, Assistant Professor
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Empire State Plaza, Albany, NY
518-474-4235

Dr. Lasek-Nesselquist
Erica.Lasek-Nesselquist@health.ny.gov
CMS 2008
518-473-3493

Dr. David Vance, Research Assistant Professor
dvance@albany.edu
Center for Medical Science Room 2020
518-402-4001

Dr. Cheryl Andam, Assistant Professor
candam@albany.edu
Life Sciences 2060
518-437-4475

Dr. Denise Kay, Clinical Assistant Professor
denise.kay@health.ny.gov
(518) 474-7610
David Axelrod Institute (room 5102)

OFFICE HOURS: By appointment with individual instructors.

TEACHING ASSISTANT: None

COURSE CREDIT HOURS: 6 credits total, offered in 2-credit modules, graded independently

COURSE PREREQUISITES/COREQUISITES: Enrollment in the MS or PhD Biomedical Sciences graduate program, or permission of course director. Undergraduate-level courses in molecular biology and biochemistry are recommended.

COURSE DESCRIPTION:

This course will examine essential cellular processes at the molecular level by providing historical perspective and using examples from both current and older literature. Emphasis in the first two modules is on processes involving DNA and RNA, with topics including genome function, replication, transcriptional regulation and signal transduction, chromatin structure and function, and RNA structure and function. In the third module, the focus will be on processes occurring in the cytoplasm – protein translation and translational regulation, protein structure and folding, and the cytoskeleton. Discussions will be supported by sessions in which the biochemical and structural principles underlying the processes under study are discussed.

COURSE LEARNING OBJECTIVES:

Students will renew and expand their familiarity with basic concepts and gain new knowledge of more advanced material relevant to the topics to be covered (see Course Description). At the conclusion of the course, students will be able to understand and critique scientific literature and seminars in the relevant areas and will have increased knowledge that they may apply to their specific areas of research.

Course Web Site: Lecture and reading material will be made available via Blackboard and the MyUAlbany web site (<https://www.albany.edu/myualbany/>). Access requires a current UAlbany netID.

MS and PhD PROGRAM COMPETENCIES:

Masters degree competencies developed in this course:

- Acquire basic knowledge of modern concepts in molecular cell biology and area of specialization.
- Identify and understand relevant scientific data in the literature and public databases.

Doctoral degree competencies developed in this course:

- Acquire advanced knowledge of modern concepts in molecular cell biology and area of specialization.
- Identify and critically evaluate relevant scientific data in the literature and public databases.

COURSE MATERIALS:

Readings from the scientific literature will be assigned by individual instructors. Students will need laptop computers for in-class exercises and assignments. Software is needed for internet browsing as well as for basic word processing, presentation and spreadsheet applications (e.g. Microsoft Office). Students will be provided with software for visualizing and analyzing molecular structures. Other programs will be accessed through web-based interfaces. Internet access will be available in the classroom.

COURSE REQUIREMENTS:**Examinations**

Exams are open book; access to the internet is also permitted but students are cautioned not to be over-reliant on web sources, as exam questions will primarily be conceptually based short answers and short essays. Exam dates are as follows: September 24, October 29, and December 8, 2021.

Grading

A-E. Students will be graded based on writing assignments and on quizzes and exams that test their ability to synthesize the concepts and approaches they have learned. Grades will be based on a combination of quizzes, exams, homework, projects, and writing assignments, as assigned by each instructor, that will test students' ability to apply the concepts they have learned to the scientific literature. These will be weighted so that material from each class session receives equal weight (20 points per class session, with a final grade being a percentage of the total points in each module). Class participation will also be considered in assigning grades. Grades will be on a curve.

	<i>Module name</i>	<i>Instructor</i>	<i>Evaluation components</i>	<i>Weighting</i>
BMS500A 240 pts	From molecules to cells, molecular graphics	Pata	Homework assignment	40/240
	Genes, genetics, genomes & Phylogeny	Andam	In-class activity per lecture, 10 pts each per lecture (30 pts). Take-home quiz 30 pts.	60/240
	Macromolecular structure & Function	Banavali	Quiz (20 points: 10 individual, 10 group), writing assignment (60 points).	80/240
	DNS replication, mutations etc	Vance	Quiz (60 points, 20 points for each lecture)	60/240
BMS500B 240 pts	Basics of Biostatistics	Kay	Homework assignment	40/240
	Prokaryotic transcriptional regulation	Ghosh	Paper Reading (x3) class discussion: 40 pts, Take home exam (x1): 40 pt	80/240
	Signal transduction	Paczkowski	Take-home writing assignment	20/240
	Eukaryotic transcriptional	Lee	Quiz (X3); take-home exam (x1)	80/240
BMS500C 240 pts	Protein translation	Agrawal	Class quizzes (x2); Writing assignment (x1)	60/240
	Translational regulation	Ojha	Class quiz (x1)	20/240
	Cytoskeleton	Sui	Quiz (x1); Open-book assignment/test (x1); Participation, In-class discussion	100/240
	Basics of Bioinformatics	Lasek Nesselquist	Completion of an exercise/assignment	60/240

Course Average	Final Grade
94-100	A
90-93	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
65-72	D*
<65	E

CLASS POLICIES:

Attendance: Attendance is mandatory. An absence should be communicated to the instructor as soon as possible. Medical Excuse Policy:

http://www.albany.edu/health_center/medicaexcuse.shtml.

Absence due to religious observance: Students should work with faculty to arrange accommodations for material this is missed due to religious observances. See New York State Education Law Section 224-A (<https://www.nysenate.gov/legislation/laws/EDN/224-A>) whereby campuses are required to excuse, without penalty, individual students absent because of religious beliefs, and to provide equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences.

Inclusive Learning Environment:

It is expected that each of you will contribute to creating an inclusive and respectful learning environment. You are expected to treat each other with dignity and value differences in perspectives. Hurtful or hateful language and actions will not be tolerated.

Diversity, Equity, and Inclusion Statement

At the University at Albany School of Public Health, we believe deeply that equity, respect, and justice are central to our united path forward. The character of our School is to stand steadfast in the face of injustice and act for the betterment of health outcomes. Racism and discrimination have no place in our work.

We are committed to creating and supporting a community diverse in every way, which includes but is not limited to: race, ethnicity, age, disability, gender, gender expression, geography, religion, academic and extracurricular interest, political beliefs, family circumstances, national origin, sexual orientation, and socioeconomic background. It is central to our mission to ensure that each member of our community has full opportunity to thrive. We recognize that all of us must embrace the responsibility and accountability for upholding these values, as they are central, not only to our mission,

but also to individual growth, education excellence and the advancement of knowledge.

The University at Albany is committed to a campus environment that supports diversity, equity and inclusion and will provide support to individuals who report incidents of bias or hate. We encourage any campus community member who experiences or witnesses a bias act or hate crime to report this incident by using the [Bias Incident Reporting Form](#). For more information, visit <https://www.albany.edu/diversity-and-inclusion>.

SCHOOL AND UNIVERSITY RESOURCES AND POLICIES:

Academic Integrity: Students are expected to abide by the UAlbany policies on academic integrity, which can be found at https://www.albany.edu/graduatebulletin/requirements_degree.htm#standards_integrity. In particular, students should review the information on academic integrity and plagiarism that are available through the UAlbany library: <https://library.albany.edu/infolit/playlists/academic-integrity>.

Classroom Health and Safety:

At the University at Albany, supporting the health and safety of all members of our campus community is a top priority. During the COVID-19 pandemic, we are following federal, state and local public health guidelines, and these guidelines apply to all campus community members across all University spaces. To ensure that each of us has a healthy and safe learning experience within courses that involve in-person contact, all students, faculty members, staff and visitors are required to adhere to the expectations outlined on the Health & Safety page of the University's COVID-19 website: <https://www.albany.edu/covid-19/planning-fall-2020/health-safety>.

In class, vaccinated and unvaccinated individuals are required to have face covering and keep it on for the entire class period. Unvaccinated individuals should additionally observe physical distancing in the classroom, including when you enter and exit the classroom.

Accommodations:

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 130, 518-442-5490, DRC@albany.edu). That office will provide the course instructor with verification of your disability, and will recommend appropriate accommodations. See <http://www.albany.edu/disability/> for more information.

Mental Health:

As a student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily life. The University at Albany Counseling and Psychological Services (CAPS) provides free, confidential services including individual and

group psychological counseling and evaluation for emotional, social and academic concerns. Given the COVID pandemic, students may consult with CAPS staff remotely by telephone, email or Zoom appointments regarding issues that impact them or someone they care about. For questions or to make an appointment, call (518) 442-5800 or email consultation@albany.edu. Visit www.albany.edu/caps/ for hours of operation and additional information.

If your life or someone else's life is in danger, please call 911. If you are in a crisis and need help right away, please call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

Students dealing with heightened feelings of sadness or hopelessness, increased anxiety, or thoughts of suicide may also text "GOT5" to 741741 (Crisis Text Line).

Title IX Reporting:

Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits discrimination on the basis of sex in federally funded education programs and activities. The SUNY-wide Sexual Violence Prevention and Response Policies prohibit offenses defined as sexual harassment, sexual assault, intimate partner violence (dating or domestic violence), sexual exploitation, and stalking. The SUNY-wide Sexual Violence Prevention and Response Policies apply to the entire University at Albany community, including students, faculty, and staff of all gender identities. The University at Albany provides a variety of resources for support and advocacy to assist individuals who have experienced sexual offenses.

Confidential support and guidance can be found through the Counseling Center (518-442-5800, https://www.albany.edu/counseling_center/), the University Health Center (518-442-5454, https://www.albany.edu/health_center/), and the Interfaith Center (518-489-8573, <https://www.albany.edu/spirituality/onCampus.shtml>). Individuals at these locations will not report crimes to law enforcement or university officials without permission, except for in extreme circumstances, such as a health and/or safety emergency. Additionally, the Advocates at the University at Albany's Advocacy Center for Sexual Violence are available to assist students without sharing information that could identify them (518-442-CARE, <https://www.albany.edu/advocacycenter/>).

Sexual offenses can be reported non-confidentially to the Title IX Coordinator within The Office for Equity and Compliance (518-442-3800, <https://www.albany.edu/equity-compliance/>, Building 25, Room 117) and/or the University Police Department (518-442-3131, <http://police.albany.edu/>).

Please note, faculty members are considered "responsible employees" at the University at Albany, meaning that they are required to report all known relevant details about a complaint of sexual violence to the University's Title IX Coordinator, including names of anyone involved or present, date, time, and location.

In case of an emergency, please call 911.

COURSE SCHEDULE:***BMS 500A: DNA Replication and Macromolecular Interactions (2 credits)***
August 23 – September 24, 2021

Day	Date	Session	Topic	Instructor
Monday	21-Aug	1	From molecules to cells	Pata
Wednesday	23-Aug	2	Genetics, genes & genomes	Andam
Friday	25-Aug	3	Genetics, genes & genomes	Andam
Monday	28-Aug	4	Phylogenetics	Andam
Wednesday	30-Aug	5	Macromolecular structure: proteins, DNA & RNA	Banavali
Friday	1-Sep	6	Protein structure & function	Banavali
Monday	4-Sep		Labor Day Classes suspended	
Wednesday	6-Sep	7	Protein structure & function	Banavali
Friday	8-Sep	8	Specificity of protein-nucleic acid interactions	Banavali
Monday	11-Sep	9	Molecular graphics workshop	Pata
Wednesday	13-Sep	10	DNA replication & Cell cycle	Vance
Friday	15-Sep	11	Specificity of Protein: Protein interaction	Vance
Monday	18-Sep	12	Mutations: impacts on structure & function	Vance
Wednesday	20-Sep	13	Review	
Friday	22-Sep	14	Exam	

Course Director* and Instructors

* Dr. Nilesh Banavali	nbanavali@albany.edu	ESP C419B	518-474-0569
Dr. Janice Pata	jpata@albany.edu	CMS 2009	518-402-2595
Dr. David Vance	dvance@albany.edu	CMS Room 2020	518-402-4001
Dr. Cheryl Andam	candam@albany.edu	Life Sciences 2060	518-437-4475

Genes and genomes: An overview of the content, structure and function of prokaryotic, eukaryotic and viral genomes, including discussion of sources of genetic innovation during evolution and how genetic variation contributes to disease.

Chromosome replication. These sessions will focus on the molecular mechanisms of DNA replication, with a brief overview of the cell cycle included. Mechanisms of replication in bacteria and eukaryotes including detailed consideration of initiation and termination are covered. The replication of chromatin and the retention of epigenetic "marks" and developmental memory and telomere structure and replication are also discussed.

Macromolecular structure and interactions: These sessions will review the types of molecules that are found in cells, with an emphasis on their structural properties and the physical and chemical principles that govern interactions between molecules. We will focus primarily on the specificity of interactions between proteins and nucleic acids, with DNA and RNA polymerases being the major focus of discussion.

BMS 500B: Transcriptional Regulation & Signal Transduction (2 credits)
September 27 – October 29, 2021

Day	Date	Session	Topic	Instructor
Monday	25-	1	Basics of Biostatistics	Denise Kay
*Wednesday	27-Sep	2	Basics of Biostatistics	Denise Kay
*Friday	29-Sep	3	Prokaryotic transcriptional regulation	Ghosh
Monday	2-Oct	4	Prokaryotic transcriptional regulation	Ghosh
Wednesday	4-Oct	5	Prokaryotic transcriptional regulation	Ghosh
Friday	6-Oct	6	Prokaryotic transcriptional regulation	Ghosh
Monday	9-Oct		Signal transduction (Prokaryotes)	Paczkowski
Wednesday	11-Oct	7	Signal transduction (Prokaryotes)	Paczkowski
Friday	13-Oct	8	No Class – Fall Break	
Monday	16-Oct	9	Eukaryotic transcriptional regulation	Lee
Wednesday	18-Oct	10	Eukaryotic transcriptional regulation	Lee
Friday	20-Oct	11	Eukaryotic transcriptional regulation	Lee
Monday	23-Oct	12	Eukaryotic transcriptional regulation	Lee
Wednesday	25-Oct	13	Review	
Friday	27-Oct	14	Exam	

Course Director* and Instructors

*Dr. Bum Kyu Lee	blee6@albany.edu	CRC 304	518-591-7200
Dr. Pallavi Ghosh	pghosh2@albany.edu	CMS 5241	518-402-2033
Dr. Jon Paczkowski	jpaczkowski@albany.edu	CMS 5221	518-474-5484
Dr. Denise Kay	denise.kay@health.ny.gov	DAI 5102	518-474-7610

Transcriptional regulation: Both prokaryotic and eukaryotic transcription will be discussed. Basic principles and some historical context will be provided, and new technologies and advances in understanding will be explored. Material on prokaryotic transcription will include discussion of genetic and biochemical approaches to studying transcriptional regulation, and mechanisms of transcriptional initiation, elongation and termination. Discussion of eukaryotic transcription will include the role of transcriptional activators, co-activators, and the basic transcription machinery, and how they function in transcriptional regulation in the context of chromatin.

Signal transduction: Both prokaryotes and eukaryotes respond to environmental stimuli and transduce information from outside to inside the cell. We will discuss the mechanisms cells use to appropriately sense external stimuli. We will also discuss how the cells respond appropriately to these signals to change their behavior. For context, we will use quorum sensing, a mechanism of bacterial cell-cell communication, to understand the mechanisms of signal recognition and the pathways used to transduce those signals, which leads to changes in transcription and in community behavior.

Introduction to biostatistics: Sessions will provide an overview of basic concepts in statistics and analytical methods commonly used by biomedical scientists, including descriptive and inferential statistics. Topics will include hypothesis testing, constructing confidence intervals and

choosing a statistical test. Methods for analysis of categorical and continuous data will be introduced and utilized.

BMS 500C: Protein Translation and Cytoskeleton (2 Credits)
November 1 – December 6, 2021

Day	Date	Session	Topic	Instructor
Monday	30-Oct	1	Protein translation	Agrawal
Wednesday	1-Nov	2	Protein translation	Agrawal
Friday	3-Nov	3	Protein translation	Agrawal
Monday	6-Nov	4	Translational regulation	Ojha
Wednesday	8-Nov	5	Cytoskeleton	Sui
Friday	10-	6	Cytoskeleton	Sui
Monday	13- Nov	7	Cytoskeleton	Sui
Wednesday	15-Nov	8	Cytoskeleton	Sui
Friday	17-Nov	9	Cytoskeleton	Sui
Monday	20-Nov	10	Basics of Bioinformatics	LasekNesselquist
Wednesday	22-Nov		No Class – Thanksgiving Break	
Friday	24-Nov		No Class – Thanksgiving Break	
Monday	27-Nov	11	Basics of Bioinformatics	LasekNesselquist
Wednesday	29-Nov	12	Basics of Bioinformatics	LasekNesselquist
Friday	1-Dec	13	Review	
Monday	4-Dec	14	Exam	

Course Director* and Instructors

*Dr. Haixin Sui	hsui@albany.edu	ESP C265	518-474-4235
Dr. Raj Agrawal	ragrawal@albany.edu	ESP C450	518-486-5797
Dr. Anil Ojha	aojha@albany.edu	CMS 5108	518-402-2605
Dr. Lasek-Nesselquist	Erica.Lasek-Nesselquist@health.ny.gov	CMS 2008	518-473-3493

Protein translation & translational regulation: The structure and function of the basic components that participate in protein synthesis will be introduced, including tRNA and ribosomes. The problems of tRNA identity and decoding the genetic code will be discussed. Impact of advancements in the structural studies of ribosome in understanding mRNA decoding on the small ribosomal subunit will be discussed. The four main steps in protein synthesis will be discussed. Molecular mimicry between tRNA and various protein factors will be outlined and discussed. The mechanism of action of several antibiotics in inhibiting the steps of translation will be discussed.

Protein structure and function: The principles of how proteins fold or assemble into functional structures and perform various biological roles, how they can be engineered and manipulated, and how small molecules can be designed to alter protein function will be explored. Different methods in protein structure prediction, protein-protein interactions, protein engineering and design, and inhibitor design will be presented. Case studies on functions of proteins as hormones, toxins, antibodies, catalysts, and molecular motors will be discussed. A homework assignment will focus on structural analysis of protein function.

Cytoskeleton: The critical functions and dynamic behaviors make the cytoskeleton research a frontier in cell biology. Different from general protein complexes that contain a defined and relatively small number of molecules, cytoskeleton filaments are long protein architecture

assembled with thousands copies of the component protein(s). This module will review major research advances on the structure-function of cytoskeleton filaments and explain how the knowledge was achieved by structural imaging methods, mainly electron microscopy. Besides advanced knowledge on cytoskeleton filaments, the application and basic principles of the involved structural imaging methods will also be discussed.

Basics of Bioinformatics: Bioinformatics involves the application of computational tools to process and analyze data. Typically, work is conducted in a command-line environment, such as Linux. We will learn the basics of operating in Linux environment before employing various tools to align reads to a genome and extract read counts for an expression analysis. Differential expression analyses examine changes in transcription that occur between two conditions (i.e. a control and treatment). We will use DESeq2, a frequently employed R (a statistical program) package, to identify differentially expressed genes in our treated condition and generate some summary figures.

**UNIVERSITY AT ALBANY
SCHOOL OF PUBLIC HEALTH**

**HBMS 601, Biomedical Science Horizons
Advanced technological approaches to human health and disease**

**Massry Conference Room in the
Cancer Research Center**

Tuesdays & Thursdays 9:00 - 10:20 AM

Spring 2023 (Class 4965)

INSTRUCTOR:

Doug Conklin, Associate Professor
dconklin@albany.edu
CRC 342
518.591.7154

OFFICE HOURS: contact the course director for an appointment

COURSE CREDIT HOURS: 3 credits

COURSE PREREQUISITES:

COURSE DESCRIPTION:

This course will discuss important concepts for students considering a future career in biomedical sciences and public health. Students will gain an understanding of cutting-edge technologies in molecular biology, genomics, proteomics, and cell biology and their role in future improvements in public health. Students will also become familiar with the all important first step in future biomedical public health studies: scientific proposal writing and review.

COURSE LEARNING OBJECTIVES:

Upon completion of this course, students will be able to:

- understand the role of genetics and the environment in human disease.
- understand the molecular and biochemical mechanisms associated with human health and disease.
- apply fundamental concepts in the core areas of biochemistry, molecular biology, neurobiology and cell biology.
- demonstrate additional depth of knowledge in systems biology and genomics.
- understand the fundamentals of grant writing, grant review, and how to seek out funding opportunities.
- develop both verbal and written communication skills through presentations and homework assignments, and they will apply fundamental concepts in the biomedical sciences to public health issues, in particular, in the detection, treatment, and prevention of disease
- critically evaluate the work of their peers in biomedical sciences and will be required to

- demonstrate broad knowledge of the genetic basis of cellular function and demonstrate basic knowledge of human genetic diseases and disorders.
- demonstrate a foundation of knowledge in the core areas of biomedical sciences and identify the strengths and limitations of various laboratory methodologies.
- explain the biological and molecular basis of public health and articulate how biological, chemical, and physical agents affect human health.
- be required to explain how genetics and genomics affect disease processes, public health policy and practice.

Diversity, Equity, and Inclusion Statement⁶

At the University at Albany School of Public Health, we believe deeply that equity, respect, and justice are central to our united path forward. The character of our School is to stand steadfast in the face of injustice and act for the betterment of health outcomes. Racism and discrimination have no place in our work.

We are committed to creating and supporting a community diverse in every way, which includes but is not limited to: race, ethnicity, age, disability, gender, gender expression, geography, religion, academic and extracurricular interest, political beliefs, family circumstances, national origin, sexual orientation, and socioeconomic background. It is central to our mission to ensure that each member of our community has full opportunity to thrive. We recognize that all of us must embrace the responsibility and accountability for upholding these values, as they are central, not only to our mission, but also to individual growth, education excellence and the advancement of knowledge.

The University at Albany is committed to a campus environment that supports diversity, equity and inclusion and will provide support to individuals who report incidents of bias or hate. We encourage any campus community member who experiences or witnesses a bias act or hate crime to report this incident by using the [Bias Incident Reporting Form](https://www.albany.edu/diversity-and-inclusion). For more information, visit <https://www.albany.edu/diversity-and-inclusion>.

PUBLIC HEALTH FOUNDATIONAL KNOWLEDGE DOMAINS AND COMPETENCIES: full listing available upon request

Foundational Knowledge Domains: This course addresses the following Foundational Knowledge Domains and Competencies for (put degree program here and list each domain below): full listing available upon request

MS OR PHD PROGRAM COMPETENCIES: This course addresses the following (MS or PhD) program competencies: full listing available upon request

COURSE MATERIALS: Readings from the scientific literature will be assigned for use in class and for posted on Blackboard. Note recently published articles relevant to individual lectures may also be introduced and will be supplied by the instructor.

Program Announcement for the **Ruth L. Kirschstein National Research Service Awards (NRSA)** for Individual Predoctoral Fellows (F31). Ruth L. Kirschstein National Research Service Award Individual Fellowship Application Instructions and forms (See Blackboard site).

Class materials are accessible via UAlbany's Blackboard system.

COURSE REQUIREMENTS: Course is graded A-E. Grading will be based on assignments (20%), two exams (40%), class participation (10%) and the preparation and presentation of a National Research Service Award (NRSA) Grant or suitable alternative*(30%). In addition, proper completion of the administrative forms, as described in the associated directions, will determine grades for the administrative section of the writing project. Attendance is mandatory and along with active participation in class discussions, will be used to determine the participation grade. Exams will consist of essay-based questions and will test understanding of concepts introduced in class and assigned readings. The grant assignment or suitable alternative will be a semester long project that results in a 10-page research proposal and final oral presentation (20 minute power point) of the project. Grades for this project are based on organization, clarity, scientific understanding and writing style and the ability to orally present and discuss your project.

* A suitable alternative to the NRSA grant-writing project is available for those students who would be better served by another granting agency or who would rather write a review article. Those wishing to undertake other grant forms (i.e. public health grants available from the CDC or foundation grants) or who wish prepare an extensive review of a public health issue can do so in consultation with Dr. Conklin.

Grading scale:

Course Average	Final Grade
94-100	A
90-93	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
65-72	D*
<65	E

*Not applicable for graduate credit

CLASS POLICIES:¶

ATTENDANCE: http://www.albany.edu/health_center/medicaexcuse.shtml.

ABSENCE DUE TO RELIGIOUS OBSERVANCE: Refer to New York State Education Law Section 224-A (<https://www.nysenate.gov/legislation/laws/EDN/224-A>) whereby campuses are required to excuse, without penalty, individual students absent because of religious beliefs, and to provide equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences.

SCHOOL AND UNIVERSITY RESOURCES AND POLICIES:¶

ACADEMIC INTEGRITY: Academic dishonesty will not be tolerated and will lead to disciplinary action as deemed appropriate by the faculty and/or the University's judicial process. Students are expected to be familiar with the University's Standards of Academic Integrity, including the "[Community Rights and Responsibilities](#)" document and additional information located at the following web addresses: (https://www.albany.edu/content_images/AcademicIntegrity.pdf, https://www.albany.edu/graduatebulletin/requirements_degree.htm, and <https://library.albany.edu/infolit/integrity>).

These guidelines address plagiarism, cheating on exams, multiple submissions, forgery, sabotage, unauthorized collaboration, falsification, bribery, theft, damage, or misuse of library and IT resources. Penalties for violations of academic integrity may include, but are not limited to, a failing grade on the assignment or exam in question or for the course as a whole.

Every student has the responsibility to become familiar with the standards of academic integrity at the University. Faculty members must specify in their syllabi information about academic integrity, and may refer students to this policy for more information. Nonetheless, student claims of ignorance, unintentional error, or personal or academic pressures cannot be excuses for violation of academic integrity. Students are responsible for familiarizing themselves with the standards and behaving accordingly, and UAlbany faculty are responsible for teaching, modeling and upholding them. *Anything less undermines the worth and value of our intellectual work, and the reputation and credibility of the University at Albany degree.* (University's Standards of Academic Integrity Policy, Fall 2013)

ACCOMMODATIONS

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 130, 518-442-5490, DRC@albany.edu). That office will provide the course instructor with verification of your disability, and will recommend appropriate accommodations.

MENTAL HEALTH

As a student there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily life. The University at Albany Counseling and Psychological Services (CAPS) provides free, confidential services including individual and group psychological counseling and evaluation for emotional, social and academic concerns. Given the COVID pandemic, students may consult with CAPS staff remotely by telephone, email or Zoom appointments regarding issues that impact them or someone they care about. For questions or to make an appointment, call (518) 442-5800 or email consultation@albany.edu. Visit www.albany.edu/caps/ for hours of operation and additional information.

If your life or someone else's life is in danger, please call 911. If you are in a crisis and need help right away, please call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

Students dealing with heightened feelings of sadness or hopelessness, increased anxiety, or thoughts of suicide may also text "GOT5" to 741741 (Crisis Text Line).

TITLE IX REPORTING

"Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits discrimination on the basis of sex in federally funded education programs and activities.

The SUNY-wide Sexual Violence Prevention and Response Policies prohibit offenses defined as sexual harassment, sexual assault, intimate partner violence (dating or domestic violence), sexual exploitation, and stalking. The SUNY-wide Sexual Violence Prevention and Response Policies apply to the entire University at Albany community, including students, faculty, and staff of all gender identities. The University at Albany provides a variety of resources for support and advocacy to assist individuals who have experienced sexual offenses.

Confidential support and guidance can be found through the Counseling Center (518-442-5800, https://www.albany.edu/counseling_center/), the University Health Center (518-442-5454, https://www.albany.edu/health_center/), and the Interfaith Center (518-489-8573, <https://www.albany.edu/spirituality/onCampus.shtml>). Individuals at these locations will not report crimes to law enforcement or university officials without permission, except for in extreme circumstances, such as a health and/or safety emergency. Additionally, the Advocates at the University at Albany's Advocacy Center for Sexual Violence are available to assist students without sharing information that could identify them (518-442-CARE, <https://www.albany.edu/advocacycenter/>).

Sexual offenses can be reported non-confidentially to the Title IX Coordinator within The Office for Equity and Compliance (518-442-3800, <https://www.albany.edu/equity-compliance/>, Building 25, Room 117) and/or the University Police Department (518-442-3131, <http://police.albany.edu/>).

Please note, faculty members are considered "responsible employees" at the University at Albany, meaning that they are required to report all known relevant details about a complaint of sexual violence to the University's Title IX Coordinator, including names of anyone involved or present, date, time, and location.

In case of an emergency, please call 911.

COURSE SCHEDULE:

Date	Instructor	Class meeting	Work due
Thursday	19-Jan-23	Conklin	Introduction
Tuesday	24-Jan-23	Conklin	Grant Overview
Thursday	26-Jan-23	Conklin	Grant Overview
Tuesday	31-Jan-23	Dr Sridar Chittur	Advanced DNA technologies
Thursday	2-Feb-23	Dr Sridar Chittur	Advanced DNA technologies
Tuesday	7-Feb-23	Dr Qishan Lin	Proteomics
Thursday	9-Feb-23	Dr Qishan Lin	Proteomics
Tuesday	14-Feb-23	Dr Ramune Reliene	Mouse transgenesis
Thursday	16-Feb-23	Dr Ramune Reliene	Carcinogenesis in mouse models
Tuesday	21-Feb-23	Dr Ramune Reliene	Carcinogenesis in mouse models
Thursday	23-Feb-23	Dr BK Lee	Application of NGS to biomedical sciences
Tuesday	28-Feb-23	Dr BK Lee	Application of NGS to biomedical sciences
Thursday	2-Mar-23	Conklin	Functional genomic approaches
Tuesday	7-Mar-23	Conklin	Functional genomic approaches
Thursday	9-Mar-23	Dr Sridar Chittur	FACS / Genomics
Tuesday	14-Mar-23	SPRING	
Thursday	16-Mar-23	BREAK	
Tuesday	21-Mar-23	Student Outlines:NRSA	Test 1 due
Thursday	23-Mar-23	Student Outlines:NRSA	
Tuesday	28-Mar-23	Student Outlines:NRSA	
Thursday	30-Mar-23	Student Outlines:NRSA	Current events due
Tuesday	4-Apr-23	Grant workshop	
Thursday	6-Apr-23	Grant workshop	Grant Draft due (4 pages)
Tuesday	11-Apr-23	Dr Michael Gerdes	IHC-based human diagnostics
Thursday	13-Apr-23	Dr Michael Gerdes	IHC-based human diagnostics
Tuesday	18-Apr-23	Grant workshop	
Thursday	20-Apr-23	Student Presentations	Test 2 due
Tuesday	25-Apr-23	Student Presentations	
Thursday	27-Apr-23	Student Presentations	Grant Draft due (10 pages)
Tuesday	2-May-23	Student Presentations	
MONDAY	8-May-23	FINAL GRANT PRPOSAL DUE 5:00 PM Eastern	

University at Albany
School of Public Health

**BMS 670/EHS 675 Responsible Conduct
of Scientific Research**

In Person-CMS Collaboratorium

**Albany College of Pharmacy and Health Sciences: Formerly the Center for
Medical Sciences (CMS)**

150 New Scotland ave.

**Fridays, 1:10-2:05 p.m.
Fall 2022**

*The University at Albany reserves the discretion to change the date, time, location and modality of
instruction*

COURSE DIRECTOR

Bill Wolfgang, Ph.D.
Research Scientist, NYSDOH Wadsworth Center
Clinical Associate Professor, Department of Biomedical Sciences, University at Albany
(518) 486-1156
william.wolfgang@health.ny.gov
wwolfgang@albany.edu

COURSE INSTRUCTORS

Glenn Monastersky, Ph.D.
Adjunct Professor, Department of Biomedical Sciences, University at Albany
gmonastersky@albany.edu

Kathy Chou, Ph.D.
Research Scientist, NYSDOH Wadsworth Center
Clinical Assistant Professor, Department of Biomedical Sciences, University at Albany
(518) 474-3043
kathy.chou@health.ny.gov

OFFICE HOURS: By Appointment.

COURSE CREDIT HOURS: 1

COURSE PREREQUISITES: None

GRADING: Satisfactory / Unsatisfactory

COURSE DESCRIPTION:

The course is designed to meeting current federal regulations, which require that all institutions receiving NIH training grants provide training in the responsible conduct of research. The purpose of this course is to engage students in reading, considering, and discussing the responsible conduct of scientific research. In addition, this course is designed to fulfill the following core competency: "Apply ethical principle to the design, collection and dissemination of research data" for PhD and MS degrees in Department of Biomedical Sciences, School of Public Health, University at Albany.

COURSE FORMAT:

Course topics will be covered by a combination of one or more of the following elements: lectures, assigned readings in the course text ("Introduction to the Responsible Conduct of Research"), additional recommended readings provided by the instructors, assigned case studies, and discussion in class. The course will be structured around weekly 1 hour seminar sessions. The first half of the session will be devoted to a discussion of the assigned readings and the ethical issues which they raise. The second half of the session will be devoted to discussing and applying those issues to the assigned case for the session.

COURSE REQUIREMENTS:

Attendance and participation in the classroom discussion is mandatory and will provide the basis for credit. Grades are assigned on a "Satisfactory/Unsatisfactory" basis.

To receive credit for the course, each student will be expected to:

- 1) Lead at least one classroom discussion; and
- 2) Actively participate in all classroom discussions.

Attendance: Although students are expected to attend all classes, we understand that emergencies can sometimes arise. Students who miss a class will be asked to write a short paper outlining a controversy or discussing an issue relevant to the responsible conduct of scientific research. The topic of the paper will be assigned by one of the course instructors. The length of the paper will increase exponentially for each class missed, **for the first missed class, students will write a 2-page paper; for the second class, a 4-page paper; for the third class, an 8-page paper, etc.** Students who fail to read the assigned materials and who attend class unprepared to fully participate also will be required to write a paper. Format of the paper: font size (11 points or larger), line spacing (1.5 lines), and margin (1 inch). http://www.albany.edu/health_center/medicaexcuse.shtml.

Absence due to religious observance: Instructors must explicitly refer to New York State Education Law Section 224-A (<https://www.nysenate.gov/legislation/laws/EDN/224-A>) whereby campuses are required to excuse, without penalty, individual students absent because of religious beliefs, and to provide equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences. Faculty should work directly with students to accommodate absences.

PUBLIC HEALTH FOUNDATIONAL KNOWLEDGE DOMAINS AND COMPETENCIES:

“The Council on Education in Public Health (CEPH) requires accredited degree programs in public health to address certain knowledge domains and competencies.” This course addresses the following Foundational Knowledge Domains and Competencies for MS and Ph.D students. “Apply ethical principles to the design, collection and dissemination of research data”.

Foundational BMS 670 Competencies	Assessment Methods
Apply ethical principle to the design, collection and dissemination of research data	Reading, considering, and discussing the responsible conduct of scientific research. In-person attendance is required as is class participation and leading one class discussion.

ONLINE TEXT: ORI Introduction to Responsible Conduct of Research
 Nicholas H. Steneck, Revised 2007, <https://ori.hhs.gov/sites/default/files/rcrintro.pdf>

Additional readings will be assigned by the instructors. All students are expected to review the assigned reading and cases prior to class. Students also are encouraged to independently research and review other cases and papers related to the weekly discussion topics.

SOME RECOMMENDED ON-LINE RESOURCES:

- American Journal of Bioethics/
 Bioethics Net: <http://bioethics.net/>

- Belmont Report: <http://ohsr.od.nih.gov/guidelines/belmont.html>

- Journal of Medical Ethics Online: <http://jme.bmjournals.com/>

- Natl. Bioethics Advisory Committee: <http://georgetown.edu/research/nrcbl/nbac/>

- Office of Research Integrity: <http://ori.dhhs.gov/>

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to our mission to ensure that each member of our community has full opportunity to thrive. We recognize that all of us must embrace the responsibility and accountability for upholding these values, as they are central, not only to our mission, but also to individual growth, education excellence and the advancement of knowledge.

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SCHEDULE:

Class	Date	Topics	Steneck Readings	Student Leader
1	8/26	Introduction to Course; Ethics and Decision Making	pp 1-17	Instructors
2	9/2	Research Misconduct	pp 18-29	
3	9/9	Data Management Practices	pp 86-101	
4	9/16	Mentoring and Trainee Responsibilities	pp 102-115	
5	9/23	Collaborative Research	pp 116-127	
6	9/30	Authorship/Publication	pp 129-145	
7	10/7	Peer Review	pp 146-157	
8	10/14	Conflicts of Interest	pp 66-81	
9	10/21	The Welfare of Laboratory Animals	pp 50-65	
10	10/28	Dual Use Research of Concern (DURC)	Assigned Readings	
11	11/4	The Protection of Human Subjects	pp 32--49	
12	11/11	Cross-Cultural Research	Assigned Readings	

13	11/18	Genetic Testing and Research	Assigned Readings	
14	12/2	Guest Lecture/Open discussion	TBD	

Additional Readings

8/26 Introduction to Course; Ethics and Decision-making

- Steneck pp 1-17: Chapter 1 - Rules of the Road

9/2 Research Misconduct

- Fixing Fraud-The Scientist
- NYSDOH APPM 633.4 – Scientific Integrity
- ORI-Image Manipulation
- Truth and Consequences
- Lessons from researcher rehab

9/9 Data Management Practices

- Imanishi-Kari Case (Scientific American Profile)
- Data Management University of Pittsburgh
- To Replicate or Not To Replicate?
- Is there a reproducibility crisis? (Nature 2016)

9/16 Mentoring and Trainee Responsibilities

- Lelieveldt: What (Not) to Expect from Your Supervisor
- Yaner_Graduate Student Mentoring
- Bob Bailey Case Study
- Harran/Sanji/UCLA case study

9/23 Collaborative Research

- When Scientists Don't Share Is Secrecy a Necessary Evil?
- ORI_Making Collaborations Work
- NIH_UBMTA_Master
- NIH_Simple letter for material transfer

9/30 Authorship / Publication and Plagiarism

- Charlie West Case Study
- Diane Archer Case Study
- Rethinking retractions
- Stem-cell cloner acknowledges errors in groundbreaking paper_2013

10/7 Peer Review

- Global Trend More Science, More Fraud_2005
- Marcus and Oransky Nature 2011
- PubPeer lawsuit
- Ghostwriting

10/14 Conflicts of Interest

- COI Reading 1
- COI Reading 2
- COI Reading 3
- Jesse Gelsinger Case
- Vioxx Studies
- Competing Interest_PLoS

10/21 The Welfare of Laboratory Animals

- The ethics of research involving animals – short guide
- The Lifeboat Test-McCrone
- Jenny Ito Case Study

10/28 Dual Use Research of Concern (DURC)

- Fact sheet: enhancing biosafety and biosecurity
- Dual Use Research The Ongoing Debate and New Regulations
- Risks and benefits of gain-of-function experiments with pathogens of pandemic potential
- COVID - DURC

11/4 The Protection of Human Subjects

- Belmont Report
- NIH VideoCast - Belmont Commemoration 25th Anniversary Tribute
- NASA Bioethicist

11/12 Cross-Cultural Research

- The Standard of Care Debate
- Trovan and Meningitis case study
- Informed consent in developing case study
- Clinical Trials in Guatemala

11/18 Genetic Testing and Research

- Privacy and protection in the genomic era
- Myriad Genetics
- Case Study-Stephen
- HeLaNature
- HeLaComment
- Can a human gene be patented?
- The Golden State Killer Is Tracked Through a Thicket of DNA, and Experts Shudder - The New York Times copy
- Your DNA Profile is Private A Florida Judge Just Said Otherwise

SCHOOL AND UNIVERSITY RESOURCES AND POLICIES:

Policy on Academic Integrity as required by UAlbany Senate to be included on all syllabi as of 2013

http://www.albany.edu/graduatebulletin/requirements_degree.htm#standards_integrity, or Undergraduate Bulletin http://www.albany.edu/undergraduate_bulletin/regulations.html.

Every student has the responsibility to become familiar with the standards of academic integrity at the University. Faculty members must specify in their syllabi information about academic integrity, and may refer students to this policy for more information. Nonetheless, student claims of ignorance, unintentional error, or personal or academic pressures cannot be excuses for violation of academic integrity. Students are responsible for familiarizing themselves with the standards and behaving accordingly, and UAlbany faculty are responsible for teaching, modeling and upholding them. Anything less undermines the worth and value of our intellectual work, and the reputation and credibility of the University at Albany degree.

(University's Standards of Academic Integrity Policy, Fall 2013)

Accommodations

Disability Access and Inclusion Student Services at UAlbany strongly urges that the following statement be included in the each course syllabus:

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of Disability Access and Inclusion Student Services (Campus Center 130, 518-442-5501, daiss@albany.edu). That office will provide the course instructor with verification of your disability, and will recommend appropriate accommodations.

Mental Health

The University at Albany recognizes the importance of our students' mental health and encourages faculty to include the following statement on each course syllabus in order to provide resources and destigmatize mental health issues:

As a student there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily life. The University at Albany Counseling and Psychological Services (CAPS) provides free, confidential services including individual and group psychological counseling and evaluation for emotional, social and academic concerns. Given the COVID pandemic, students may consult with CAPS staff remotely by telephone, email or Zoom appointments regarding issues that impact them or someone they care about. For questions or to make an appointment, call (518) 442-5800 or email consultation@albany.edu. Visit www.albany.edu/caps/ for hours of operation and additional information.

If your life or someone else's life is in danger, please call 911. If you are in a crisis and need help right away, please call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

Students dealing with heightened feelings of sadness or hopelessness, increased anxiety, or thoughts of suicide may also text "GOTS" to 741741 (Crisis Text Line).

Title IX Reporting

UAlbany faculty members are required to report all known relevant details about a complaint of sexual violence to the Office of Equity and Compliance. Below is language, vetted through the General Counsel's office, that professors can include in their syllabi if they want to offer this information to their students. Including this language is optional, not mandatory; however, if professors do opt to include Title IX language in a syllabus, do not change the language provided below. If interested in including a Title IX statement that at all differs from that provided below, please contact the Title IX Coordinator for vetting prior to distribution.

“Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits discrimination on the basis of sex in federally funded education programs and activities.

The SUNY-wide Sexual Violence Prevention and Response Policies prohibit offenses defined as sexual harassment, sexual assault, intimate partner violence (dating or domestic violence), sexual exploitation, and stalking. The SUNY-wide Sexual Violence Prevention and Response Policies apply to the entire University at Albany community, including students, faculty, and staff of all gender identities. The University at Albany provides a variety of resources for support and advocacy to assist individuals who have experienced sexual offenses.

Confidential support and guidance can be found through the Counseling Center (518-442-5800, https://www.albany.edu/counseling_center/), the University Health Center (518-442-5454,

https://www.albany.edu/health_center/), and the Interfaith Center (518-489-8573,

<https://www.albany.edu/spirituality/onCampus.shtml>). Individuals at these locations will not report crimes to law enforcement or university officials without permission, except for in

extreme circumstances, such as a health and/or safety emergency. Additionally, the Advocates at the University at Albany's Advocacy Center for Sexual Violence are available to assist students without sharing information that could identify them (518-442-CARE,

<https://www.albany.edu/advocacycenter/>).

Sexual offenses can be reported non-confidentially to the Title IX Coordinator within The Office for Equity and Compliance (518-442-3800, <https://www.albany.edu/equity-compliance/>,

Building 25, Room 117) and/or the University Police Department (518-442-3131,

<http://police.albany.edu/>).

Please note, faculty members are considered “responsible employees” at the University at Albany, meaning that they are required to report all known relevant details about a complaint of sexual violence to the University’s Title IX Coordinator, including names of anyone involved or present, date, time, and location.

In case of an emergency, please call 911.”

University at Albany
Program Revision Proposal
Biomedical Sciences MS
Appendix 3

PARTNER INSTITUTION LETTER OF APPROVAL



Department of Health

KATHY HOCHUL
Governor

JAMES V. McDONALD, M.D., M.P.H.
Commissioner

JOHANNE E. MORNE, M.S.
Acting Executive Deputy Commissioner

November 15, 2023

Interim Dean Erin Bell
School of Public Health
University at Albany
George Education Center
One University Place
Rensselaer, NY 12144-3445

Dear Dr. Bell,

With this letter, I confirm the Department of Health's approval of the changes to the Master of Public Health and Biomedical Sciences Master of Science degrees as set forth in Form 3A, Program Revision Proposal: Changes to an Existing Program. Thank you for keeping me apprised of these curricular matters.

Sincerely,

James V. McDonald, MD, MPH
Commissioner of Health




Distance Education Format Proposal For A Proposed or Registered Program

Form 4
Version 2016-10-18

When a new or existing program is designed for a [distance education format](#), a campus Chief Executive Officer or Chief Academic Officer should submit a signed cover letter and this completed form to the SUNY Provost at program.review@suny.edu. According to MSCHE, the 50% standard includes only courses offered in their entirety via distance education, not courses utilizing mixed delivery methods. Also, MSCHE requires that the first two programs for which 50% or more is offered through distance education be submitted for Commission review and prior approval of a substantive change.

- All campuses must complete the following sections: Sections 1 - 3, and Part B: Program Specific Issues.
- Part A must be completed if the proposing campus has not previously submitted this form with a completed Part A: Institution-wide Issues, or has made significant changes to its institution-wide distance education operations since last completing Part A. This applies even if the institution has programs registered to be delivered at a distance.

Section 1. General Information	
a) Institutional Information	Institution’s 6-digit SED Code : 210500
	Institution’s Name: University at Albany
	Address: 1400 Washington Avenue, Albany, NY 12222
b) Registered or Proposed Program	Program Title: Biomedical Sciences
	SED Program Code 85296
	Award(s) (e.g., A.A., B.S.): MS
	Number of Required Credits: Minimum [36] If tracks or options, largest minimum []
	HEGIS Code : 0499
	CIP 2010 Code : 26.0102
c) Distance Education Contact	Name and title: Colleen Davis, Assistant Dean Telephone: (518) 437-5063 E-mail: cdavis@albany.edu
d) Chief Executive or Chief Academic Officer Approval	Signature affirms that the proposal has met all applicable campus administrative and shared governance procedures for consultation, and the institution’s commitment to support the proposed program. E-signatures are acceptable. Name and title: Carol H. Kim, Provost and Senior Vice President for Academic Affairs 
	Signature and date: 1/25/2024
	If the program will be registered jointly¹ with one or more other institutions, provide the following information for <u>each</u> institution:
	Partner institution’s name and 6-digit SED Code: Name, title, and signature of partner institution’s CEO (or append a signed letter indicating approval of this proposal): New York State Department of Health 000041

Section 2: Enrollment

¹ If the partner institution is non-degree-granting, see SED’s [CEO Memo 94-04](#).

Year	Anticipated Headcount Enrollment			Estimated FTE
	Full-time	Part-time	Total	
1	3	2	4	4
2	4	3	5.5	5.5
3	4	3	5.5	5.5
4				
5				

Section 3: Program Information

- a) **Term length** (in weeks) for the distance program: 15
- b) Is this the same as term length for classroom program? [] No [X] Yes
- c) How much "**instructional time**" is required per week per credit for a distance course in this program? (Do not include time spent on activities that would be done outside "class time," such as research, writing assignments, or chat rooms.) **NOTE:** See [SUNY policy on credit/contact hours](#) and [SED guidance](#).

The online classes are designed to be equivalent in terms of instructional time and total material covered to the face to face classes, which follow SED guidelines of 150 minutes/week for 15 weeks.

- d) What proportion or percentage of the program will be offered in Distance Education format? Will students be able to complete 100 percent of the program online? If not, what proportion will be able to be completed online?

A student would be able to complete 50% of the degree online. The campus-based version of the program is also offered, so a student can also do a mix of in-person and online courses if that is preferable.

- e) What is the maximum number of students who would be enrolled in an online course section?

At the graduate level there will be no more than 30 students enrolled in an online course section.

Part A: Institution-wide Issues: Submit Part A only for the **first** Distance Education program proposed by your institution using this form. SUNY and the State Education Department will keep this in a master file so that your institution will not need to resubmit it for each new proposed online program, **unless there are significant changes, such as a new platform.**

Part A.1. Organizational Commitment

- a) Describe your institution's planning process for Distance Education, including how the need for distance access was identified, the nature and size of the intended audiences, and the provisions for serving those audiences, including how each student's identity will be verified.
- b) Describe your institution's resources for distance learning programs and its student and technical support services to ensure their effectiveness. What course management system does your institution use?
- c) Describe how the institution trains faculty and supports them in developing and teaching online courses, including the pedagogical and communication strategies to function effectively. Describe the qualifications of those who train and/or assist faculty, or are otherwise responsible for online education.

- d) If your institution uses courses or academic support services from **another provider**, describe the process used (with faculty participation) to evaluate their quality, academic rigor, and suitability for the award of college credit and a degree or certificate.
- e) Does your institution have a clear **policy on ownership of course materials** developed for its distance education courses? How is this policy shared with faculty and staff? **NOTE:** You may refer to [SUNY's statement on copyright and faculty ownership of instructional content](#), and/or faculty contract provisions.

Part A.2. Learner Support

- a) Describe how your institution provides distance students with **clear information** on:
 - Program completion requirements
 - The nature of the learning experience
 - Any specific student background, knowledge, or technical skills needed
 - Expectations of student participation and learning
 - The nature of interactions among faculty and students in the courses.
 - Any technical equipment or software required or recommended.
- b) Describe how your institution provides distance learners with adequate **academic and administrative support**, including academic advisement, technical support, library and information services, and other student support services normally available on campus. Do program materials clearly define how students can access these support services?
- c) Describe how **administrative processes** such as admissions and registration are made available to distance students, and how program materials inform students how to access these services.
- d) What **orientation** opportunities and resources are available for students of distance learning?

Part B: Program-Specific Issues: Submit Part B for each new request to add Distance Education Format to a proposed or registered program.

Part B.1. Learning Design

- a) How does your institution ensure that the **same academic standards and requirements** are applied to the program on campus and through distance learning? If the curriculum in the Distance Education program differs from that of the on-ground program, please identify the differences.

The curriculum for the Distance Education program is the same as the campus-based version. The courses have the same template/syllabi, instructors, and requirements. Students may take participate either on campus or via an online format.
- b) Are the courses that make up the distance learning program offered in a sequence or configuration that allows **timely completion of requirements**?

Courses will be offered on a regular basis, with each student assigned an academic advisor who works with students to make sure courses they need are available, and advising which semester to take a particular course. All courses are available at on a rotating basis (typically every year or every semester). The online program can be complete in the same amount of time as the face-to-face program.
- c) How do faculty and others ensure that **the technological tools** used in the program are appropriate for the content and intended learning outcomes?

The faculty use a LMS standard platform (currently Brightspace). This platform is updated regularly and enables video, student discussion and collaboration, weblinks, and many other resources.

- d) How does the program provide for appropriate and flexible interaction between faculty and students, and among students?

Online as organized by the instructor. Faculty and programs are also supported in using a variety of technologies and pedagogical approaches to support the effectiveness of their online courses and programs.

- e) How do faculty teaching online courses verify that the student who registers in a distance education course or program is the same student who participates in and completes the course or program and receives the academic credit?

The University at Albany utilizes two layers of authorization and authentication for students who participate in online learning. Students are required to establish an account and to log in to the University password protected domain using the NETID protocol and must also log into the Learning Management System using their university credentials. The LMS also uses tools (e.g., SafeAssign, TurnItIn) to monitor the completion of certain tasks within the LMS environment.

Part B.2. Outcomes and Assessment

- a) Distance learning programs are expected to produce the **same learning outcomes** as comparable classroom-based programs. How are these learning outcomes identified – in terms of knowledge, skills, or credentials – in course and program materials?

Each course has a syllabus with course goals, content focus, readings, and assignments. Program faculty routinely discuss and revise the course syllabi student learning outcome, the same for both the campus and online formats based on program assessments and evidence of student learning.

- b) Describe how the **means chosen for assessing student learning** in this program are appropriate to the content, learning design, technologies, and characteristics of the learners.

All the courses have assessments aligned to our student learning outcomes. The assessments are specific to the course goals and may involve video analysis, discussion, essay response, written reflection, response to learning, analysis of teaching strategies, critique of available resources, publications etc. The assessments require integration, application, and analysis of course content.

Part B.3. Program Evaluation

- a) What process is in place to monitor and **evaluate the effectiveness** of this particular distance education program on a regular basis?

Whether a course is face-to-face or online there are similar methods to evaluate program effectiveness: a yearly review of student learning outcomes. The periodic assessment and length of assessment cycle is the same for the currently registered program and the distance education program.

- b) How will the evaluation results will be used for **continuous program improvement**?

In addition to the on-going, regular University at Albany assessment cycle, the program leadership (e.g. concentration or program directors) are responsible for both soliciting and putting forward improvements to the program on a continuous basis. Particular attention will be paid to reducing and eliminating gaps between the delivery methods at the course level, as well as the program level. We also acknowledge unique aspects of evaluating and improving online course offerings; this includes accessibility, learning management technology, and navigation issues that are incorporated into evaluation and improvement. These areas are also addressed via survey and feedback from students to provide program improvements by the program leadership.

- c) How will the evaluation process assure that the *program results in learning outcomes appropriate to the rigor and breadth* of the college degree or certificate awarded?

The program evaluation is the same for students taking online or campus-based courses. The courses meet university requirements for rigor and breadth required of graduate coursework, including credits, format, and assignments needed for a graduate degree. Program leadership takes advantage of extant advisory boards of external professionals in the industry to assist in this process.

Part B.4. Students Residing Outside New York State

SUNY programs must comply with all "[authorization to operate" regulations](#) that are in place in other U.S. states where the institution has enrolled students or is otherwise active, based on each state's definitions.

- a) What processes are in place to monitor the U.S. state of residency of students enrolled in any distance education course in this program while residing in their home state?

Distance learning students will be flagged in our integrated administrative system. This will allow regular querying so that we can identify any out of state students who participate from their home state. The University is a member of the National Council for State Authorization Reciprocity Agreement (NC-SARA). This is a voluntary agreement among member states and U.S. territories that establishes comparable national standards for interstate offering of postsecondary distance-education courses and programs. As a member institution, the University is approved to offer distance education courses to students outside of New York.

- b) Federal regulations require institutions delivering courses by distance education to provide students or prospective students with contact information for filing complaints with the state approval or licensing entity in the student's state of residency and any other relevant state official or agency that would appropriately handle a student's complaint. What is the URL on your institution's website where contact information for filing complaints for students in this program is posted? **NOTE:** Links to information for other states can be found at [here](#).

<https://www.albany.edu/online>