



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

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September 18, 2015

Dr. Abigail Panter
Senior Associate Dean
Office of Undergraduate Education
Steele Building, Room 3010
Campus Box 3504
Chapel Hill, NC
27599-3504

Dear Abigail and CAS Administrative Board Members:

I am writing in support of the proposal to create a Pre-Health Post-Baccalaureate Certificate Program at UNC-Chapel Hill. This program provides an exciting opportunity for UNC-Chapel Hill to assist non-degree-seeking students to succeed in medical and health science careers.

My participation in a planning meeting this summer regarding this initiative, combined with review of the market analysis initiated by the Friday Center for Continuing Education, leads me to believe there is ample room in the market for this type of certificate program in North Carolina. There is a strong likelihood that the program at UNC-Chapel Hill could increase graduate school placement rates for students pursuing careers in medicine and health science.

The Friday Center has committed to providing administrative support and academic advising services, and the Department of Biology has offered to serve as the home academic department. The Summer School Office, along with the Departments of Biology, Chemistry, Math, and Physics are all supportive and have concluded they can accommodate the extra students, and that their impact on campus resources will be minimal.

Attached please find a detailed program proposal, a market evaluation, and several letters of support from other constituents. We look forward to taking the next step in enhancing UNC-Chapel Hill's offerings to North Carolina's future medical and health science practitioners.

Sincerely,

A handwritten signature in black ink that reads "Kevin M. Guskiewicz". The signature is written in a cursive, flowing style.

Kevin Guskiewicz, Ph.D.
Kenan Distinguished Professor, Exercise and Sport Science
Senior Associate Dean, Natural Sciences



THE UNIVERSITY
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August 26, 2015

Ms. Stephanie Schmitt
Graduate School
UNC-Chapel Hill

Dear Stephanie:

The Department of Biology endorses the proposal to create a Pre-Health Post-Baccalaureate Certificate program. The Friday Center's recently conducted market survey showed that only four North Carolina higher education institutions have Post-Baccalaureate certificate programs aimed at meeting the needs of students who would like to fulfill requirements for medicine, dentistry, and other health-professional schools. Existing programs in North Carolina report a high demand for their programs. The Friday Center concludes, based on their survey as well as their own advising experience, that there is room in the market for a UNC-Chapel Hill program. The proposed program would target non-degree-seeking students and offer coursework and advising. Students would be required to complete five courses of their choosing, tailored to the requirements of their particular professional school. Between the academic year and summer sessions, the Department of Biology teaches courses that students require: from introductory biology to genetics and cell biology. There are 6 courses that we offer that meet the needs of pre-health students. Four of these courses are taught every fall and spring, and six are offered every summer. Students would have access to these courses in our department and others, and the Friday Center would handle advising as well as assistance with placement.

The department is aware of the potential impact on classroom and faculty resources. Because we already teach a small number of post-baccalaureate students in our classes, encapsulating these students under the classification of a certificate program will not significantly impact our resources. Even if added to our existing numbers of post-baccalaureate students, the impact of a small number of additional students would be negligible compared to our substantial undergraduate population. The Department of Biology supports this proposal for the creation of the Pre-Health Post-Baccalaureate Certificate Program

Sincerely yours,

A handwritten signature in black ink, appearing to read "Victoria Bautch". The signature is fluid and cursive, with a long horizontal line extending from the end.

Victoria L. Bautch, PhD

Beverly Long Chapin Distinguished Professor and Chair of Biology



UNC
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ARTS & SCIENCES

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DEPARTMENT OF CHEMISTRY

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JOSEPH L. TEMPLETON
Venable Distinguished Professor and Interim Chair

Monday, July 6, 2015

Timothy R. Sanford
Director of Credit Programs
2007K Friday Center, 1020
Chapel Hill, NC
27599-1020

Dear Tim,

The Chemistry Department endorses the proposal to initiate a Pre-Health Post-Baccalaureate Certificate program. Our department offers a number of courses that are important to students interested in medical and health science careers, and we agree that it is important to, in a more formal manner, recognize the achievements of post-baccalaureate students in these courses.

Such a program will also provide a tailored framework for these students with respect to coursework, as well as provide academic advising, which will further assist in helping students achieve their goals.

The Chemistry Department enthusiastically recommends that this program be approved.

Sincerely,

Joseph L. Templeton
Venable Distinguished Professor and Interim Chair

Cc: Alexanian

University of North Carolina at Chapel Hill

Certificate Program Application Form

Please use this application form as a guide for your Certificate Program proposal.

Name of Proposed Certificate Program: Pre-Health Post-Baccalaureate Certificate Program

Sponsoring Academic Unit: Biology

Administering Unit, if different: William and Ida Friday Center for Continuing Education

Primary Contact Name: Dr. Robert G. Bruce

Address and CB #: Friday Center for Continuing Education, CB #1020

Phone Number: 919-962-2646 **Email:** rgbruce@email.unc.edu

First Term the Certificate Would be Offered: Spring 2016

1. Describe the Certificate Program and provide a statement of educational objectives.

The University of North Carolina at Chapel Hill Pre-Health Post-Baccalaureate Certificate Program prepares college graduates and career-changers to enter the health-related workforce in North Carolina (medical technologist, laboratory technician, biologist, etc.) and/or to seek admission to medical schools and other professional schools in health-related fields (dentistry, nursing, pharmacy). Educational objectives include:

- Increasing Science, Technology, Engineering, and Math (STEM) education
- Increasing medical school, professional school, and graduate school placement rates within the UNC System
- Enabling career change by providing science courses to students who have a minimal academic science background
- Creating an opportunity for those students seeking post-graduate health-related course work at Carolina

2. Include a statement about the need for such a Certificate Program, and specifically why there is a need to offer this Certificate at UNC-Chapel Hill. Is the Certificate offered at other universities or community colleges?

An Educational Advisory Board EAB study (attached) was recently conducted on behalf of UNC-Chapel Hill to investigate the market demand for post-baccalaureate pre-medical/health program certificates in North Carolina. The report revealed that, while the state of Virginia offers nine such programs, only four are offered in North Carolina—none through UNC-Chapel Hill (page 8). Programs reviewed at peer institutions showed high demand and competitive admissions. In addition, Friday Center advisors are frequently asked for assistance in crafting a

Completed and approved applications should be submitted to:
Stephanie Schmitt, Associate Dean for Academics, sschmitt@email.unc.edu

Updated: July 20, 2010

plan of study for students interested in pursuing post-baccalaureate study in preparation for health-related degree applications.

3. Describe the demographics of the target student population for the Certificate Program. Double click each box that applies and describe the intended audience.

- ☐ Undergraduate Students
- ☐ Graduate Students
- ☐ Professional Students: _____
- ☐ Degree-seeking, Matriculated Students
- ☒ Non-Degree-Seeking Students

The target student audience includes non-degree-seeking college graduates and career-changers who seek to enter the health-related workforce in North Carolina (medical technologist, laboratory technician, biologist, etc.) and/or seek admission to medical schools and professional schools in health-related fields (dentistry, nursing, pharmacy). These students will be special, non-degree-seeking post-baccalaureates.

4. Why is the Certificate Program necessary beyond offering the program as a minor, supporting area, or specialization/concentration/track?

Because the program is targeted specifically at non-degree, post-baccalaureate students, it cannot be offered as a minor or concentration. Similar certificate programs reviewed in the EAB study showed high graduate school placement rates. Students who are offered a certificate with competitive admission criteria will have the opportunity to earn necessary college credits in prerequisite areas of study and will serve as a competitive pool of applicants to UNC-Chapel Hill health-related professional and graduate programs as well as similar programs at other universities.

5. Provide specific courses and other requirements for the Certificate Program. Separate listings of courses may be included with the proposal.

Five courses in math and science will need to be completed in order for students to earn the Pre-Health Post-Baccalaureate Certificate. Students must earn a B or higher grade in each undergraduate course (those numbered below 400); for courses numbered 400 and higher, a P or H must be earned. Students will not need to earn specific credits within math and science; instead, students will take courses appropriate to their goals with academic advisors available to guide them into concentrations based on academic and career goals as needed. See the attached "Prerequisites for Health-related Degree Programs" for examples of specific courses available. The UNC Summer School will also provide courses.

Examples of courses likely to be taken by the students are:

- Biology 202, 205, 252, 352, 353, 422 & 422L, 474 & 474L
- Chemistry 102, 241 & 241L, 261, 262 & 262L, 430
- Math 231
- Microbiology 25, 255
- Physics 114, 115, 116, 117
- Physiology 202
- Psychology 215
- Statistics 151, 155

- 6. Provide a statement on the relationship of the Certificate Program to degree programs within the unit(s). To what extent will requirements for the Certificate overlap with requirements for bachelor's, master's or doctoral degrees? Confirm how course credit transfer policies will be applied to students.**

There is no overlap with degree programs. Given the flexibility of the five courses required, transfer credits into the certificate program are not allowed. To earn the certificate, students must take five courses at UNC-Chapel Hill in the STEM areas after being admitted to the certificate program.

- 7. Will the Certificate Program be offered jointly with another university? If yes, describe the relationship with the joint unit.**

No

- 8. Will the Certificate Program be offered on campus, as a distance education program, or a combination? Describe any distance education components in detail.**

The Certificate Program will be offered primarily on campus through the College of Arts and Sciences and the UNC-Chapel Hill Summer School. If online courses are available, students will be given the option of enrolling in online formats. Academic advisors will advise students on the acceptance and transferability of online credits, especially in relation to science labs and medical school.

- 9. Describe the admissions criteria and process in detail. Differentiate between processes for degree-seeking students and non-degree-seeking students, where applicable. Include information about residency for tuition purposes as needed.**

In order to be admitted, the applicant must have a four-year college degree from an accredited college or university with at least a 3.0 GPA and must have completed the introductory chemistry and biology courses (CHEM 101, BIOL 101) and associated labs with at least a B average.

Admission will be managed by the Friday Center's Part-time Classroom Studies office using existing procedures and the current application fee for post-baccalaureate students. In the first year, qualified students will be admitted on a rolling basis up to the maximum of 20. In subsequent years as the program grows, applications will be held for review at a set date, and the most qualified admitted up to the maximum enrollment set for that year. The number admitted may increase to 30 or 40 depending on the success of the program. All admitted students to the program will be part-time, non-degree, post-baccalaureate.

No transfer credits from courses taken prior to entering the certificate program will be accepted as outlined above.

Residency for tuition purposes will be administered per University policy through the Office of the University Registrar. Tuition rates will be the current rates set by the UNC Board of Governors for Part-time Classroom Study students during fall/spring semesters; for courses taken through UNC-Chapel Hill's Summer School, students will pay the Summer School tuition rates.

10. Provide a three-year, semester-by-semester projection of enrollments and course offerings.

This is difficult to project because of the flexibility students will have to tailor their own curriculum. Some students may concentrate their coursework in Biology while others may take Biology, Chemistry, Math, and Psychology. Most students should complete the certificate in a single academic year including summer sessions, so a large increase in University enrollments is not expected. Also, with only 20 students admitted into the certificate each year and those students spread across 20 or more courses, the impact on any single course or department should be relatively modest.

The table below shows the variety of courses that students might take as they work on the certificate. As stated above, there is no set curriculum that students must complete; the five courses required can come from any of the STEM areas guided by the student's desired outcome. Most students will complete the certificate in one year.

Example:

Semester	Courses*	Projected Enrollment
Spring 2016	BIOL 202; CHEM 102, 241 & 241L; Math 231; PSYC 215; STAT 151; PHYS 114	3 students per course
Summer 2016	BIOL 252/276, CHEM 261	2 students per course
Fall 2016	CHEM 241; PHYS 114 or 116; BIOL 352, 353; STAT 155	3 students per course
Spring 2017	BIOL 202; CHEM 102, 430; PHYS 114, 115; PSYC 215; STAT 151	3 students per course
Fall 2017	CHEM 262, CHEM 262L; PHYS 116/117; BIOL 422 & 422L; Math 231	3 students per course
Spring 2018	BIOL 202, 205; CHEM 102, 241 & 241L; Math 231; STAT 155; PHYS 114	3 students per course

11. Provide a three-year projection of the Certificate Program's financial plan. Include the impact on campus resources, such as classrooms and instructional faculty/personnel. Also include plans for tuition and billing, if separate from standard rates across schools.

There will be minimal impact on campus resources (classroom, faculty, or staff) because the Certificate Program will admit only a modest number of students who will take a variety of already existing courses offered across a number of departments as mentioned above. Standard tuition rates will be used.

The Friday Center will charge a non-refundable application fee of \$260 for the Certificate Program. This will cover the ongoing cost of advising, student services, and administration. This fee will be proposed to the Friday Center Credit Programs Academic Administrative Board which approves student fees charged by Credit Programs (application fee, education & technology fee, etc.).

12. List all faculty members who will be responsible for planning and participating in the Certificate Program. Programs are encouraged to provide advising for students through the identification of one faculty member as the director of the Certificate.

No individual faculty will have any specific role in the certificate given the broad flexibility of the courses students may choose; however, the following department representatives will provide academic and administrative guidance for the program.

Summer School:	Dean Jan Yopp
Biology:	Dr. Corey Johnson
Friday Center Administrative:	Dr. Tim Sanford
Friday Center Academic Advising:	Ms. Jennie Brooks, Dr. Melissa Solomon

Friday Center Academic Advisors will be available to students who are seeking advice about the certificate and the courses needed to apply for admission to the various health professional programs. Also, the advisors will help students who are seeking to improve their skills for professional growth or career change.

13. Describe the evaluation plans for the Certificate Program.

Student success will be measured by retention/completion rates, surveys of student satisfaction with the certificate, successful medical/professional school applications, and job placement. Each student's success will be tracked by advisors throughout the program and afterwards to determine if students are attaining the results they desired when they enrolled in the certificate.

14. Appropriate letters of support should be included with the proposal. All units sponsoring and participating in a Certificate Program should approve the proposal and provide support letters, including letters from units supporting the Certificate through resources (e.g., faculty time, course slots). Approval letters from the home school should accompany the proposal submitted to the Graduate School for final approval.

Support letters are attached (Friday Center, Summer School, Biology, Chemistry)



Education
Advisory
Board

COE Forum

Market Demand for a Post-Baccalaureate Pre-Medical/Health Program

An Analysis of Common Practices and Trends in Pre-Med/Health Programs



COE Forum

Tom Scott-Sharoni
Market Research Associate

John Griffin Dowdy
Market Research Manager

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1) Research Methodology

Project Challenge

Leadership at the University of North Carolina—Chapel Hill approached the Forum as they considered launching a new post-baccalaureate pre-med/health certificate program. Through a combination of qualitative interviews with administrators of peer and competitor programs and quantitative data analytics, the Forum sought to assess the market viability of a new post-baccalaureate pre-med/health certificate program.

The Education Advisory Board's market research function provides insights which guide strategic programmatic decisions at member institutions. The Forum combines qualitative and quantitative data to help administrators identify opportunities for new program development, assess job market trends, and align curriculum with employer and student demand.

EAB reports rely primarily on labor market data from the Burning Glass Labor/Insight™ tool (description below). Reports occasionally use data from the United State Census Bureau and United States Bureau of Labor Statistics to explore occupation and job trends. Market research reports may also incorporate Integrated Postsecondary Education Data System (IPEDS) to assess student enrollment, demographics, and completion rates across competitor programs.

Methodology and Definitions

Methodology: Unless stated otherwise, this report includes data from online job postings from January 2014 to December 2014. The Forum identified top titles, skills, employers, and locations for post-baccalaureate and master's-level students in the pre-med/health and biomedical science fields in the North Carolina region.

Definitions: 'Regional data' and the 'North Carolina Region' refer to Virginia, North Carolina, and South Carolina. **California State University—Fullerton** and the **University of California—Davis** are abbreviated to 'CSU Fullerton' and 'UC Davis' in this report. 'Academic enhancer' is occasionally shortened to AE. 'Career changer' is occasionally shortened to CC.

The Education Advisory Board's Partner for Real-Time Labor Market Data

This report includes data made available through EAB's partnership with Burning Glass Technologies, a Boston-based leader in human capital data analytics. Burning Glass Technologies specializes in the use of web spidering technology to mine more than 80 million online job postings and analyze real-time employer demand. Under this partnership, EAB may use Burning Glass's proprietary Labor/Insight™ tool to answer member questions about employer demand for educational requirements, job titles, and competencies over time, as well as by geography. The tool considers job postings "unspecified" for a skill, industry, employer, geography, certification, or educational requirement when the job posting did not advertise for one of these particular job characteristics. Unspecified postings represent null values and should be excluded from the total number (n value) of job postings analyzed in the query. A more complete description of the tool is available at <http://www.burning-glass.com/products/laborinsight-market-analysis/>.

For more information about the Labor/Insight™ tool, please contact Kelly Bailey, Business Development Manager, at kbailey@burning-glass.com or 732-800-2484.

Project Sources

The Forum consulted the following sources for this report:

- EAB's internal and online research libraries (<http://eab.com>)
- The Chronicle of Higher Education (<http://chronicle.com>)
- National Center for Education Statistics (NCES) (<http://nces.ed.gov/>)
- American Association of Medical Colleges (AAMC) (<https://www.aamc.org/>)

Profiled Institutions

The Forum interviewed program directors and administrators at the following institutions:

A Guide to Institutions Profiled in this Brief

Institution	Location	Approximate Institutional Enrollment (Undergraduate/Total)	Classification
California State University—Fullerton	Pacific (Suburb; Large)	33,000 / 38,300	Master's Colleges and Universities (larger programs)
Johns Hopkins University	Mid-Atlantic (City; Large)	6,100 / 21,000	Research Universities (very high research activity)
University of California—Davis	Pacific (Suburb; Small)	26,500 / 33,300	Research Universities (very high research activity)
University of Delaware	Mid-Atlantic (Suburb; Large)	18,500 / 22,100	Research Universities (very high research activity)

Source: National Center for Education Statistics

2) Executive Overview

Key Observations

The North Carolina market appears open to a new post-baccalaureate pre-medical/health program. Institutions in Virginia host at least nine post-baccalaureate pre-medical/health programs, while institutions in North Carolina host only four. Most profiled programs report acceptance rates of less than ten percent, an indication of high student demand to enroll. Pre-medical/health programs are usually in-person, which limits space within current programs.

Profiled pre-med/health certificate programs have high graduate school placement rates. All profiled programs' placement rates are above 70 percent, significantly better than the medical school and graduate school placement rate of undergraduate students who apply directly to medical and graduate schools. Most programs incorporate some unique element to help promote their students, which ranges from study abroad to participation in some medical school courses. Contacts believe these promotion strategies allow students, many of whom have previously applied to medical school, to increase their odds of acceptance.

Academic advisors are essential in ensuring high placement rates for graduates of pre-medical/health programs. Profiled programs high student placement rates are in part due to the constant supervision and assistance academic advisors provide students. Many programs require students to meet with an advisor or program coordinator as a group once a week and participate in individual meetings every few weeks.

Most students enrolled in pre-medical/health programs wish to attend medical school upon graduation. Only around 30 percent seek a different path and become dentists, physical therapists, or nurses. Administrators at **Johns Hopkins University** only accept students who wish to attend medical school. These administrators believe the focus on medical school hopefuls allows them to ensure higher placement rates.

Some programs incorporate their post-baccalaureate programs into a master's program of biomedical science or other related field. Students in post-baccalaureate/master's programs who are unable to enroll in a medical or other graduate school after their first year enrolled may choose to continue their studies and attain a master's degree in biomedical science. Contacts believe a graduate degree is much more useful in the search for post-graduate work than a post-baccalaureate certificate is.

Some programs are classified as post-baccalaureate programs in order to charge students the undergraduate tuition rate. Contacts believe that cost is a key factor students consider when they decide where to apply for a post-baccalaureate program. By classifying their work as post-baccalaureate, students can take courses otherwise unavailable to them without paying the higher graduate tuition rate.

3) Program Structures

Program Characteristics

Choose Between an Academic Enhancer Program and a Career Changer Program to Target Desired Audience

The two types of pre-medical post-baccalaureate programs that exist serve different audiences. 'Career changer' programs focus on students who have minimal science background and enable students to take the courses they need to apply to medical or graduate school. 'Academic enhancer' programs center on students with a sufficient educational background to apply to medical or graduate school, but whose academic profile or performance necessitates continued coursework to be competitive in the application process. Both types of programs are generally small, but career changer programs mostly enroll students in basic undergraduate science courses, while academic enhancer students take graduate-level course work. Some academic enhancer programs offer students the chance to earn a master's degree if they are not accepted to medical school after completion of their post-baccalaureate coursework.

Program Characteristics of Profiled Post-Baccalaureate Pre-Medical/Health Programs

	CSU Fullerton	Johns Hopkins University	UC Davis	University of Delaware
Academic Enhancer or Career Changer	Both	Both	Academic enhancer	Academic enhancer
Admissions Requirements	Chemistry pre-requisites, letter of recommendation	3.0 GPA, us citizen or permanent resident, calculus experience	2.7 GPA, California resident, educationally or socially disadvantaged, medical school pre-requisite courses	3.0 GPA, two letters of recommendation, medical school pre-requisite courses complete
Tuition	\$450/credit	\$35,296 total	NA, though most receive significant financial aid	\$5,450/ semester in-state \$14,625/ semester out-of-state
Number of Credits	47	NA	Variable, 2 semesters + 1 summer's worth	26-44
Modality	In-person	In-person	In-person (cohort)	In-person
Acceptance Rates	5%	10% for AE 20% for CC	5%	8.3%
Retention Rates	90%	High	Near 100%	High
Placement Rates	90-92%	Near 100%	82%	75%

All programs require a prior bachelor's degree, with academic enhancers requiring ones in a relevant pre-med field. All programs enroll fewer than 40 students.

Source: Forum interviews and institution websites

Competitor Programs

All Profiled Programs Only Offer In-Person Courses

All contacts fear that an online or hybrid program would fail to serve students effectively. Contacts voiced concerns that medical school admissions officers view online courses skeptically, especially lab courses. Further, some expressed concern that online courses might lead to students not fully dedicating themselves to their studies. Programs are extremely rigorous and most administrators forbid students to work while enrolled and often discourage part-time students. However, if **UNC Chapel Hill** could successfully establish a hybrid or online program, it would be unique in the North Carolina region.

Pre-Medical/Health Programs in the North Carolina Region

	Institution	Program Name	AE or CC	Credits	Tuition (in-state/out-of-state) per semester
Virginia	Hampton University	Medical Science Master's Program	AE	50	\$472 / credit up to 9 credits or \$9309/ semester
	Eastern Mennonite University	MA in Biomedicine	CC	59	\$850 / credit up to 8 credits or \$8,400/ semester
	Georgetown University and George Mason University	Advanced Biomedical Sciences Graduate Certificate Program	Both	20	\$15,400
	Liberty University	Master of Science in Biomedical Sciences	CC	39	\$520 / credit
	Eastern Virginia Medical School	Medical Master's Program	Both	24 or 49	\$11,750 / \$13,250
	The George Washington University	Pharmaceutical Sciences Program	CC	35	\$19,750
	Virginia Commonwealth University	Premedical Graduate Certificate Program	AE	27	\$12,500
	Edward Via College of Osteopathic Medicine	Post-baccalaureate Pre-medical Program	AE	35	\$8,000
	University of Virginia	Post-baccalaureate Pre-medical Program	CC	30	\$13,092 / \$15,983
North Carolina	Wake Forest University	Post-baccalaureate Pre-medical Program and Master's of Biomedical Sciences	AE	30-36	\$17,682
	Meredith College	Pre-health Post-baccalaureate Certificate Program	Both	NA	NA
	Guilford College Post-Baccalaureate pre-health program	Post-baccalaureate Pre-Health Program	CC	NA	NA
	UNC at Greensboro	Pre-medical and Pre-dental Post-baccalaureate Program	CC	36	NA
	North Carolina State University	Interdisciplinary Physiology Graduate Program	AE	36	\$3,811 / \$10,655
South Carolina	Medical University of South Carolina	Biomedical Science Graduate Program	AE	NA	\$6,490 / \$10,128
	USC Medical School	Graduate Certificate in Biomedical Sciences	AE	NA	\$7,875 / \$10,500

Source: Institution websites and the AAMC

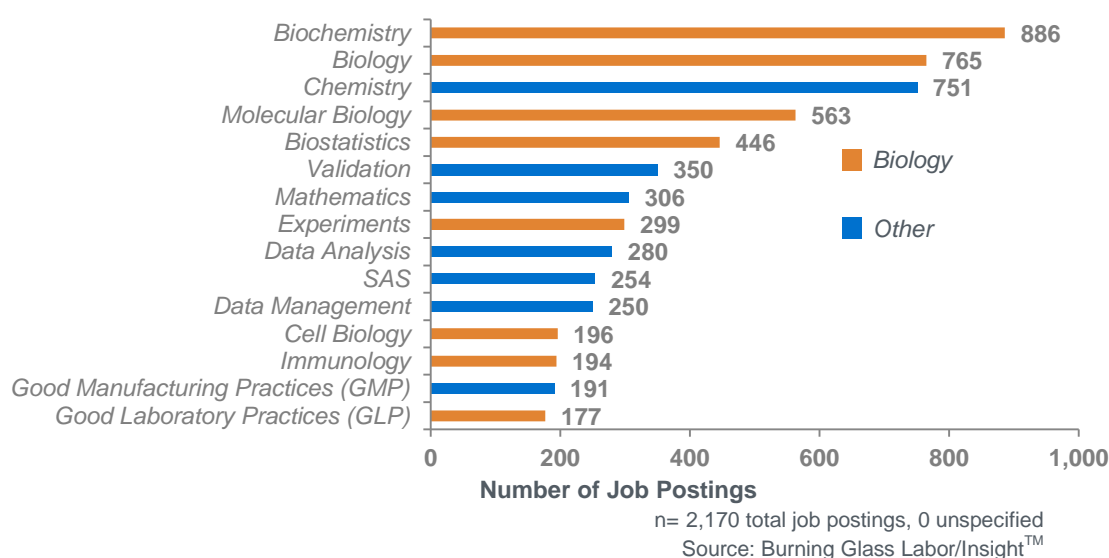
Degree Level Considerations

Consider the Differences between a Graduate Certificate, Post-Baccalaureate Certificate, and Master's Degree Program

Pre-medical/health programs exist in many forms. While post-baccalaureate certificate programs are most common, many institutions structure programs as part of master's degree programs (particularly academic enhancer programs). Contacts at the **University of Delaware** note that a stackable credential ensures that students who do not successfully enroll in medical school may receive a degree that will help find a job upon graduation. Nearly all contacts believe that a stand-alone post-baccalaureate certificate puts students on the level of a bachelor's of science graduate (if a career changer program). Some programs, particularly academic enhancer programs, classify their programs as graduate certificates.

Top Skills Employers Demand of Post-Baccalaureate Students

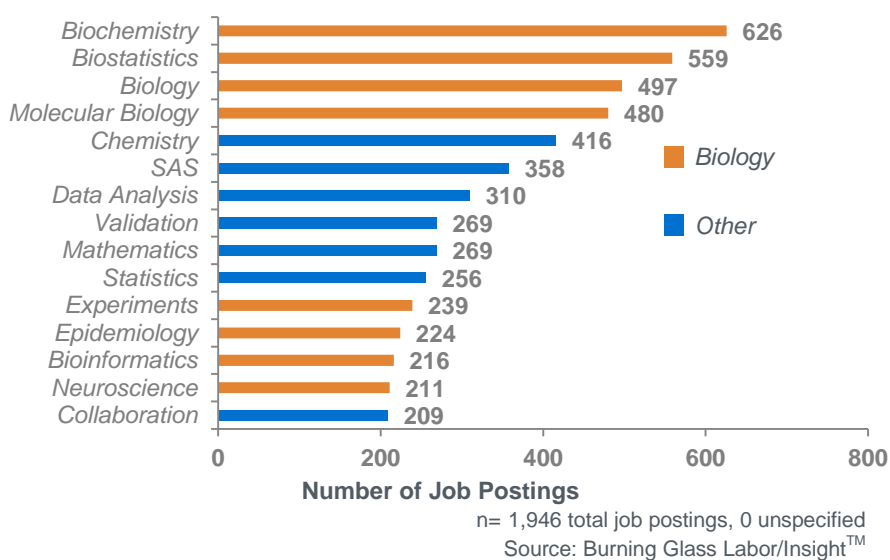
January 2014 – December 2014, North Carolina Region



Skills required of graduate students focus more on advanced practice skills (e.g., 'bioinformatics,' 'biostatistics,' 'epidemiology') than those required of undergraduates. Undergraduates skills appear slightly more basic (e.g., 'good manufacturing practices' and 'good laboratory practices.'

Top Skills Employers Demand of Biomedical Science Graduate Students

January 2014 – December 2014, North Carolina Region







Advisors and Features

Require Students to Meet with Advisors Every Couple of Weeks

Students at **UC Davis** must take a seminar in which the program coordinator meets with students weekly to discuss their courses. Seminars also allow staff to bring various health care professionals on site to provide perspectives on coursework and network with students. Students also must attend social hours every week or two to ensure students do not become too competitive, and take time to relax. Finally, students are required to meet with their advisors every few weeks to focus students' attention on their goals and provide students with the necessary support with the graduate school application process.

Techniques Used by Universities to Improve Placement Rates

	CSU Fullerton	Advisors help write reports or articles to improve their students' profile and help facilitate letters of recommendation.
	UC Davis	Administrators bring together students from socio-economically disadvantaged backgrounds in a cohort model and require students to spend time with one another to improve performance and reduce competition.
	Johns Hopkins University	Several courses are taught by physicians who can assist students with letters of recommendation for graduate school. Administrators also permit students to attend medical school courses and occasionally observe clinical work.
	University of Delaware	Administrators strongly advise students to take a wide variety of courses, including courses on history, women's studies, and psychology to understand health care issues from a wide range of perspectives. Administrators also encourage students to study abroad to improve their academic profile.

4) Student Profile and Outcomes

Student Background

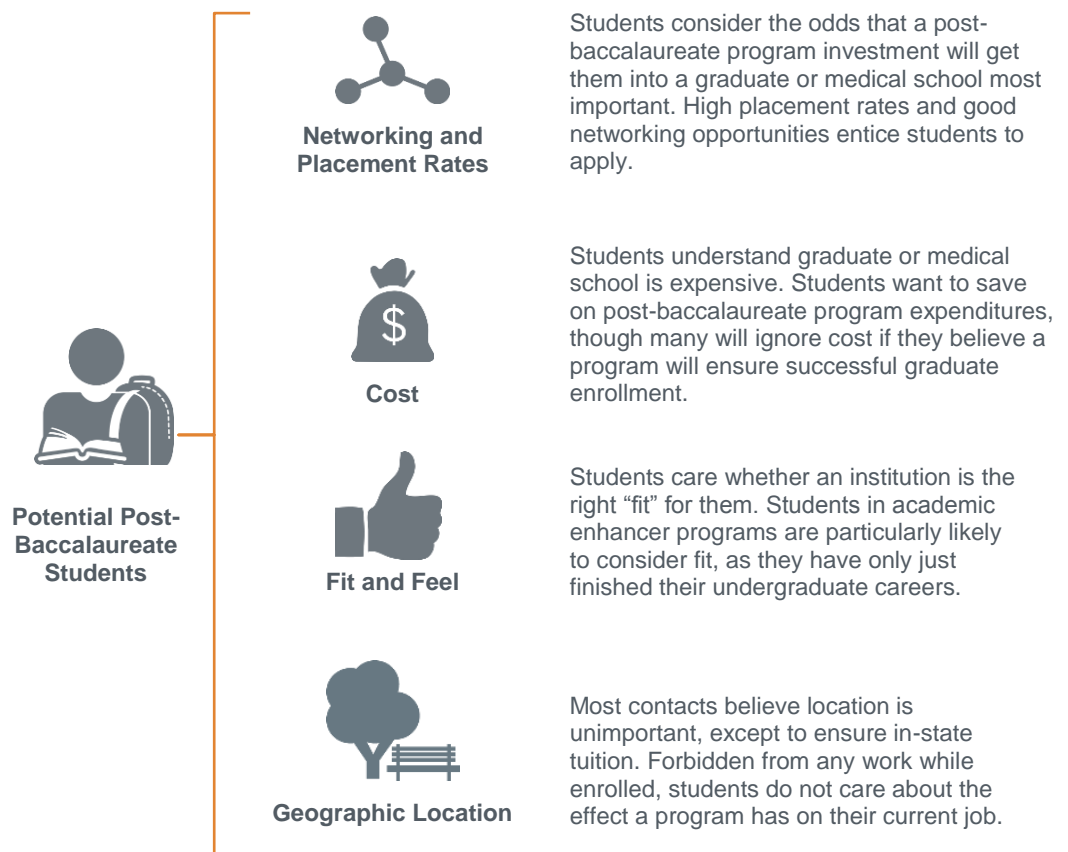
Students' Educational Background Do Not Provide Clear Guidance for Marketing and Outreach Efforts

The career changer program at **CSU Fullerton** equally attracts students with educational experience in psychology, sociology, business, and the humanities. The career changer program at **Johns Hopkins University** attracts students with math, psychology, and related social science degrees, as well as students with business degrees. Academic enhancer programs, by their very nature, only enroll biology, chemistry, or physics graduates who have fulfilled graduate school pre-requisites. Academic enhancer students typically enroll immediately after completion of their undergraduate degree and after an unsuccessful attempt to enroll in graduate school.

Graduates with Two to Five Years of Experience Display the Greatest Interest in Career Changer Programs

Students enrolled in the **Johns Hopkins University** career changer program average 25 years of age, with three to four years of work experience. These students have often had some professional exposure to a health related field.

Student Post-baccalaureate Program Selection Considerations

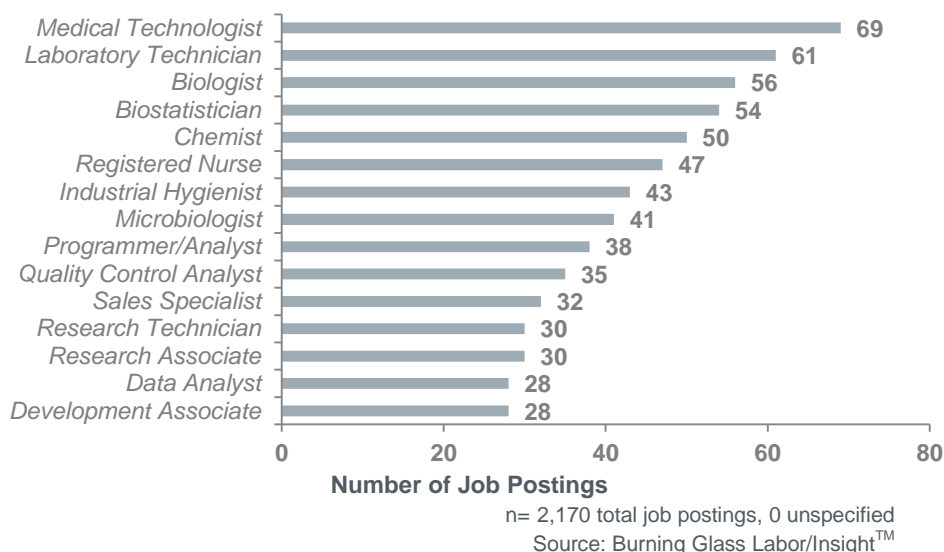


Employer Demand for Bachelor's-Level Biomedically Qualified Employees Slightly Exceeds Demand for Graduate-Level Employees

Though a large majority of students would like to enter a graduate program upon completion of a pre-medical/health programs, many job opportunities exist for those who do not matriculate onwards.

Top Titles for Post-Baccalaureate Biomedically Prepared Students

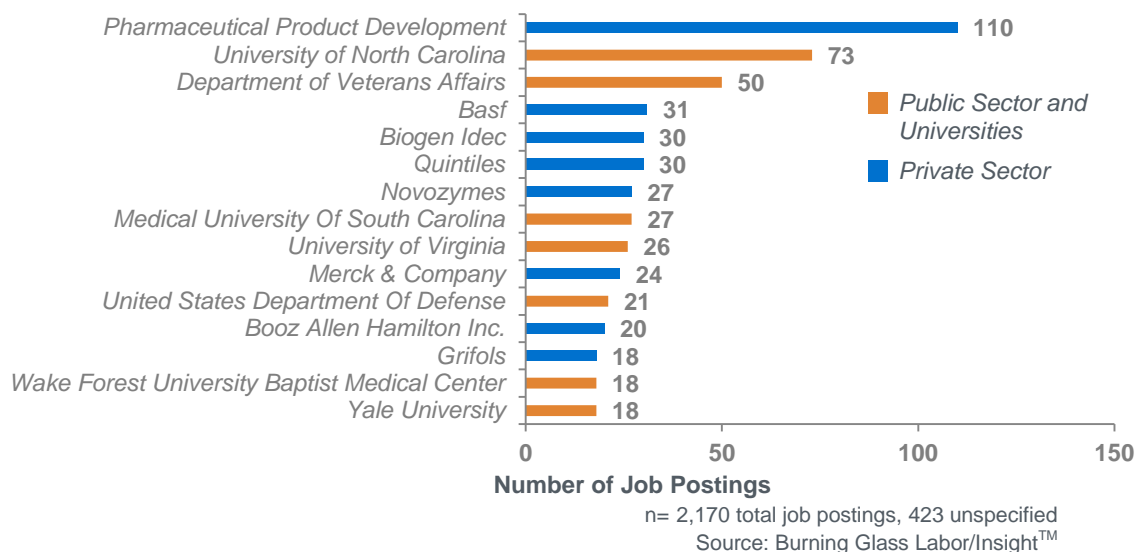
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The top three titles for post-baccalaureate student employment are 'medical technologist,' 'laboratory technician,' and 'biologist.' Most available jobs to students with a post-baccalaureate level of education are technical or assistant level work in university and private sector laboratories and firms.

Top Employers of Post-Baccalaureate Biomedically Prepared Students

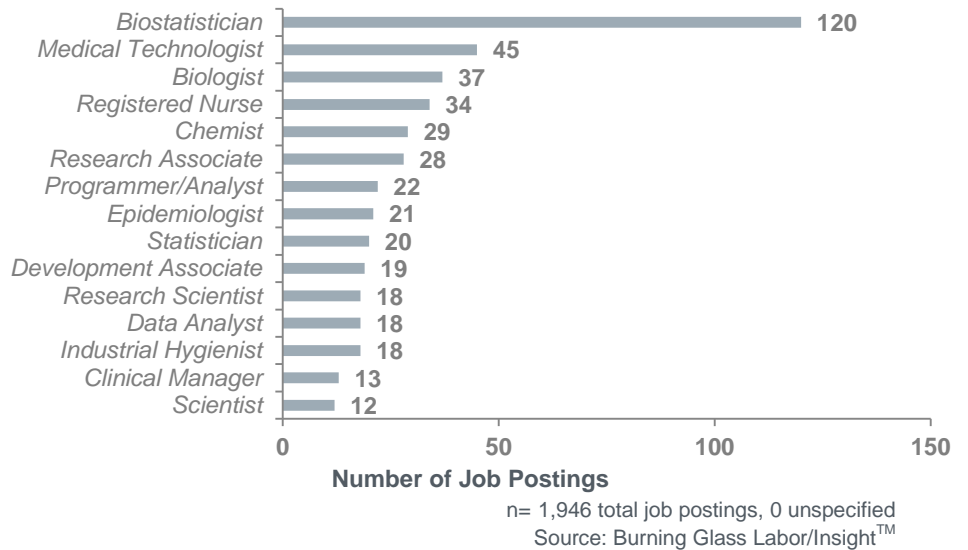
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The top three titles for graduate-level biomedical students are 'biostatistician,' 'medical technologist,' and 'biologist.' Generally, positions available to graduate students are higher level than those for bachelor's and post-bachelor's students. There are also relatively more public sector and university jobs available to applicants with graduate degrees.

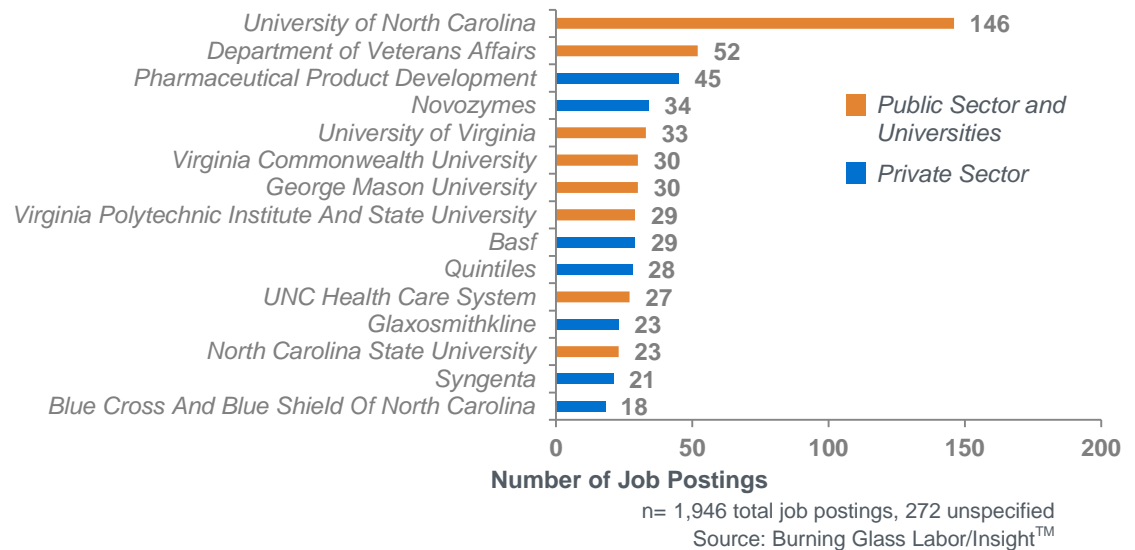
Top Titles for Graduate Level Biomedical Students

January 2014 – December 2014, North Carolina Region



Top Employers for Graduate Level Biomedical Students

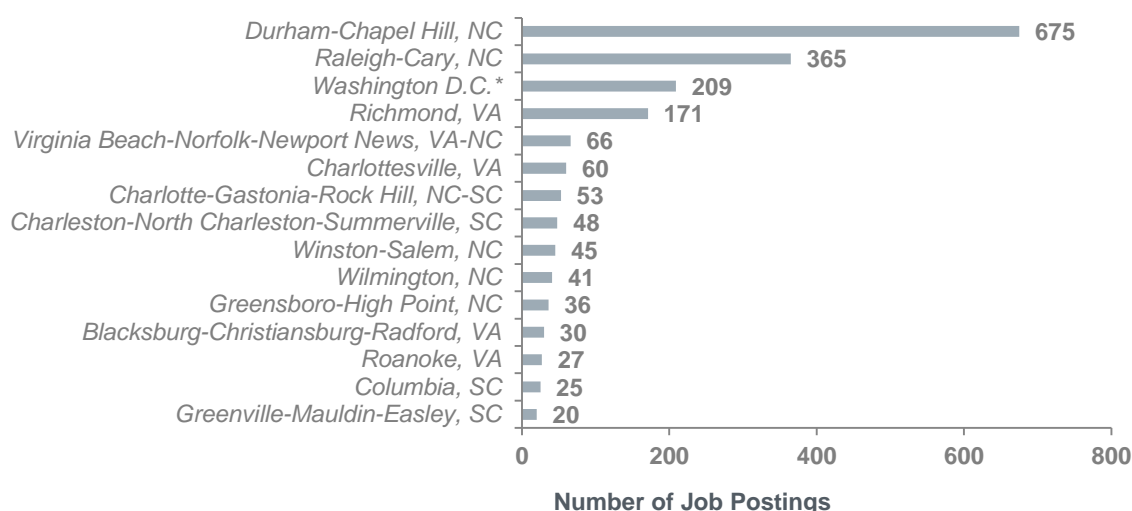
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On both the graduate and undergraduate level, the Durham-Chapel Hill, Raleigh-Cary, and Washington D.C. metropolitan statistical areas host the largest number of available job postings. Employers in North Carolina post by far the most jobs, with 1,421 postings compared to Virginia's 635 and South Carolina's 114. The relative number of job postings between Virginia and North Carolina would indicate NC's four extant programs underserve North Carolina. Virginia hosts nine programs yet has less than half the number of job postings North Carolina does.

Top Locations for Post-Baccalaureate Biomedically Qualified Students

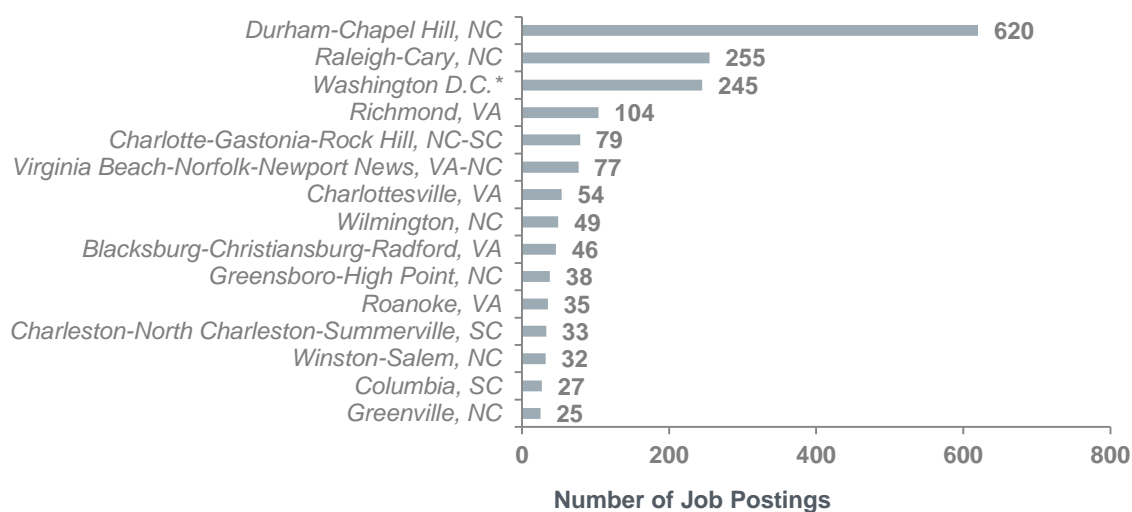
January 2014 – December 2014, North Carolina Region



* Washington-Arlington-Alexandria, DC-VA-MD-WV
n= 2,170 total job postings, 0 unspecified
Source: Burning Glass Labor/Insight™

Top Locations for Graduate Level Biomedical Students

January 2014 – December 2014, North Carolina Region



* Washington-Arlington-Alexandria, DC-VA-MD-WV
n= 1,946 total job postings, 0 unspecified
Source: Burning Glass Labor/Insight™

Appendix A: Networking Contacts

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