

New Brunswick Strategic Planning Proposal

Proposal Title: Summer Preparatory Program and Academic Support

Proposal Initiator: Office for Diversity and Academic Success In the Sciences (ODASIS)

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Primary Strategic Priority/Foundational Element/Integrating Theme Addressed (Select one)

- Envision Tomorrow's University
- Build Faculty Excellence
- Transform the Student Experience
- Enhance Our Public Prominence
- Strong Core of Sciences and Humanities
- Inclusive, Diverse, and Cohesive Culture
- Effective and Efficient Infrastructure and Staff
- Financial Resources Sufficient to Fund Our Aspirations
- Robust Shared Governance, Academic Freedom, and Effective Communication
- Cultures, Diversity, and Inequality—Local and Global
- Improving the Health and Wellness of Individuals and Populations
- Creating a Sustainable World through Innovation, Engineering, and Technology
- Educating Involved Citizens and Effective Leaders for a Dynamic World
- Creative Expression and the Human Experience
- Measuring Progress and Defining Success

Proposal Abstract (brief summary of the proposal – 250-word limit):

The Summer Preparatory Program, which is an opportunity for matriculating freshmen who come from underserved communities to develop skills with credit-bearing work in Chemistry, Calculus, and writing before they begin their fall coursework. This helps them adjust to the rigors of a college curriculum, and positions them to succeed in their first year courses, and puts them on track to succeed in continuing ODASIS programs.

Full Proposal Description (5-page limit)

Background

The Office for Diversity and Academic Success in the Sciences (ODASIS) is an academic support unit within the Division of Life Sciences at Rutgers, The State University of New Jersey. The goal of ODASIS is to increase the recruitment and academic success of underrepresented students, as well as educationally and economically disadvantaged students, who are interested in pursuing careers in the scientific professions. ODASIS aims to improve the percentage of underrepresented students entering the scientific, mathematics, and health professional fields by encouraging academic achievement through unique and rigorous academic support. By cultivating the number, participation, and success of underrepresented and disadvantaged students who pursue scientific disciplines, ODASIS works towards minimizing the achievement gap in professional education, thereby creating a highly qualified and diverse workforce.

The necessity for a supportive environment that maximizes opportunities for underrepresented students to excel academically stems from the achievement gap that exists in professional education. African-Americans, Hispanics / Latinos, and Native Americans make up approximately 31.2 percent of the U.S. population. Individuals from these groups, however, are not equally represented in the scientific disciplines. According to the Association of American Medical Colleges, for example, only 8.6 percent of practicing doctors come from these groups (U.S. Census Bureau, American Medical Association). These statistics underscore the need for programs such as ODASIS that seek to effectively address the disparity in representation of certain groups in the scientific community.

In an effort to minimize this long-standing disparity, ODASIS aggressively recruits students who express a desire for supplemental instruction, usually as a result of not having received adequate preparation during high school to succeed in college-level courses. Students who demonstrate significant financial need, as exhibited by Free Application for Federal Student Aid (FAFSA), the NJ Educational Opportunity Fund (EOF) grant, or other major grants such as the Federal Pell Grant or New Jersey Tuition Aid Grant (NJ TAG), are also considered for ODASIS programs.

ODASIS recognizes that solely recruiting students is insufficient; once participants are enrolled, it is imperative to stimulate their motivation, cultivate their knowledge, and sustain their interest in the sciences so that they excel academically for the four years that they are ODASIS participants. The success of this model is made evident by the fact that since 1990 the program has produced over 1034 graduates from underrepresented communities who are equipped with the education necessary to succeed in scientific graduate schools and later diversify the workforce. This past year, 52 ODASIS students and alumni applied and were accepted to medical, dental, podiatry, osteopathic, and B.A./M.D. programs, and 41 ODASIS alumni graduated from medical, dental, podiatric, osteopathic, Ph.D., M.P.H., graduate biomedical science, and B.A./M.D. programs.

Relevance

ODASIS operates in a cross-cutting role for the University, supporting students in all schools and academic units including the School of Arts and Sciences (SAS), the School of Biological and Environmental Sciences (SEBS), and the Ernesto Mario School of Pharmacy. We work with faculty members and staff from many different departments to develop holistic and relevant programs that prepare students for the complexities of today's health professions.

Our mission at ODASIS is to empower diverse students, and our programs work to fulfill the goals of the 2014 University Strategic Plan. As the Strategic Plan calls for, we provide "academic support services, instructional support, academic advising, and career counseling services to establish a platform that best supports our students and best positions them for professional success in the health and science professions." Our students build close relationships with Rutgers University faculty and ODASIS staff members, reinforcing their academic studies, enhancing their student experience, and setting them up for professional success.

The ODASIS model also succeeds in transforming the student experience, as called for in the University Strategic Plan, providing "personalized and institutionally streamlined student experience through innovative living and learning communities, improved advising services, access to hands-on learning, and more direct interaction between students and faculty." Through workshops, one-one-one tutoring, group sessions, and individual advising by dedicated members of the ODASIS staff, our students become part of a small and supportive community, allowing them to build the skills they need to succeed both at Rutgers and beyond in the health professions. Increased support for ODASIS programs will directly address these goals set out in the Strategic Plan. Our Summer Preparatory Program has proven to help students succeed at Rutgers, and combining this program with sustained, intensive academic support throughout their time at Rutgers will build upon this community and maximize student achievement.

Project Overview

To increase these successful efforts, ODASIS seeks to expand the resources, instruction, and academic enrichment opportunities provided to underrepresented students by providing more students interested in pursuing scientific disciplines with free supplemental instruction and enrichment opportunities. The SIS experience will make students more competitive applicants to various scientific and health professional schools, thereby increasing the matriculation and retention rates of underrepresented students as well as their preparation for these disciplines.

ODASIS's interventions commence with the Summer Program, which provides an introductory course in chemistry and math. This program was started to address the fact that a large proportion of students have inadequate college preparation or experience great difficulty with these courses. In addition, 33% of students received a D, F, or withdrew from first-semester General Chemistry at Rutgers University in the previous four academic years. Academic difficulty in introductory science coursework during college has been shown to significantly discourage students from pursuing careers in the scientific disciplines and may limit the entry of underrepresented groups into the science, technology, engineering, and mathematics fields (*Science*, December 2011). This pre-college program plays a critical role in reducing disparities in higher education by providing the students with the requisite tools to succeed in their fundamental courses.

The Summer Preparatory Program has had demonstrated success in setting students up for success in their first year of college. In 2013, students who completed the Summer Preparatory Program were 48.01% more likely than their peers to receive a grade of B or higher in General Chemistry, and 57.08% more likely to receive a grade of B or higher in math courses compared to the general Rutgers population. This programming has also been linked to increased efforts in completion of classwork, increased parental engagement, as well as heightened intrinsic motivation that results in more enthusiasm, less apathy, and enhanced positive feelings towards their college education. Furthermore, this programming helps us to recruit historically marginalized students while promoting specific majors and career paths, serving as an investment in the community to further reinforce and foster positive attitudes towards an improved educational future.

Following the Summer Preparatory Program, ODASIS provides academic support to students in critical areas for their success at Rutgers and their entry into the health professions. These areas include chemistry, biology, organic chemistry, mathematics, and a variety of other upper-level courses. The academic support program is intensive and multifaceted, incorporating supplemental instruction sessions, discussion groups, academic and career counseling, and motivational and study skills workshops. During the 2012-2013 academic year, 845 Rutgers University students received academic support through ODASIS. These students were 15.3% more likely to receive a grade of B or higher in General Chemistry, 22.29% more likely to receive a grade of B or higher in General Biology, and 18.41% more likely to receive a grade of B or higher in mathematics courses, as compared to the rest of the general Rutgers population.

The success of the Summer Preparatory Program and the academic support program separately is notable. Combining the impact of these two programs would position disadvantaged students to excel and surpass their peers in their academic pursuits. To build the success of these programs, funding in the amount of \$108,176 is requested to support the Summer Preparatory Program for incoming college freshman, and to provide specific academic support for this cohort throughout the first three years of their career at Rutgers. This will provide an opportunity to build on the success of the Summer Preparatory Program and provide sustained, intensive academic support, tracking the growth and progress of this cohort of 30 students. Not only will this support increase the likelihood of success for these students, it will also ensure their retention in the ODASIS program so that they can take advantage of other ODASIS opportunities, such as the Biomedical Careers Summer Program. This model combines some of the most successful programs offered through ODASIS into one intensive and replicable project with sustained support and opportunities for intensive tracking.

Project Objectives

1. To build a sustainable educational foundation for first-year students, improve academic achievement scores of participants, and increase mastery levels in fundamental science and mathematics courses through credit-bearing supplemental instruction
2. To support these students throughout their first three years at Rutgers, building on a strong foundation, establishing a strong community, and providing intensive and sustained support
3. To increase entry and retention rates of students from underrepresented groups who are interested in pursuing scientific, mathematics, or health professional careers.

Project Plan

1. Academic Support: ODASIS provides academic support in Mathematics, General Chemistry, General Biology, Organic Chemistry, Genetics, and other upper-level science electives. Participation in structured supplemental instruction for fundamental and upper-level science courses provides students with the necessary foundation to successfully pursue further scientific education and professions. They will thus obtain a comprehensive understanding of scientific topics and ultimately become more competitive applicants to graduate programs. The Summer Preparatory program allows academic support to be provided to students as early as the summer preceding the first undergraduate year as students complete a credit-bearing 5-week introductory course in mathematics and General Chemistry while receiving supplemental instruction in these subjects. Supplemental instruction sessions are led by experienced third and fourth year students who are often

ODASIS participants who have successfully completed the courses they instruct. Since many of the instructors have been in similar positions as the participants, they can better relate to the students' needs and tailor the instruction accordingly. Students develop their learning abilities by participating in peer study groups, interactive computer sessions, study hall sessions, and study skills workshops. Peer-led supplemental instruction has been a highly successful strategy allowing ODASIS to meet its objectives.

2. Academic Advising: ODASIS offers academic advising based on subject area. With Developmental Specialists dedicated to General Chemistry, General Biology, and upper-level science courses, students receive a consistent message tailored to their individual needs. Additionally, Developmental Specialists meet with first-year students enrolled in pre-chemistry and pre-mathematics courses to establish a four/five-year academic plan and guide them through the initial phases of the ODASIS program. Taking a proactive role from the beginning of the students' time at Rutgers University allows ODASIS to encourage and advise students throughout their collegiate careers. Since Developmental Specialists are committed to the participants, are aware of their backgrounds and any obstacles they may face, and are cognizant of their professional goals, the guidance provided is both specific and strategic.

Appendix One: Budget Tables

Table 1: Proposed Budget for ODASIS Summer Preparatory Program for 2014

Summer Preparatory Program Budget 2014	Project Budget	Amount Requested
Salary, 2 Instructors (2 x \$2793.50 per instructor + \$413 Fringe)	\$6,413.00	\$6,413.00
Salary, 4 Supplemental Instructors (4x 70 hours x \$18/hr)	\$5,040.00	\$5,040.00
Housing (30 students x \$181/week x 5 weeks)	\$27,150.00	\$27,150.00
Chaperones (2 chaperones x \$181/week x 5 weeks)	\$1,810.00	\$1,810.00
Textbooks (30 students x \$350 for textbooks)	\$10,500.00	\$10,500.00
Credits (30 students x 2 credits x \$345 credits)	\$20,700.00	\$20,700.00
Registration Fees (30 students x \$154.75/student)	\$4,643.00	\$4,643.00
Supplies (30 students x \$50/student)	\$1,500.00	\$1,500.00
Total for Summer Preparatory program	\$77,756.00	\$77,756.00

Table 2: Proposed Budget for Cohort's ODASIS Academic Support Academic Years 2014-2017

First Year Academic Support Budget (AY 2014-2015)	Project Budget	Amount Requested
Salary, 2 Supplemental Instructors for General Chemistry (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Salary, 2 Supplemental Instructors for General Biology (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Salary, 2 Supplemental Instructors for Mathematics (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Supplies (\$50/student x 30 students)	\$1,500.00	\$1,500.00
Total for First-Year Academic Support	\$10,140.00	\$10,140.00
Second Year Academic Support Budget (AY 2015-2016)	Project Budget	Amount Requested
Salary, 2 Supplemental Instructors for Organic Chemistry (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Salary, 2 Supplemental Instructors for Genetics (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Salary, 2 Supplemental Instructors for Mathematics (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Supplies (\$50/student x 30 students)	\$1,500.00	\$1,500.00
Total for Second-Year Academic Support	\$10,140.00	\$10,140.00
Third Year Academic Support Budget (AY 2016-2017)	Project Budget	Amount Requested
Salary, 2 Supplemental Instructors for Systems Physiology (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Salary, 2 Supplemental Instructors for Biochemistry (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Salary, 2 Supplemental Instructors for Mathematics (2 x 80 hours x \$18.hr)	\$2,880.00	\$2,880.00
Supplies (\$50/student x 30 students)	\$1,500.00	\$1,500.00
Total for Third-Year Academic Support	\$10,140.00	\$10,140.00
Total for Academic Support in First-Third Years	\$30,420.00	\$30,420.00

Table 3: Total Proposed Budget for Cohort

Projects	Project Budget	Amount Requested
Total for Summer Preparatory program	\$77,756.00	\$77,756.00
Total for Academic Support in First-Third Years	\$30,420.00	\$30,420.00
Total Amount	\$108,176.00	\$108,176.00

Proposed Measures to Mark Progress or Determine Success

In the Fall semester of 2013, an analysis was conducted of Summer Preparatory Program students completing their fall courses. 83.3% of the students who completed the Summer Preparatory Program earned a B grade or higher in General Chemistry, compared to 52.89% of all ODASIS students and just 35.29% of all Rutgers students. In math courses, 95.83% of students who completed the Summer Preparatory Program earned a B grade or higher, compared to 48.12% of all ODASIS students, and 38.75% of all Rutgers students. These results highlight the importance of the Summer Preparatory Program in providing the intensive support that facilitates a successful transition to college. Statistical data will continue to be collected to assess the success of measurable outcomes such as students' grades compared to other Rutgers University students, and find areas that can be improved. Individual student trends over the course of the 11-month time period spanning pre-freshman year and year one, graduate school entrance exam scores, and the number of students accepted into graduate programs will also be assessed to measure the success of the program.

Program outcomes will also be evaluated using qualitative measures, such as student assessments of instructors, program structure, and program content, as well as quantitative measures, such as instructor evaluations of student mastery levels prior to examinations. Student progress during the supplemental instruction sessions will be monitored by the instructors who will report weekly to the Developmental Specialists; the Developmental Specialists will then track student trends using a continually updated database to provide individual student feedback and evaluate program content and instruction. The data will be used to help improve the program and further tailor it to the needs of ODASIS participants. Results will be publicized in university reports and articles submitted for publication. By establishing specific academic support for the 2014 cohort in the Summer Preparatory Program, we will have an opportunity to conduct extensive tracking and evaluation as these students progress throughout their time at Rutgers. We will be able to identify specific areas of strength and weakness, measure growth, and provide a detailed report of the impact of the program. These results will allow the program to be replicable in future years at Rutgers, as well as at other universities in the future. ODASIS plans to maintain the program to meet the needs of underrepresented students interested in the scientific, mathematics, and health professions. To do this, ODASIS will continue to seek funding so that its programs are self-sustainable. ODASIS has its own aggressive fundraising plan targeting relevant corporations and foundations which is spearheaded by the Rutgers Foundation, Office of Corporate and Foundation Relations. Over the course of the next four years, it is ODASIS's goal to create a self-sustainable program with the assistance of organizations whose intentions align with ODASIS's missions. Thus, ODASIS respectfully requests funding in the amount of \$108,176 to support the program in line with the University Strategic Plan.

Please save your proposal as a Word document and submit it as an email attachment to NBStratPlanProposals@rutgers.edu by April 15, 2014.