

**NEW UNITS OF INSTRUCTION, PUBLIC SERVICE,
AND RESEARCH AT PUBLIC UNIVERSITIES**

Submitted for: Action.

Summary: This item requests approval of two degree programs and one certificate program at two public universities.

Action Requested: That the Illinois Board of Higher Education approve the following:

Governors State University

- Master of Arts in School Psychology in the South Metro Region
- Educational Specialist Certificate in School Psychology in the South Metro Region

Illinois State University

- Bachelor of Science in Biochemistry in the Central Region

STATE OF ILLINOIS
BOARD OF HIGHER EDUCATION

**NEW UNITS OF INSTRUCTION, PUBLIC SERVICE,
AND RESEARCH AT PUBLIC UNIVERSITIES**

By statute, the Illinois Board of Higher Education is responsible for approving new on-campus and off-campus units of instruction, organized research, and public service, and units of administration proposed by public university governing boards. The Board's approval criteria, defined in rules adopted for administering the statute, address university mission, academic control, faculty and staff, support services, financial resources, student demand, curriculum, statewide need, and congruence with Board policies and priorities. In addition to the approval criteria in rules, each new program was reviewed for its contributions to the goals of the *Illinois Public Agenda for College and Career Success*, which sets forth new priorities to guide Illinois higher education. Staff recommendations are based on analyses of application materials and responses to staff questions, and, for advanced degree programs, recommendations of external consultants.

Governors State University

Proposed Program Title: Master of Arts in School Psychology in the South Metro Region

Proposed Program Title: Educational Specialist Certificate in School Psychology in the South Metro Region

Projected Enrollments and Degrees: Governors State University has projected that enrollment in the proposed Master of Arts in School Psychology will grow from approximately 20 in the first year to 40 in the fifth year and projected that 20 degrees will be awarded in the second year of operation and between 15 to 20 degrees will be awarded annually in the fifth year and beyond.

The University has projected that approximately 20 students will enroll in the Educational Specialist Certificate program the third year (following completion of the master's) growing to 40 students in the fifth year. It is projected approximately 15 to 20 certificates will be conferred annually in the fourth year and beyond.

The projected enrollments and degrees for the master's program are similar to the numbers for the specialist certificate program because it is expected that most of the same students will complete both programs using the cohort enrollment model beginning at the master's level.

Background

Governors State University (GSU or the University) requests authority to offer the Master of Arts (M.A.) in School Psychology and the Educational Specialist Certificate (Ed.S.), a related post-master's certificate program, in the South Metro Region. The two programs will share much

in common, including faculty, facilities, equipment, and students who would enroll in cohorts at the master's level and are expected to enroll in the specialist certificate program immediately after completion of the master's. As conceived, a typical student will take four years to complete both programs. The proposed programs are designed to provide a combination of essential theoretical and applied approaches across developmental, cognitive, social, and behavioral areas. Graduates of each program will be prepared to function in multiple roles, including treatment, assessment, and consultative modalities, as well as teaching and research. The programs are to supply qualified professionals to work with parents, teachers, students, educators, and others to meet the educational and psychological needs of children in the University's service region which is currently underserved by higher education.

Until 2006, the University offered one of the largest and most well-recognized master's programs in school psychology in Illinois, a program that was approved by the Illinois State Board of Education (ISBE) and accredited by the National Association of School Psychologists (NASP). Graduates were and continue to be leaders in the Illinois School Psychology Association and other professional organizations. At that time, the University's changes in personnel and budgets led to changes in priorities which resulted in the decision to discontinue the program. However, recent growing demand for the program at the regional, state, and national levels, coupled with changes in the University's strategic plan, caused the University to reconsider, plan, and propose re-establishment of the master's program. The University has indicated that the issues that led to the elimination of the program have been resolved. At the same time, the growing popularity of the Educational Specialist Certificate credential has prompted the University to seek to offer the certificate program with a very close relationship to the master's program to ensure efficiency and effectiveness.

Currently Governors State University offers nearly ten degree programs that are closely or tangentially related to the proposed programs, including three baccalaureate programs in Elementary Education, Early Childhood Education, and Psychology; five master's programs in Education, Multicategorical Special Education, Early Childhood Education, Psychology, and Counseling; as well as the Doctorate in Counselor Education and Supervision. The proposed programs in school psychology will build upon the strengths of these and other programs at the University.

Need

1050.30(a)(6): A) The unit of instruction, research or public service is educationally and economically justified based on the educational priorities and needs of the citizens of Illinois; B) The unit of instruction, research or public service meets a need that is not currently met by existing institutions and units of instruction, research or public service.

According to the U.S. *Occupational Outlook Handbook*, demand for school psychologists is driven by a growing awareness of how students' mental health and behavioral problems, such as bullying, negatively affect learning. Also, they are needed for general student counseling on a variety of other issues, including working with students with disabilities or with other special needs, tackling drug abuse, and consulting and managing personal crises.

Need for school psychologists in Illinois is validated by the Illinois State Board of Education's publication, the *Annual Report for Educator Supply and Demand*. The August 2012 publication indicates that available pool for re-entering school service personnel which includes school psychologists "is down by 13 percent" in 2010. The report's personnel severity index

ranks psychologists and closely related fields 6th out of 37 occupations fields with under supply of needed personnel.

The Illinois Department of Employment Security has projected occupational demand for clinical, school, and counseling psychologists will grow from 5,640 to 6,217 between 2008 and 2018 or by 10.2 percent compared to 8.7 percent for all occupations during the same period. Separate projections are not provided for school psychologists because the occupation is too small to be considered by itself.

J.L. Charvat's study, *Estimates of the School Psychology Workforce* for the National Association of School Psychologists, documents that in the 2004-2005 school year, the national average ratio of school psychologists to students was 1 to 1,482. During this period, the ratio for Illinois was better at 1 to 1,258; however, the National Association of School Psychologists recommends a lower school psychologist to student ratio of 1 to 1,000. Based upon estimated student enrollment in Illinois higher education, Charvat concluded that approximately 19,700 additional school psychologists would be needed in 2008 to meet the recommendation. Yet, the number of school psychologists graduating from Illinois training programs was estimated to be 1,900 of which only approximately 1,750 school psychologists actually enter the field each year. Additionally, it is reported in 2004 by Curtis, Chesno-Greer & Hunley in *The Changing Face of School Psychology: Trends in Data Projections for the Future* that about 67 percent of all current school psychologists in the U.S. will retire by 2020. They predict that the shortage will be almost 15,000 school psychologists. Although insufficient to address the unmet need, the two proposed programs would add approximately 40 to 50 school psychologists a year.

The Illinois Public Agenda for College and Career Success

Although the proposed two programs for preparing school psychologists will address all four goals of the *Illinois Public Agenda for College and Career Success*, they will make the most contributions to Goals 2 and 3. Goal 2, to *ensure college affordability for students, families, and tax payers*, will be met because the University has one of the lowest graduate tuition rates among universities in the state. In addition to this advantage, students admitted to either program will be eligible for the University's financial aid, including grants, loan, and work-study.

Goal 3, to *increase the number of high-quality postsecondary credentials to meet the demands of the economy and an increasingly global society*, will be addressed by educating and graduating students in each program to help meet the state and national priorities.

Comparable Programs in Illinois

In spite of the significant need for more school psychologists in Illinois, there are only four fully accredited school psychologist programs at the specialist certificate level and there are over ten closely related programs, including educational counseling, educational psychology, and clinical psychology. At the master's level, only the Loyola University's program in school psychology is listed in the Illinois Board of Higher Education (IBHE) Degree Program Inventory with over three dozen other closely related programs in fields such as educational psychology, clinical psychology, and counseling psychology. Data from the Inventory clearly indicate there are few graduate-level degree programs in school psychology in the state, particularly at the master's level.

Mission and Objectives

1050.30(a)(1): A) The objectives of the unit of instruction, research or public service are consistent with the mission of the college or university; B) The objectives of the unit of instruction, research or public service are consistent with what the unit title implies.

School psychologists help children and youths succeed academically, socially, behaviorally, and emotionally. To be effective, they collaborate with educators, parents, and other counseling professionals to create and maintain safe, healthy, and supportive learning environments that strengthen connections between home, school, and the community for all students. Their training emphasizes preparation in mental health and educational interventions, child development, learning, behavior, motivation, curriculum and instruction, assessment, consultation, collaboration, school law, and others.

The objectives of the master's and the educational specialist certificate programs are to increase the number of graduates of the proposed two programs with strong qualifications in school psychology with preparation in theoretical and applied fields, including developmental, cognitive, social, and behavioral areas so that the graduates can work effectively with many collaborators, including parents, teachers, school leaders, and others to meet the educational and mental needs of students, as well as assessment, consultative modalities, and teaching and research.

The objectives are aligned with the ten 2010 goals of the National Association of School Psychologists, including:

1. Data-based decision making and accountability,
2. Intervention and instructional support to develop academic skills,
3. Interventions and mental health services to develop social and life skills,
4. Preventive and responsive services,
5. Family and school collaboration services,
6. Diversity in development and learning,
7. Research and program evaluation, and
8. Legal, ethical, and professional practice.

The goals and objectives of the master's and educational specialist certificate are consistent and support the mission and priorities of Governors State University.

Curriculum and Assessment

1050.30(b)(1): A) The caliber and content of the curriculum must assure that the objectives of the unit of instruction will be achieved. B) The breadth and depth of the curriculum must be consistent with what the title of the unit of instruction implies. C) The admission and graduation requirements for the unit of instruction must be consistent with the stated objectives of the unit of instruction. D) Institutions must show the capacity to develop, deliver and support academic programs. Procedures and policies that will assure the effective design, conduct and evaluation of the degree program under the academic control of the institution must be developed. Assessment plans must demonstrate that the institution has identified clear and appropriate program and student learning goals and has defined appropriate outcomes. Appropriate data must be collected and may be requested by the Board to show the level of student learning that

has occurred as a result of participation in the institution's programs of study. E) Degree programs must meet [appropriate] requirements.

Admission Requirements

To be admitted to the Master of Arts in School Psychology, an applicant must meet a number of requirements, including:

1. Submission of a set of unopened transcripts from one or more accredited colleges and universities with a grade point average of at least 3.00 on a scale of 4.00 in the last 60 hours of undergraduate coursework, which include about nine pre-requisite courses specified by the program faculty,
2. Proof of having taken the Graduate Record Examination within the last five years and scored a minimum of 1050 points on the Verbal and Quantitative sections and a 4.5 points in the Analytical Section,
3. Evidence of a satisfactory professional writing and analysis in a course such as PSYC 3102, Thinking and Writing in Psychology,
4. Submission of three personal references from professionals/professors familiar with the student's academic and professional performance on the University's Personal Reference Forms,
5. Present evidence of having passed the Basic Skills Test of the Illinois Certification Testing Systems, and
6. Evidence of passing an Illinois State Criminal Background check before the interview with faculty.

Students who have successfully met all requirements for the M.A. in School Psychology program may be admitted to the Educational Specialist Certificate program because as they are progressing through the master's program, they will be assessed to determine if they are well prepared for the certificate program. The two programs are designed to be closely related with the expectation that most students who complete the master's program will pursue the advanced certificate program and most of the faculty will support both programs.

Curricula

The curriculum of the Master of Arts in School Psychology is aligned with the standards of ISBE, the National Council for Accreditation of Teacher Education (NCATE), and NASP, and it consists of 36 semester hours from 12 graduate level courses that every student must complete. The 12 courses comprise four groups:

- Educational and Psychological Foundations, comprising 18 hours, including Cognitive/Educational Psychology, Psychopathology, and Seminar in Human Development;
- Data Based Decision Making and Assessment consisting of 18 hours, including Psycho-educational Lab, Psycho-educational Assessment and Intervention, Diagnostic Lab I and II, and Psycho-diagnostics I: Intelligence;
- Intervention, Consultation, and Program Evaluation, comprising 12 hours, with one course in Theories of Psychotherapy; and
- Field Experience, with a course in the Practicum in School Psychology requiring 120 supervised and evaluated practicum.

In addition to these requirements, each student must complete a portfolio containing performance- and knowledge-based evidence demonstrating attainment of the program's required competencies.

The curriculum of the Educational Specialist Certificate in School Psychology program is aligned with the standards of ISBE, NCATE, and NASP, and it consists of 30 semester hours beyond the Master of Arts in School Psychology. The ten required courses for the certificate program are clustered into three groups:

- Educational and Psychological Foundations, consisting of two courses: Topics in Multicultural Psychology, and Neuropsychology: Brain and Behavior;
- Data Based Decision Making and Assessment, consisting of one course in Advanced Statistics in Behavioral Science;
- Intervention, Consultation, and Program Evaluation consisting of four courses, including: Family Systems: Theory and Practice, Crisis and Intervention Strategies for Schools, and Advanced Assessment and Intervention; and
- Field Experiences comprising three courses in Advanced Practicum in School Psychology requiring at least 100 hours of supervised and evaluated work, and Internship in School Psychology I and II.

In addition to these requirements, each student must: a) successfully complete a capstone project providing evidence demonstrating completion of the program competencies as well as consultation, intervention planning, and/or program evaluation, b) pass the National School Psychology Examination or the State of Illinois Subject Area Test in School Psychology, and c) complete a two-semester internship which requires 1200 hours, at least half of which must take place in a school setting.

Assessment of Student Learning Outcomes

Assessment of student learning in each of the two programs will be conducted using a variety of direct and indirect measures, including tests and examinations in many courses for the program, passing the National School Psychology examination, candidacy course evaluation, evaluation of submitted comprehensive portfolios, and capstone project reports. Also, passing an optional National Certified School Psychologist exam administered by the National Association of School Psychologists is recommended as well as passing the Illinois content-area test. Additionally, to work as school psychologists in the state, graduates of the programs must be certified. These assessments are consistent with the requirements of the Illinois State Board of Education and the National Association of School Psychologists.

Program Assessment

Consistent with the IBHE staff requirements, the University will submit to the IBHE a progress report on the Master of Arts and the Education Specialist Certificate programs in School Psychology at the end of the third year of operation. The reports will summarize key areas of accomplishments by the faculty and any remaining challenges and how each challenge will be addressed. In addition, the program faculty will participate in the University's eight-year program review process to assess the program using multiple measures including evaluation of faculty teaching in the programs by students; the level of faculty research and scholarship, awards and honors, retention and graduation rate of students in the program; and the level of alumni and employer satisfaction with the programs. The faculty will use measures such as the percent of

graduates employed in occupations closely related to the discipline. Accreditations of each program by the National Council for Accreditation of Teacher Education, and the National Association of School Psychologists will be another mode assessing the program. A summary of each program review, including the program's strengths and weaknesses, as well as steps to be taken to improve the program, will be submitted by the University to the IBHE with summaries of other programs reviewed in the same cycle.

Facilities (space, equipment, instructional materials)

1050.30(a)(4): A) Facilities, equipment and instructional resources (e.g., laboratory supplies and equipment, instructional materials, computational equipment) necessary to support the high quality academic work in the unit of instruction, research or public service are available and maintained; B) Clinical sites necessary to meet the objectives of the unit of instruction, research or public service; C) Library holdings and acquisitions, owned or contracted for by the institution, that are necessary to support high quality instruction and scholarship in the unit of instruction, research and public service, are conveniently available and accessible, and can be maintained.

The proposed programs will be provided with needed offices for the existing faculty and those that will be hired. It is expected that the existing classrooms and labs, other facilities, as well as equipment required by the specialized accreditation in the discipline will be sufficient to support the programs. In case of any unmet need, it is projected \$45,000 will be budgeted in the first year and \$5,000 will be budgeted each year through the four years for library resources, testing materials and lab update. Among key facilities that will support the two programs are the existing Psychology Diagnostic Lab and the GSU Family Development Center.

Library

Most of the library resources that supported the previous M.A. in School Psychology and the existing M.A. in Psychology, M.A. in Counseling, and doctoral degree in Counselor Education and Supervision will be available to support the master's degree and the advanced certificate programs. The resources include over four dozen textbooks, 19 academic journals, and 14 electronic databases important in the discipline. Examples of the journals are: *Journal of School Psychology, School Psychology Digest, School Psychology International, School Psychology Quarterly, School Psychology Review, Advances in School Psychology, Cognitive Therapy and Research, Learning and Motivation, and Psychology of Learning and Motivation*. In addition, some of the budgeted funds for four years identified above will be used to acquire needed library resources for the two programs.

Technology and Instructional Resources

It is expected that the required minimum equipment for the two programs will be available to support the two programs. They include interview and testing tools, as well as equipments in the Diagnostic Lab and the Family Development Center. To meet anticipated need for equipment the facility remodeling for the two programs, \$40,000 has been budgeted for the second year. The Lab should be self-supporting through the estimated lab fees students will pay. Any unmet need for the programs will be addressed when the University applies for the specialized accreditation by the National Association of School Psychologists and/or to meet any NCATE requirements.

Faculty and Staff

1050.30(a)(3): A) The academic preparation and experience of faculty and staff ensure that the objectives of the unit of instruction, research or public service are met.

Currently, 13 existing faculty members will support the proposed M.A. in School Psychology and the Educational Specialist Certificate programs. Two of them were recently hired. Each of the 13 faculty members has an earned Ph.D. except one who has a Psy.D. in School Psychology. Five of the 13 have doctoral degrees in clinical psychology while three of them have expertise in school psychology. Of the 13 faculty members, two of them with doctorates in school psychology will support the proposed programs full-time and one of the two will be the Program Director. The other faculty members will serve the programs as cognates. The other degrees are closely related to the discipline and they include educational psychology, cognitive and experimental psychology, and marriage and family therapy. In addition to these, one additional faculty with an earned doctorate in School Psychology will be hired in the fourth year of operation.

Fiscal and Personnel Resources

1050.30(a)(5): A) The financial commitments to support the unit of instruction, research or public service are sufficient to ensure that the faculty and staff and support services necessary to offer the unit of instruction, research or public service can be acquired and maintained; B) Projections of revenues necessary to support the unit of instruction, research or public service are based on supportable estimates of state appropriations, local tax support, student tuition and fees, private gifts, and/or governmental grants and contracts.

No new state resources are needed to establish the proposed Master of Arts and Educational Specialist Certificate in School Psychology programs because the programs will be funded by tuition and fees paid by students enrolled in both programs. The budgets for the programs are considered as one here because both programs will be supported by nearly the same resources, including faculty, facilities and equipment, including the Diagnostic Lab, as well as the library resources and instructional technology. Students in the programs will be enrolled in successive cohorts for the master's program and when they complete the master's program, they are expected to continue in the advanced certificate program such that a typical student is expected to complete both programs in four years.

Governors State University has projected that altogether, the budgets of the two programs will grow from approximately \$117,000 in the first year to \$448,500 in the fourth year. During this period, total projected expenditures for the programs are expected to be \$129,000 in the first year and \$304,773 in the fourth year. The University has projected that while total expenditure will slightly exceed total resources in the first year, there would be more total resources than total expenditure in the second year and beyond. As a result, for example, it is expected that in the fourth year total resources for the programs will exceed total expenditure by over \$100,000. Total costs for the programs are relatively low because considerable existing resources such as library resources, facilities and equipment will be available to support the programs. The vast majority of faculty who support the programs will serve as cognate or part-time faculty members because they serve other University's programs.

Accreditation and Licensure

1050.30(b)(3): Appropriate steps shall be taken to assure that professional accreditation needed for licensure or entry into a profession as specified in the objectives of the unit of instruction is maintained or will be granted in a reasonable period of time.

1050.50 (a)(1) Three years after approval of a new program, the institution shall provide a program progress report to the Board as part of the institution's annual report. The third year progress report shall describe the institution's performance in meeting program objectives and show where any improvements are necessary. The placement of a program in voluntary temporary suspension will not negate the requirement of submitting a third year progress report.

1050.50 (a)(2)(C) Requirement for Programs in which State Licensure is Required for Employment in the Field: In the case of a program in which State licensure is required for employment in the field, a program can be found to be in good standing if the institution is able to provide evidence that program graduates are eligible to take the appropriate licensure examination and pass rates are maintained as specified in the objectives of the unit of instruction. If there is no such evidence, the institution shall report the program as flagged for review.

The previous M.A. in School Psychology was accredited by the National Association of School Psychologists for the National Certified School Psychologist certification. If the programs are approved by the IBHE, the Department will seek the accreditation as soon as possible. In addition to this accreditation, Governors State University is accredited by the Higher Learning Commission of the North Central Colleges and Schools which cover all degree programs offered by the University. Since students who complete the master's program are expected to be admitted to the advanced certificate program and to complete it, the two accreditations are also applicable to the Educational Specialist Certificate program.

Program Information

1050.30 (b)(2)(A) The information the institution provides for students and the public...(B) The information listed in subsection (b)(2)(A) shall be available to prospective students prior to enrollment and shall be included in the institution's catalog of programs.

Information about Governors State University's proposed Master of Arts and Educational Specialist Certificate programs in School Psychology, including a detailed description of the each curriculum, admission requirements, tuition, fees and other cost information as well as university and graduate school policies, will be published on the University's website, www.govst.edu. Comparable information about the programs will be published in hard copy in the University's Graduate catalog and similar information may be available from the College of Education upon request.

Staff Conclusion. The staff concludes that the Master of Arts in School Psychology and the Educational Specialist Certificate in School Psychology programs proposed by Governors State University meet the criteria to implement the Board of Higher Education Act (110 ILCS 205/et.seq.) as set forth in 23 Illinois Administrative Code, Ch. II, Section 1050.30, and the Illinois Board of Higher Education policies pertaining to assessment and accreditation or licensure.

Illinois State University

Proposed Program Title: Bachelor of Science in Biochemistry in the Central Region

Projected Enrollments and Degrees: Illinois State University has projected that enrollments in the Bachelor of Science in Biochemistry in the Central Region will grow from a cohort of approximately 12 full-time students in the first year to 48 in the fifth year. It has also projected that approximately 12 degrees will be awarded in the fifth year and annually in future years. If enrollment exceeds the projected 48, there would be more degrees conferred per year.

Background

Illinois State University (the University) requests authority to offer the Bachelor of Science (B.S.) in Biochemistry in the Central Higher Education Region to qualified full- and part-time students. The program is designed to serve the needs of Illinois, the United States of America, and the planet generally for educated university graduates able to enter a wide variety of professions or progress to higher levels of study. Graduates of the program will be suitable to enter any profession requiring a fundamental understanding of biochemical processes and those requiring the ability to employ the techniques of biochemistry to purify, characterize, and manipulate biological molecules to solve problems in medical and agricultural sciences and in biotechnology. They will also be appropriately educated to enter graduate study in most biomolecular fields, such as biochemistry, molecular biology, physiology, pharmacology, and biophysics.

Beginning in 2001, the Department of Chemistry and the School of Biological Sciences at the University collaborated to offer a Bachelor of Science in Biochemistry and Molecular Biology. Since 2009, the students in the program have been given the opportunity to select one of three specialties within the degree program: Biochemistry, Molecular and Cellular Biology, and the original, General track. As the titles imply, those students selecting Biochemistry are educated primarily as chemists, with a strong biological foundation in their advanced coursework, while the students selecting Molecular and Cellular Biology are to become fundamentally biologists, with an emphasis on the chemistry of biological processes pervading their advanced learning. Those students choosing the General track receive an education combining the fundamental principles of both approaches. At present, the 91 students enrolled in the joint program are essentially evenly distributed between the three tracks: 29 are pursuing Molecular and Cellular Biology, 32 Biochemistry, and 30 the General track.

While the combined program in Biochemistry and Molecular Biology has been successful, enrolling nearly twice as many students as predicted in 2001, both the Department of Chemistry and the School of Biological Sciences see substantial advantages to separating the program into independent degrees, each entirely the responsibility of its supervising academic unit. In the case of Biochemistry, in addition to the obvious administrative advantages of sole responsibility for the degree's curriculum and the students' education, the Department of Chemistry will now be able to offer a bachelor's degree in biochemistry certified by the American Chemical Society (ACS), the premier society of chemists in the U.S. and the largest scientific society in the world. ACS certification of a bachelor's degree in chemistry and its subsidiary fields is the most valued endorsement for such a degree and a worthy credential for the University to offer its Biochemistry graduates.

If approved by the Illinois Board of Higher Education (IBHE), the establishment of the University's B.S. in Biochemistry will not end collaboration between the University's chemists and biologists; the program's students will be required to complete courses emphasizing molecular and cellular biology, and the faculty of the School of Biological Sciences with biochemical research interests will actively engage Biochemistry students seeking advanced research opportunities with significant biological components. The program provides sufficient flexibility in advanced coursework and research that students will still reap many of the advantages of the combined program in Biochemistry and Molecular Biology.

Institutional Completion Rates

Criterion 1050.30(b)(1)(G) provides that success in student progression and graduation, and success rates in programs preparing students for certification and licensure, shall be consistent with expectations in higher education and the appropriate related field of study. At a minimum, the Board shall consider the following factors, based on results for similar institutions: (i) Graduation rates, degree-completion rates, retention rates, and pass rates for licensure and certification. (ii) Success rate, which shall be, at a minimum, higher than that of the lowest quartile of these measures for similar Illinois institutions defined as open versus competitive enrollment institutions and primarily associate versus primarily baccalaureate granting institutions. Exceptions may be made to the lowest quartile if an institution is above the national average for these measures using the same comparison categories of institutions.

Illinois State University is in the primarily baccalaureate-granting, selective-admission comparison group in Illinois. Cohort graduation is based on those seeking a bachelor's degree.

<u>Cohort Graduation Rate</u>	<u>Group Mean</u>	<u>Group Median</u>	<u>Rank</u>
71.0%	52.3%	54.9%	9/65
<u>Undergraduate Completions per 100 FTE</u>	<u>Group Mean</u>	<u>Group Median</u>	<u>Rank</u>
24.6	22.2	22.2	16/67

Note: This new section is a work in progress as staff begins evaluating institutions and presenting augmented write-ups for Board consideration, based on criteria that were added for explicit consideration under recently-adopted revisions to IBHE rules. These data were considered in the staff evaluation of the proposal, but were not a determinative factor as the implementation of the revised rules is phased in.

Need

1050.30(a)(6): A) The unit of instruction, research, or public service is educationally and economically justified based on the educational priorities and needs of the citizens of Illinois; B) The unit of instruction, research or public service meets a need that is not currently met by existing institutions and units of instruction, research or public service.

Biochemistry is central to the revolution in biotechnology the world is currently witnessing. The elucidation of biomolecular targets for novel pharmaceuticals, pesticides and herbicides, and research chemicals designed to uncover the participants in a cellular process of interest, depends on a strong foundation in biochemistry. In recent years biological molecules

have been modified to carry out processes in engineering and other technological pursuits, devoid of any other remnants of the cells in which those molecules were discovered. The explosion of novel technologies based on molecules discovered in biological environments has occurred with biochemists the greatest contributors to their development, and future discoveries and inventions promise only to put ever greater numbers of biochemists to work.

Graduates of the University with a B.S. in Biochemistry are able to find gainful employment in any area of science to which knowledge of chemistry and its role in biological systems is valuable. Therefore, the graduates of the proposed program will be employed as pharmaceutical, medical and biomedical, and agricultural scientists, scientific researchers, and biological and chemical technicians. They may also choose to undertake post-graduate education in one or another biomolecular science or in a professional field such as medicine, dentistry, optometry, or veterinary practice. The proposed B.S. in Biochemistry will prepare these students to pursue any avenue of post-graduate employment or education due to the central role their discipline plays in so many scientific and professional careers.

According to the Bureau of Labor Statistics, some 34,000 Illinois residents were employed in 2010 in occupations requiring knowledge of a life, physical, or social science, including biochemistry. Of these 34,000 positions, approximately 9,600 were those for which a B.S. in biochemistry provides appropriate education. Including the broader category of Healthcare Practitioners and Technical Occupations, for which a B.S. in biochemistry provides a fundamental education on which the graduate can build additional education or training, more than 320,000 Illinois residents belonging to this group were employed in 2010. Roughly one-third of these Illinoisans possessed advanced degrees in one or another of the constituent areas. Nationally, employment among Healthcare Practitioners and Technical Occupations is projected to grow by nearly 26 percent, the third-fastest growing area of employment among the 22 into which the Bureau divides its projections. Illinois' universities will supply a significant fraction of the workers in this area nationwide, given the high-level, high-demand credentials supplied by academic programs such as the proposed B.S. in Biochemistry, as those universities implement state and national priorities to promote science, technology, engineering, and mathematics (STEM) disciplines.

The Illinois Public Agenda for College and Career Success

The proposed Bachelor of Science in Biochemistry will address primarily the third of the four Goals of the *Illinois Public Agenda*. This goal, to increase the number of high-quality post-secondary credentials to meet the demands of the economy and an increasingly global society, will be addressed by facilitating the development of capable and motivated students' knowledge of the chemistry of biomolecular processes, and a formal credential certifying that extent of knowledge. This will permit them to obtain additional knowledge and training in this area or immediately enter a wide variety of research and professional positions strongly demanding this level of technical understanding and competence. As the biotechnology revolution continues to produce innovations spurred by and useful to scientists trained in biochemically oriented disciplines, the University's recipients of the B.S. in Biochemistry will step up to occupy the positions created by demand for these technologies and opportunities to develop new ones. These positions are opening all over the world, and the University's graduates will be prepared to work in environments where they will travel to other nations and meet with their counterparts across the planet, establishing collaborations and learning new techniques to solve an ever-broadening array of technological problems. Additionally, for those degree recipients interested in clinical careers in the health sciences or professional training, also in demand in the world's rapidly evolving technological economy and increasing standards of living, the education conferred by

successful completion of the program will prepare them to enter the most intellectually demanding of these careers and post-graduate programs.

Comparable Programs in Illinois

There are currently 15 programs in Illinois conferring a bachelor's degree in biochemistry or a comparable expertise. Given the enduring and accelerating demand for scientists with competence in biomolecular disciplines and the robust enrollment currently constituting the Biochemistry track of the University's bachelor's program in Biochemistry and Molecular Biology, it is clear that the state benefits from the availability of this program to its residents. Moreover, the state will benefit further from the re-establishment of the program as proposed, as it will offer the additional credential of the ACS-certified degree to students successfully completing the program's requirements.

Mission and Objectives

1050.30(a)(1): A) The objectives of the unit of instruction, research or public service are consistent with the mission of the college or university; B) The objectives of the unit of instruction, research or public service are consistent with what the unit title implies.

The objectives of the proposed program leading to the Bachelor of Science in Biochemistry are consistent with the mission of Illinois State University. The University strives to provide a broad education to its bachelor's degree recipients in the arts and sciences, while endowing them with the technical knowledge characteristic of their disciplines that permits them to find rewarding, remunerative employment in their chosen fields, or seek further education at competitive institutions will increase their ability to enter such a career.

The proposed B.S. in Biochemistry will offer its recipients the complement of knowledge and skills expected of a bachelor's-level graduate in the discipline. Additionally, the hosting of the program entirely by the Department of Chemistry ensures a strong chemical focus; the program's requirement to complete a semester of physical biochemistry with lab is advantageous in ensuring that the biochemists it produces are trained chemists knowledgeable of the most fundamental molecular principles on which the biological sciences rely. Moreover, the certification of the degree by the ACS provides a concrete credential which ensures the scientific rigor of the chemical aspects of the recipient's education, while communicating to interested entities the high standards the recipient has met.

Students in the program will be prepared to learn and apply their understanding of biomolecular structure, reactions, and techniques for molecular manipulation in a variety of environments, such as:

- Laboratory scientists in the biotechnology, pharmaceutical, agrochemical, and medical industries;
- Graduate students seeking master's or doctoral degrees in a number of biomolecular sciences, primarily biochemistry, molecular biology, physiology, biophysics, biotechnology, pharmaceutical chemistry, and pharmacology;
- Students in post-graduate professional schools, such as schools of medicine, pharmacy, dentistry, optometry, and veterinary medicine;
- Teachers of high school and community college level biology and chemistry;
- Technical writers; and

- Content reviewers for scientific publishers.

Curriculum and Assessment

1050.30(b)(1): A) The caliber and content of the curriculum must assure that the objectives of the unit of instruction will be achieved. B) The breadth and depth of the curriculum must be consistent with what the title of the unit of instruction implies. C) The admission and graduation requirements for the unit of instruction must be consistent with the stated objectives of the unit of instruction. D) Institutions must show the capacity to develop, deliver and support academic programs. Procedures and policies that will assure the effective design, conduct and evaluation of the degree program under the academic control of the institution must be developed. Assessment plans must demonstrate that the institution has identified clear and appropriate program and student learning goals and has defined appropriate outcomes. Appropriate data must be collected and may be requested by the Board to show the level of student learning that has occurred as a result of participation in the institution's programs of study. E) Degree programs must meet [appropriate] requirements.

Admission Requirements

In order to be admitted to the University, an applicant must submit a final high school transcript showing the date of graduation, official scores on the ACT or SAT, and the \$40 application fee. For students who did not complete high school, admission to the University is still possible if they received a score of at least 410 on each of the five tests of the GED high school equivalency examination and an average battery score of 450 on the same exam. Specific requirements for an incoming freshman's high school preparation include four years of high school English; three years of high school mathematics, through Algebra II and Trigonometry; two years of natural sciences with laboratory; two years of social science; and two years of a single foreign language or fine arts. The Department of Chemistry strongly recommends that transfer students enter with a grade of C or better in Calculus I, General Chemistry I and II, and an overall grade-point average of 2.30.

Curriculum

The curriculum consists of 27 required core courses, providing a foundation in general, organic, analytical, inorganic, and physical chemistry, physics, calculus and biological sciences, and basic and advanced coursework in biochemistry. The required courses in chemistry total 45 semester credit hours, and the Department of Chemistry recommends that majors complete an additional six hours in advanced electives in biochemistry.

The 27 required courses, including those offered outside the Department of Chemistry, for the proposed Bachelor of Science in Biochemistry are:

- General Chemistry I and II
- Organic Chemistry I and II, with accompanying laboratory courses
- Analytical Chemistry, and its accompanying laboratory course
- Fundamentals of Inorganic Chemistry, and its accompanying laboratory course
- General Biochemistry I and II, with an accompanying laboratory course
- Physical Chemistry I, and its accompanying laboratory course
- Physical Biochemistry, and its accompanying laboratory course
- A course in instrumental analysis or advanced inorganic chemistry

- A laboratory course in instrumental analysis or advanced inorganic chemistry, a semester credit hour of undergraduate research, or an hour of supervised co-op or internship experience
- Biological Diversity
- Molecular and Cellular Basis of Life
- Cell Biology
- Genetics
- General Physics I and II
- Calculus I and II

Students who choose to earn the required semester credit hour in research or a co-op or internship setting must write a summary of the work they completed to receive the course grade. In the case of research, this write-up takes the form of a manuscript which could be submitted for publication in a peer-reviewed scientific journal; where the student is extraordinarily successful in completing the research project, the manuscript could be published.

Students who declare Biochemistry as their undergraduate major are encouraged to meet regularly with a faculty advisor who assists the student in selecting courses, ensure that requirements are completed, and provide career counseling. Students who choose to earn the required semester credit hour in research or the co-op or internship experience are advised in that activity by either the same faculty advisor or another mentor in whose specific expertise the student has a personal interest. Because of the close cooperation between Chemistry and Biological Sciences faculty supervising the students in the Biochemistry and Molecular Biology program in recent years, students in the proposed Biochemistry program will also have the option of conducting research with a number of Biological Sciences faculty members who have chemistry-oriented research interests.

Assessment of Student Learning Outcomes

Assessment of student learning outcomes will be made based on several types of evaluation, including tests and formal course examinations; reports of individual laboratory experiments in laboratory courses; students' written accounts of their research or co-op or internship projects; student presentations; trends in students' grade point averages; and the performances of multiple groups of students on specific test questions administered in appropriate courses as diagnostic indicators of mastery of key subject-area topics. To assess the development of students' abilities to navigate electronic research resources and computational tools for data evaluation, assignments will be developed testing these abilities in the context of solving specific problems of biochemical significance; student performance on these assignments will be examined and compared to benchmarks representing desirable levels of ability appropriate to the students' level of study. Other assignments will require integration of students' knowledge of diverse areas of biochemical content, setting out a realistic problem to be solved and demanding that the student devise a method of solution as well as carrying it out. Knowledge of laboratory techniques and safe laboratory practices will be gauged through observation of the students in the lab directly, as well as through assessment of their performances on laboratory reports and test questions designed with this assessment in mind.

Program Assessment

Consistent with IBHE staff requirements, the University will submit to IBHE a progress report on the Bachelor of Science in Biochemistry program at the end of the third year of

operation. The report will summarize key areas of accomplishment in the administration of the program, and any remaining challenges as well as how these challenges will be addressed. In addition, the program's faculty will participate in the University's eight-year program review to assess the program using multiple measures, including evaluation by students of the faculty's teaching of program courses, the quality of faculty research and scholarship, awards and honors received by the program, its faculty, and its students, retention and graduation rates of students enrolled in the program, and the level of satisfaction exhibited by alumni and employers of the program's graduates. The program's faculty will employ benchmarks agreed to represent satisfactory levels of achievement in the assessed areas and will report successes and failures to relevant Department and University administrative entities in order to remedy deficiencies. The review of the program will also be reported to the American Chemical Society's (ACS) Committee on Professional Training every five years which will conduct its own evaluation and recertify the Department's authority to grant ACS-approved Biochemistry degrees. The Department currently possesses the equivalent authority to grant ACS-approved bachelor's degrees in Chemistry.

Facilities (space, equipment, instructional materials)

1050.30(a)(4): A) Facilities, equipment and instructional resources (e.g., laboratory supplies and equipment, instructional materials, computational equipment) necessary to support the high quality academic work in the unit of instruction, research or public service are available and maintained; B) Clinical sites necessary to meet the objectives of the unit of instruction, research or public service; C) Library holdings and acquisitions, owned or contracted for by the institution, that are necessary to support high-quality instruction and scholarship in the unit of instruction, research and public service, are conveniently available and accessible, and can be maintained.

Illinois State University's program leading to the Bachelor of Science in Biochemistry will be offered on the University's campus in Normal, Illinois, in the Central Region. The two buildings in which the Department of Chemistry is housed, the Science Laboratory Building and Julian Hall, will provide state-of-the-art facilities for instruction and research, safe and secure classrooms, laboratories and conference space, instructional and technical support services, and convenient access to the social and recreational amenities of a large, busy, urban campus. Computing equipment for research, data analysis, and study will be convenient, accessible, and highly integrated into the infrastructure used by the Biochemistry program's students on a daily basis. The library in which the University's chemistry and biology collections of books and research journals are located is only a short walk away, and the newest electronically published books and journals are accessible online wherever students can connect to the University's network. The existing resources and those planned for purchase by the University to support the Biochemistry program will be sufficient to maintain the high standards expected.

In support of the proposed bachelor's program in Biochemistry, the University maintains a wide variety of modern scientific instrumentation and experimental equipment, which the Department uses to sustain both its instructional and research missions. They include ultraviolet/visible-wavelength spectrometers, a fluorimeter, electrophoresis and ultracentrifugation equipment, a variety of calorimeters, and liquid and gas chromatographs with mass-spectrometric detectors. Two high-field nuclear-magnetic-resonance spectrometers are an additional resource of this undergraduate biochemistry program. The Department plans to complement this collection with additional acquisitions in the near future, supported by both institutional appropriations and external grants for laboratory improvement. The faculty is active in research and will contribute their expertise and laboratory facilities and equipment to give

students the opportunity to carry out experiments in the classroom providing exposure to a research environment.

Library

Illinois State University houses and supports a robust library that provides all of the research resources necessary for cutting-edge instruction in an undergraduate program in Biochemistry. The library subscribes to all of the most important peer-reviewed journals reporting the most cited biochemical research, such as *Proceedings of the National Academy of Sciences*, *Science*, *Nature*, *The Journal of Biological Chemistry*, *Biochemistry*, and *The Journal of Medicinal Chemistry* as well as such specialized serials as *Bioconjugate Chemistry* and *Bioorganic Chemistry*. The library further maintains a broad and varied collection of books necessary to a student's mastery of the basic body of knowledge. The library continually updates its electronic database subscriptions, providing access to current peer-reviewed journals. The University is a member of the Consortium of Academic and Research Libraries in Illinois, consisting of 76 university and institutional libraries and can borrow by interlibrary loan those materials the library does not currently possess. The library offers state-of-the-art computing access, through wired and wireless networks, and lends out portable computing devices, including laptops and tablet computers, for use by students, faculty, and staff, within the library building. The library also offers quiet study and presentation space, the latter including projection hardware which students practicing presentations can use.

Technology and Instructional Resources

The Department of Chemistry maintains three classrooms with projection hardware, two of which are equipped with “clicker” technology used in interactive instruction. The classrooms and laboratories of the Department are furnished with wireless computer network access. The University's Center for Teaching, Learning, and Technology also provides the Department with access to “smart” classrooms and a wide variety of supportive services for electronic instructional technology.

The Biochemistry program's courses will be delivered predominantly in a traditional classroom setting but electronic instruction will also be used. Learning-management software is used by the Department to support student learning. The University is converting from Blackboard software to a customized online system, called Sakai.

Faculty and Staff

1050.30(a)(3): A) The academic preparation and experience of faculty and staff ensure that the objectives of the unit of instruction, research or public service are met.

Twelve faculty members—nine of whom have primary appointments in the Department of Chemistry, and three of whom have primary appointments in Biological Sciences and secondary appointments in Chemistry—will provide the instructional and research leadership for the proposed program in Biochemistry. All have earned Ph.D.'s in chemistry, biochemistry, or a chemistry-oriented biological science, and all are active researchers at the interface between chemistry and biology. Their research interests include the chemical reactions of biologically important molecules, synthesis of novel compounds which mimic or inhibit a biological reaction of interest, the study of important enzymes, and the development of analytical techniques which permit the observation of biochemical phenomena heretofore visible only with great difficulty. They are all professionally active and productive teachers and researchers with strong histories of

conducting research and authoring peer-reviewed, scholarly publications. Some have received significant honors and awards for teaching or research from University or external entities. The Department of Chemistry employs 21 tenured or tenure-track faculty and is of an appropriate size to maintain a competitive variety of expertise and resources in biochemical education and research in the coming years.

Fiscal and Personnel Resources

1050.30(a)(5): A) The financial commitments to support the unit of instruction, research or public service are sufficient to ensure that the faculty and staff and support services necessary to offer the unit of instruction, research or public service can be acquired and maintained; B) Projections of revenues necessary to support the unit of instruction, research or public service are based on supportable estimates of state appropriations, local tax support, student tuition and fees, private gifts, and/or governmental grants and contracts.

The Department of Chemistry has for the last 11 years contributed half of the financial resources to the joint program in Biochemistry and Molecular Biology, which was undertaken with the University's School of Biological Sciences. Chemistry, thus, supported half of the approximately 90 undergraduates in the program in recent years. The Department's resources will now be kept within the Department to support the 45 or so students who will choose Biochemistry once access to the joint program ceases. The Department has adequate fiscal resources to support these students and offer them the opportunities appropriate to a bachelor's program in biochemistry. The budget anticipated for the program will total approximately \$785,000 in the first year, expanding to \$875,000 by the fifth year, the increase primarily reflecting inflation in salaries. These funds should be adequate to support the proposed program within the first five years of its operation.

Faculty members aggressively seek outside funding for their research programs with numerous grants currently supporting students' projects. Chemistry and biochemistry departments who instruct undergraduates typically seek instrumentation grants, notably from the National Science Foundation, which has a funding program dedicated to improving student access to cutting-edge research instrumentation. The faculty of the Department of Chemistry has resolved to obtain this type of funding and purchase equipment which will be of value to the Department's educational mission. The current operating budget of the Department is provided primarily by institutional allocations, as the University has shown over the 11 years of the joint Biochemistry and Molecular Biology program that this type of education for the University's students is valued and should be adequately funded.

The library holds books, journals, and electronic resources which are better than simply adequate for a program of this type. The library is committed to support the learning and research needs for information that the Biochemistry program requires, and its resources will be appropriate to the activities the Department contemplates. The University's electronic infrastructure for delivering course content and providing research access is appropriate to the Department's instructional and research mission in biochemistry and shows solid evidence that it will continue to be supported at the fiscal level required.

Accreditation and Licensure

1050.30(b)(3): Appropriate steps shall be taken to assure that professional accreditation needed for licensure or entry into a profession as specified in the objectives of the unit of instruction is maintained or will be granted in a reasonable period of time.

1050.50(a)(1): Three years after approval of a new program, the institution shall provide a program progress report to the Board as part of the institution's annual report. The third-year progress report shall describe the institution's performance in meeting program objectives and show where any improvements are necessary. The placement of a program in voluntary temporary suspension will not negate the requirement of submitting a third-year progress report.

1050.50(a)(2)(C): Requirement for Programs in which State Licensure is Required for Employment in the Field: In the case of a program in which State licensure is required for employment in the field, a program can be found to be in good standing if the institution is able to provide evidence that program graduates are eligible to take the appropriate licensure examination and pass rates are maintained as specified in the objectives of the unit of instruction. If there is no such evidence, the institution shall report the program as flagged for review.

The proposed program leading to the Bachelor of Science in Biochemistry will have the endorsement of the ACS, the premier professional society of chemists of all varieties in the United States, and recipients of the proposed degree will have this ACS endorsement, described as an “ACS-certified degree.” There is no general licensure or certification for biochemists, and the ACS certification of the degrees awarded is the nearest equivalent to individual licensure or certification. Illinois State University is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools, and this accreditation of the University is scheduled for renewal during the 2014-2015 academic year.

Program Information

1050.30(b)(2)(A): The information the institution provides for students and the public ... (B) The information listed in subsection (b)(2)(A) shall be available to prospective students prior to enrollment and shall be included in the institution's catalog of programs.

Information about Illinois State University's program leading to the Bachelor of Science in Biochemistry, including a detailed description of the curriculum, admission requirements, tuition, fees, and other cost information, as well as the policies of the University and College of Arts and Sciences, will be published on the University's website, illinoisstate.edu. Comparable information about the Biochemistry program will be published in the University's undergraduate catalog, and equivalent information will be available from the Department of Chemistry and the College of Arts and Sciences upon request.

Staff Conclusion. The staff concludes that the Bachelor of Science in Biochemistry proposed by Illinois State University meets the criteria to implement the Board of Higher Education Act (110 ILCS 205/et seq.) as set forth in 23 Illinois Administrative Code, Ch. II, Section 1050.30, and the Illinois Board of Higher Education policies pertaining to assessment and accreditation or licensure.

The staff recommends adoption of the following resolutions:

The Illinois Board of Higher Education hereby grants to Governors State University authorization to establish the Master of Arts in School Psychology and the Educational Specialist Certificate in School Psychology programs in the South Metro Region subject to the institution's implementation and maintenance of the conditions that were presented in its applications and that form the basis upon which these authorizations are granted.

The Illinois Board of Higher Education hereby grants to Illinois State University authorization to establish the Bachelor of Science in Biochemistry in the Central Region subject to the institution's implementation and maintenance of the conditions that were presented in its application and that form the basis upon which this authorization is granted.