Appendix to Enhancing Student Success/Equalization and Diversity:

Student success and equalization within the College of Science is essential for OSU to be among the top 10 land grant universities in America. Dedicated individuals and small groups of faculty have made outstanding efforts to support science students and students from other colleges taking science courses, having an important impact on student success. However, these efforts are often occurring in isolation or without cross-department coordination and sharing of successful approaches. With the momentum started by these Faculty Leaders in Student Success and prioritization by the University, the College of Science is primed for a cultural change that will support specific mechanisms to improve student success and equalization.

The summary below outlines the initial steps that will be taken by the Dean’s Office to lead the college in student success and equalization efforts. The summary will be followed by the efforts proposed by each unit in the college.

CULTURAL CHANGE

Elevate undergraduate teaching mission to be equal with research mission.
Instructors are teaching a majority of the lower level student credit hours, particularly in the mathematics and chemistry courses that are essential for success in the STEM majors. The college applauds and supports the efforts of the University and Faculty Senate to improve compensation and contracts for Instructors at OSU. In addition, the College leadership is committed to communicating to all faculty the valuable contributions Instructors make toward the mission of the University and providing opportunities for Instructors to have a voice in college and departmental operations.

Improving student success will require trying new approaches for student learning and engagement, which experience suggests can result in lower Student Evaluation of Teaching (SET) scores. Instructors are particularly vulnerable to the traditional emphasis on SET scores in evaluations limiting their ability to take risks by attempting new methods in teaching. The College leadership is committed to supporting Instructors in the implementation of best practices in teaching as students become comfortable with the cultural change needed for a transformative educational experience.

Equalization

The first step toward equity of success in the College of Science is awareness and prioritization within the faculty ranks. The college initiated a strategic planning process this summer and the College leadership is committed to communicating the demographics for the relevant STEM fields, national trends and climate for underrepresented minorities to the faculty as college and department goals are set and metrics defined. We have initiated this process already, and will enhance the tracking and prioritization through adding an additional Associate Dean in the college whose focus will be in our strategic initiatives related to student success, equalization and diversity.

MECHANISMS
Establish a Professional Learning Community (PLC) focused on student success and equalization.

A college-level PLC would allow for cross-unit sharing and dissemination of best practices within STEM education. College of Science Instructors have developed a learning assistant program in Integrative Biology, a Success TA model in Chemistry, and flipped classrooms in Physics. Although these and other efforts have been presented at national meetings, limited communication has occurred within the college and university. The College of Science PLC would provide a mechanism for presenting new approaches for student learning and engagement, as well provide comradery, mentoring, and professional development opportunities. The Associate Dean for Academic and Student Affairs, Julie Greenwood, and the college PLC leadership team consisting of Indira Rajagopal and Leslie Blair from the Life Sciences, Margie Haak from the Physical Sciences, and Mary Beisiegel from the Quantative Sciences, will complete the Center for Teaching and Learning PLC training this fall with implementation of the PLC during the winter and spring terms. In addition, plans for unit-level PLCs are also being discussed for departments with large numbers of Instructional faculty such as Integrative Biology and Mathematics.

The 3 C’s of Student Success and Equalization – Cohorts, Connectivity, and Caring

**Cohorts.** The Louis Stokes Alliance for Minority Participation (LSAMP) in STEM has clearly demonstrated that the organization of students from underrepresented groups into a cohort, as much as two weeks prior to the start of classes, increases student retention and success at OSU. This year, the College of Science provided funding for 20 students to participate in the two week bridge program and 50 students to participate in the two day academy. Equally important, the Dean and members from the college participated in various activities with the students. Starting this fall, a second cohort-based program comes online led by Kevin Ahern, housed in the department of Biochemistry and Biophysics, and supported by funds from NSF and the College. This program will focus on providing undergraduate research opportunities for students from underrepresented groups in STEM. The College is committed to the success of these two cohort-based approaches for improving equity of success and is discussing similar methods for assisting first-generation and underrepresented groups with the Academic Success Center.

**Connectivity.** As Jeff Selingo expressed at University Day, faculty engagement and encouragement leads to student success. Although office hours are a viewed as a well-established opportunity for students to interact one-on-one with faculty members, office hours are underutilized. The college plans to 1) coach students how to effectively use office hours to promote learning and success, 2) encourage the use of small classrooms or conference rooms for office hours, particularly for large enrollment classes, 3) encourage faculty to promote their own office hours, and 4) hold college level and encourage unit-level social events to facilitate interactions between faculty and students.

**Connection** with the College needs to begin during recruitment, grow with START and Connect Week, and be nurtured and maintained throughout the fall term and school year. The college is committed to attendance of events by the Dean, Associate Dean, Chairs, and faculty, and the use of social media and
electronic communication to connect with students. In addition, a new mechanism has evolved in the College of Science with the establishment of a Student Advisory Committee which not only provides input on the student experience to the Dean, but led the way for the College’s first ever Welcome Social which was an outstanding bonding experience as the program proceeded through the heavy downpour Thursday of Connect Week. Our student leaders are also working with the Dean’s office to develop 1) unit-based peer mentoring programs, 2) cross-unit communication of seminars, events, and learning resources, and 3) volunteer and service learning opportunities.

**Caring.** The College Leadership is committed to developing a community where the faculty and staff appreciate the privilege and responsibility we have to guide and assist each student on their individualized path to success. The college has already initiated mechanisms to educate faculty and staff about unconscious bias and is using web and social media to make diversity initiatives visible throughout the College. Similar mechanisms will be used to support the “It’s On Us” campaign. Feeling comfortable and safe are basic human rights and essential for the success of all of our students.

**Recruitment Plan:**

The College of Science is committed to recruiting diverse faculty and plans to be proactive in both recruiting through traditional channels established by OSU as well as through targeted recruiting. A couple of our departments have already identified opportunity hiring for the positions described below. Our college goal is to significantly increase the diversity among our faculty through this year’s hiring. We have required each department to have faculty who have gone through the search advocacy training. Many of the department chairs, associate deans and the dean have gone through the search advocacy training. Every search committee will be required to have a couple of search advocates, advertise broadly, include the statements developed by the provost office related to commitment to student success and equalization in every position description, and the department chair and the dean will evaluate the candidate pool to ensure diversity before the candidates will be invited to come for a campus interview.

Each department has provided a recruitment plan below. Also, the departments indicate what they are currently doing in the area of student success and what will be done differently with additional hires.

1. Physics Education Research.
   Connected to “Student Success and Diversity.”

Synergy with Mathematics, Chemistry, Chemical Engineering, Education

Material added since previous write-up, in response to questions:

1) Advancing student success, in place:
   • Interactive classrooms used for some PH211-2-3 sections, expanding under WIDER
   • Student designed first year experience course
   • Help rooms for all students
• Mentor program, pairing lower and upper division physics students
• Society for Physics Students actively connecting all physics students to the department
• PH111, Introductory Physics course for prospective K-8 teachers

2) Culture/climate, in place:
• Weekly faculty discussions about curriculum, alternating lower/upper/graduate
• Paradigms program
• Long history of common responsibility for student success in upper division
• Latest PER hire focused on lower division improvement
• Chair will step down and take over lower division organization
• Teaching seminar focusing on education methods
• There is a strong connection between long term success as a major in physics and short term success in the introductory physics courses for all majors. This hire will perform research that will lead to results which are very beneficial for improving the lower division courses

3) Recruitment:
• Use PER listserv to reach all qualified candidates and leads to candidates
• June 6-7 2014 Workshop on the Status of the Upper-Division Physics Curriculum brought in many prospective candidates to Corvallis
• Write letters to all current postdoctoral fellows in the field, and pay special attention to all candidates who are part of an URM
• Write all physics departments

4) Metrics:
• Use FCI/CCEM data collection for lower division courses to monitor progress of URM students in lower division courses
• This position uses qualitative assessment, which is a standard and widely accepted tool to evaluate student success, but cannot be scored as simple metrics
• Graduation rate of our majors, where a major is defined when they start our junior year courses. This is a combination of metrics and qualitative data. Because our numbers are small, fluctuations are large. We do have 15 years of data, though. Qualitative analysis is essential, though, since in many cases failure to graduate depends on non-academic events like illness or poverty

5) Position Description:
• Duties, see attached

• Qualifications:

Faculty members at Oregon State University are committed to undergraduate and graduate student success. We seek faculty members who show promise of excellence in educating and mentoring a diverse group of learners, which may include experience with sponsoring student research or internships, developing study abroad opportunities, service learning courses, or the use of innovative
pedagogies such as hybrid or online learning, interactive classroom adaptation, and the use of interactive learning tools.

- Ph.D. in Physics or closely related field.
- Strong record of research, and evidence of potential excellence in teaching.
- Research experience in Physics Education.
- Strong interest in joining a collaborative research community.
- Ability to participate in interdisciplinary projects with other scientists throughout the University.
- Preferred: A demonstrable commitment to promoting and enhancing diversity.

Previous justification:

Research on STEM education has moved from a paradigm of knowledge “transmission” to a re-examination of what it means to “know” within the STEM disciplines: the nature of scientific inquiry, adaptive technical expertise, engineering design principles, and mathematical habits of mind. That shift has profound implications for the invention and implementation of instructional innovations, the assessment of learning, and the evaluation and dissemination of educational programs. For the academy, accountability is measured in terms of quantity, quality, and diversity of the new members it inducts into communities defined by discipline-based ways of thinking, approaches to problem solving, and languages of communication. This means re-imagining academic courses and programs as not merely delivery systems for information, but rather as structured environments affording opportunities for learners to engage with ideas (and with each other) in settings that support them becoming practitioners in STEM disciplines. OSU is in the process of building a networked cadre of discipline based educational researchers (DBER) who can create, inform, assess, and disseminate the best research knowledge in this arena.

OSU has already taken several enormous steps toward the vision expressed in the introduction with its investment in a new Center for Research in Lifelong STEM Learning, its decision to search for national/international leaders for that Center as well as for the Center for Teaching and Learning, and its commitment, utilizing new and vacant positions, to hire seven discipline- and education-based research faculty in 2011/12 to underpin this endeavor. The mission of the new STEM center is to conduct research and development that leads to enhanced understanding of the processes that underlie how individuals become lifelong STEM learners, STEM practitioners and STEM researchers as well as the structures and mechanisms that lead to achieving these outcomes. The faculty hires are targeted to have the content, pedagogical, and research expertise to engage in curriculum reform at the undergraduate level, to study student learning in this context, and to support the professional development of instructors, graduate teaching assistants, undergraduate learning assistants, and pre-service and in-service teachers. These researchers can inform efforts to aid students in making the transition from high school to university, and from the lower division to the upper division at OSU. Working with experienced faculty at OSU, the new interdisciplinary hires have already submitted a $1.5M proposal to the NSF to build and mentor a cohort group of DBER graduate students who will
address the undergraduate experience through both their teaching and research endeavors.

The OSU Physics Department has established an international reputation for our work in curriculum development in the Paradigms Program. Our efforts have focused on three of the five elements in the cycle model for knowledge production and improvement of practice in undergraduate STEM education: Creating New Learning Materials and Teaching Strategies, Developing Faculty Expertise, and Implementing Educational Innovations. The expectations of national funding agencies (primarily NSF) have changed since our first grant for the Paradigms Program and now require a plan that includes eventual national dissemination of successful innovations. In order to compete effectively for this funding, we have a strong need to broaden our faculty research expertise in the remaining two areas of the cyclic model: Assessing Learning and Evaluating Innovations, and Conducting Research on Undergraduate STEM Teaching and Learning. In addition, a close look at existing, effective national dissemination projects shows that they can only realistically be run by a group.

We propose to start with hiring a physics education researcher who will be able to focus on the two areas mentioned above, Assessing Learning and Evaluating Innovations and Conducting Research on Undergraduate STEM Teaching and Learning. This hire will use the experimental laboratory we have available in our upper division instruction as a result of the Paradigms program. A better understanding of how students learn on the upper division level is essential and will inform our decisions on restructuring the lower division instruction, where we are part of the OSU WIDER project. This reform will benefit not only physics students, but it will improve the learning of all students in our service courses. A subsequent hire should focus on the lower division physics education research. The order of hires is important. Our upper division research is unique and there is no other source of data. For the lower division reform we can start with using results of lower division educational research performed at other places. Student success is a natural designator for this area of research.

This position also has a great potential for hiring a faculty member belonging to underrepresented groups. By studying and employing diverse methods of education we focus on the success of all students, and will be able to better understand the different instructional needs of underrepresented groups. Faculty members with such an experience will be very valuable to achieve success in this area. We therefore expect that the nature of the work in the area of physics education research will lead to a more diverse applicant pool. Of course, we will also make sure that we advertise strongly in venues that are aimed at underrepresented groups.

2. Integrative Biology

Strategies for Enhancing Students Success

Overview

We propose to hire new faculty to address the problems of early and late attrition among the 1200 students pursuing the Zoology and Biology majors. These students have diverse academic interests that
include marine biology, pre-health professional preparation, ecological studies and natural systems. Our hiring initiative targets the special problems that characterize freshmen and sophomores in these majors (e.g., disorientation during the transition from small to large classes, anxiety over mathematics) as well as the factors contributing to attrition among junior and seniors (e.g., seeing relevance of classes to career goals). Because our approach is based on proven methods, we have strong expectations that our initiative will help curb attrition in this large population of biological science majors. At the same time, our initiative is aligned with Healthy people/Healthy planet initiatives, and it will enhance diversity among our faculty and students.

Background

Our overarching goals for the student success initiative are to:

• provide forward momentum for students by incorporating proven methods of academic and career success as proposed in the Vision and Change Initiative.
• increase faculty and student diversity and equalize access for all students.

Our hiring plan is explicitly directed toward:

1) reversing

a. early student attrition, when freshman and sophomores are in the process of acquiring quantitative skills and developing confidence in their abilities and knowledge.

i. Most attrition of Biology and Zoology majors is in their first year before they even enter a life sciences class. Furthermore the very large format BI 21X series where our majors are first exposed to a survey of life sciences concepts (usually in year 2) can prove challenging to some students. Despite small lab sections, student often do not seek support when they struggle in this large class.

ii. Students struggle with and often try to avoid quantitative subjects and have difficulty relating the acquisition of these skills to their interests and success in later coursework.

iii. To retain students during the first two years, we need to help them during the crucial period when the biology major first begins We are not fully utilizing opportunities to reach and engage students through our BI/Z 198 Freshman seminar class and UEngage courses.

b. later loss of students who do not persist in the majors due to the lack of compelling experiences that seem relevant to their career interests. To retain students during years 3, 4 and beyond to graduation requires revamping junior and senior level courses to provide incentives for student persistence (the capstone BI450 Marine Biology course is very successful example).

2) increasing the diversity of IB faculty and students. Our faculty demographic shows that we good representation of female faculty but are less diverse in other respects. At present we have no mechanisms in place to reach out to under-represented groups during faculty recruitment to ensure a
diverse pool of applicants.

Plan

In our strategic plan, IB faculty defined our department’s teaching and research mission as the integration of scientific findings across different levels of organization: a systems biology approach. This integrative approach provides the best opportunity for meeting our core mission: training a diverse group of students from two of the largest CoS majors, to meet the challenges of processing and extracting meaning from the large, diverse, and complicated datasets that students will encounter in their future careers. Despite the importance of this core mission, the loss of faculty over the past two years threatens our ability to succeed with our mission. To meet the student success challenges, our initiative will allow us to:

1) reduce attrition and improve retention by

a. creating and revising courses to provide a better foundation for first year students and that allow them to connect to the department in more explicit ways that could increase retention

b. providing more active learning in introductory biology courses

c. create new courses that increase the outcomes related to quantitative skills--i.e., teaching courses that explicitly marry biology with math and statistics

d. providing more experiential learning opportunities

2) enhance faculty and student diversity by

a. employing some of the atypical search processes to increase the diversity of the candidate pool that are outlined in OSU’s diversity task force self-study document: http://oregonstate.edu/oei/self-study-report. These processes will include conducting searches with a shortened timeline, directly targeting potential applicants, and organizing a small meeting at OSU for diverse young investigators to enhance recruitment to OSU

b. developing programs to retain students from under-represented groups including mentoring and support for minority student research.

Specific strategies for enhancing student success

1) Expand the BI 198 Freshman seminar class and serve as the supervisor/organizer of the graduate and Undergraduate Teaching Assistants (UTAs) helping with the active learning parts of the BI 198.

2) Monitor and engage individual freshman students who are doing poorly in the their fall and winter
3) Develop a UEngage courses

- for Biology and Zoology majors interested in the health professions
- for freshman with a quantitative mathematical theme
- for incoming Zoology and Biology majors students interested in ecology and zoology, with, for example, a focus on Oregon natural history (perhaps using the museum collections) or ecological themes.

4) Develop an experiential inquiry-based capstone courses

- for juniors and seniors (e.g., a field course), that incorporates quantitative approaches.
- that incorporate quantitative approaches for juniors and seniors and that provides compelling, authentic research experience.

5) Contribute to team-taught cross-disciplinary systems-level classes for sophomores that will integrate quantitative and biological themes in organismal biology.

6) Participate in Math 268 to present aspects of mathematics that are relevant to biology, especially by helping students develop the skills necessary to handle large data sets that are increasingly central to ecology and genomics. Surprisingly few (100-150) students currently take the course given the large number of students that pursue biological majors (~2500). Discussions between Mathematics and IB suggest that the course could have an important and wider impact on Biology/Zoology majors. Both programs see an opportunity for the course to serve as an introduction to mathematical biology that could serve to induct new students into both majors, as well as better serving current ones. Recent advancements in quantitative methods in the biological sciences, especially in genomics and ecology, present an opportunity to update the curriculum of the course to reflect current approaches. Working with Mathematics, we will create curriculum that enhances student ability in all of the nine competencies and develops the ability to construct and employ mathematical models. This individual would be involved in improving the success of students who find quantitative approaches difficult.

7) Provide research opportunities for juniors and seniors.

The hiring of this person will free up a senior faculty member to coordinate a training program for graduate and senior undergraduate students. These students will be trained in active learning and engagement practices as mentors for the BI 198 sections and in peer-peer mentor program. Senior students will mentor entering freshman thereby creating and reinforcing student ties with the department community. Through this program, IB will develop mechanisms to directly engage and retain students from under-represented groups.
The data science revolution is upon us. It’s a rare policy-level meeting in academia, industry or the public sector where “analytics” is not mentioned—there are now health analytics, business analytics, academic analytics, sales analytics, people analytics, etc. In response to this, the Department of Statistics is developing a new M.S. program in Data Science (planned for fall 2015). The proposed program responds to the increasing demand for new approaches in data management and data analysis to deal more effectively with the ever-increasing amounts of data in our world. Training students in dealing with ‘big data’ is one of the three areas that the College of Science has listed in its research priorities, and tools and methods for handling large datasets will be addressed by the Data Science program.

We propose a new faculty position at the rank of full professor to direct the new Data Science program and to enhance the teaching and research profile of the Department. We believe that leadership by an experienced faculty member is critical for the overall success of the program, which is ultimately measured by student success (i.e., the academic analytics!). The Director of the Data Science program will also contribute substantially to on-campus teaching and research. The Department already has a heavy load of service teaching, and with programs in bioinformatics under development, PhD programs in the College of Business, and new statistics option for undergraduates in mathematics, we only see that load increasing. In addition, the Department is increasingly involved with joint research activities across colleges. The new faculty member will provide senior leadership in research, including mentoring students in our MS and PhD programs on campus (the number of PhD students has doubled in the last three years) and in mentoring our junior faculty. Currently the Statistics Department has only one full professor, four associate professors, and eight assistant professors.

The success of the professional computer science B.S. Online Degree for Post-Bac students in the OSU School of Electrical Engineering and Computer Science indicates that our new program will likely be quite popular. The Director will be responsible for recruiting students, advising students in the program, overseeing the program curriculum, and providing overall management of the program. The responsibilities of this position are to assist in developing the online courses currently planned for the program to ensure that the delivery of these courses is meeting best-practices for distance education and assessment, to teach classes in the new program and our existing programs, and to conduct research. We believe that justification for this position is intimately tied to our new Data Science program. A widely circulated report by McKinsey Global Institute estimates that by 2018, the US could face a shortage of 140,000 to 180,000 people with deep analytic skills and that 1.5 million managers and analysts will be needed with the know-how to use the analysis of big data to make effective decisions. These “deep analytic skills” are founded primarily in the disciplines of statistics and computer science, and the M.S. in Data Science program draws heavily on these two disciplines, with the objective of producing trained professionals with these skills.

The M.S. in Data Analytics program will directly address the following core objectives set out at different administrative levels within OSU. As such, a strong, capable and experience leader will enhance our chances of meeting these objectives.
a. The OSU Mission. Private companies, government agencies, and academic researchers all now deal with huge data streams on a daily basis. Teaching and research aimed at improving the ability of these groups to analyze large amounts of data clearly contributes to economic, social, cultural, and environmental progress by promoting deeper, more accurate, and more effective use of the data essential to their functioning. The M.S. in Data Science will be unique in the state. Graduates of the program working in Oregon will serve the needs of both public and private interests seeking to make more effective use of their data resources.

b. Strategic Priorities and Signature Areas of Focus. One of three focus areas in OSU’s Strategic Plan is “Promoting Economic Growth and Social Progress,” and the goal includes “an expanding institutional culture of innovation and collaboration.” Making effective use of data is essential not only to academic researchers and industry, but also to health providers, managers of ecological resources, transportation experts, and professionals in countless other fields. The M.S. in Data Science is a cutting-edge program, and its multidisciplinary nature (involving courses in Statistics, Computer Science, Business, and Public Health) will help to advance OSU’s burgeoning culture of collaboration.

c. OSU goals for access and attracting students from diverse backgrounds. OSU goals include expanded access to educational opportunities for non-traditional students. Our new Data Science program will be attractive to students without the financial (or life-stage) capability to move to Corvallis to obtain a graduate degree since the program will be offered exclusively online through Ecampus. We believe that this program will appeal to a wide range of students from many diverse backgrounds, including working professionals in positions that increasingly demand data analytic skills. By offering the program online, we will provide an opportunity for students not necessarily located in Corvallis, or even in Oregon, to deepen their data analytic skills. The design and execution of courses by OSU faculty members will ensure a quality product.

d. Statewide needs. The need for collecting and analyzing data doesn’t know state boundaries; one could argue that in certain areas, such as environmental monitoring, Oregon’s needs are greater than those of other states. Yet to date there is no program in Oregon aimed at preparing data analysis professionals to cope with the continuing data onslaught. Areas such as health services, resource management, and emergency preparedness need to gather and analyze huge data sets; so do banks, insurance companies, and marketing specialists.

e. Student engagement, student success and equalization of success. During the 2012-13 academic year, the Department revamped our introductory Statistics courses at the 200 level. These classes typically have 200 students per section. These courses historically had some of the highest rates of D/F/W at OSU. A key change to the curriculum added an additional credit ‘recitation’ hour to these classes, both ST 201 and ST 202. This added credit hour is a recitation composed of small sections of students. The D/F/W rates were cut in half as a result of these changes. These small sections improve student discussion, student interaction, creative thinking, and engagement for students who otherwise do not speak up in large classes. All of these factors lead to student success. In our ST 351/352, our instructor has introduced simulations to illustrate key concepts. We expect with introducing more visual aids in the
class, students will be more engaged and more successful in the class.

As the size of our Data Science program grows, we intend to bring some of what we have learned from the enhanced learning of our 200-level students to bear. We intend to create discussion groups within this program to enhance student collaborations and discussions leading to student success. Another key component of the program is a capstone project which will include direct student contact with a faculty member in developing a project and seeing it through to completion. Direct student-faculty interaction throughout a quarter long capstone project will lead to student success.

In addition, if adequate time were available with a new faculty member, we may be able to add a second section of ST 511 that is taught every fall. This graduate student class typically has between 160-200 graduate students. This would create a smaller size class to increase student success.

We believe that for our Data Science program to succeed, we need strong leadership. The new director will enhance our profile as a key player in educating the next generations of data scientists, and he/she will help enhance our research profile with an active research program and the experience to mentor graduate students, post doctoral researchers and junior faculty.

4. Department of Biochemistry and Biophysics Diversity and Student Success Initiative (appendix)

This tenure-track position is dedicated to enhancing diversity and student success. The appointee must contribute to the diversity of our faculty and students, enhance student success in the classroom and in life, and be able to conduct significant research in the area of biophysical analysis of protein structure and function. To improve diversity, the appointee must be committed to recruiting, teaching and inspiring students who are under represented minorities. To improve student success, the appointee must have a thorough grasp of the chemistry of life, so that he or she is able to deliver accurate and engaging instruction in our general biochemistry courses for non-majors and our advanced biochemistry and biophysics courses for majors. In addition, the appointee must be knowledgeable in biophysical theory and technology, so that a biophysical techniques laboratory course can be developed to enrich the educational experience of biochemistry and biophysics majors and graduate students, and majors and graduate students in other programs that study biology at the molecular level. In delivering this instruction, the appointee must develop strategies to equalize student learning, including participation in teaching workshops. Lastly, the appointee must have demonstrated success in conducting research in the area of analysis of protein structure and function using biophysical approaches such as nuclear magnetic resonance (NMR), circular dichroism (CD), fluorescence intensity and anisotropy, isothermal microcalorimetry, raman spectroscopy, and plasmon resonance. Evidence of success would include peer-reviewed publications, peer-reviewed research funding, and presentations at national biophysical meetings.