

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

**Submitted for:** Action.

**Summary:** This item requests approval of five degree programs at three public universities.

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

Governors State University

- Master of Science in Information Technology in the South Metro Region

Southern Illinois University Carbondale

- Master of Science in Cybersecurity and Cyber Systems in the Southern Region
- Master of Science in Strategic Analytics in the Southern Region

University of Illinois at Urbana-Champaign

- Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science
- Master of Science in Health Technology

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 (IBHE) 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, addresses 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.

**Executive Summary – Public Institutions**

Governors State University

- Master of Science in Information Technology

Governors State University requests authorization to offer a Master of Science in Information Technology in the South Metro Region. The proposed 33-credit-hour graduate program will be administered by the Division of Science, Mathematics, and Technology within the College of Arts and Sciences. The Master of Science in Information Technology program offers two concentrations, infrastructure administration and cybersecurity, both of which are designed to prepare students to plan, implement, configure, and secure information systems. There are policies in place to ensure faculty members possess the training, credentials, and qualifications to provide instruction in the proposed program. The University has sufficient library, technology, staff, and financial resources in place to support the program.

Approval request summary, including staff conclusion, follows in Attachment A.

Southern Illinois University Carbondale

- Master of Science in Cybersecurity and Cyber Systems

Southern Illinois University Carbondale requests authorization to offer a Master of Science in Cybersecurity and Cyber Systems in the Southern Region. The Master of Science in Cybersecurity and Cyber Systems program requires 30 semester credit hours. It is designed to prepare students for careers in information security and in demand across a wide variety of sectors in business and industry. The curriculum consists of three foundation courses covering fundamentals in computer security, systems programming, and network systems. Students have the option to seek a concentration either in cybersecurity or in cyber systems. There are policies in place to ensure faculty members possess the training, credentials, and qualifications to provide

instruction in the proposed program. The University has sufficient library, technology, staff, and financial resources in place to support the program.

- Master of Science in Strategic Analytics

Southern Illinois University Carbondale requests authorization to offer a Master of Science in Strategic Analytics in the Southern Region. The Master of Science in Strategic Analytics program requires 36 semester credit hours. It is designed to prepare students for management and executive careers that use data-based decision making. Students will acquire advanced skills in analytics techniques and artificial intelligence to apply in making strategic business management decisions. Courses in the Master of Science in Strategic Analytics are accelerated and offered in an eight-week format which expedites completion. There are policies in place to ensure faculty members possess the training, credentials, and qualifications to provide instruction in the proposed program. The University has sufficient library, technology, staff, and financial resources in place to support the program.

Approval request summary, including staff conclusion, follows in Attachment B.

#### University of Illinois at Urbana-Champaign

- Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

The University of Illinois at Urbana-Champaign requests authorization to offer a Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science in the Prairie Region. The proposed 42 credit hour interdisciplinary program emphasizes machine learning, artificial intelligence, and computer programming across multiple departments and colleges, preparing students for careers in the healthcare, government, education, and manufacturing sectors or to continue to graduate school. There are policies in place to ensure faculty members possess the training, credentials, and qualifications to provide instruction in the proposed program. The University has sufficient library, technology, staff, and financial resources in place to support the program.

- Master of Science in Health Technology

The University of Illinois at Urbana-Champaign requests authorization to offer a Master of Science in Health Technology in the Prairie Region. The proposed 36 credit hour program, offered by the College of Applied Health Sciences in collaboration with the Grainger College of Engineering, will train applied healthcare and engineering professionals in the design, development, testing, and use of new technologies that promote health, foster rehabilitation, mitigate disability, improve independence, and enhance quality of life. Graduates will be prepared for career opportunities in the emerging industry of applied health technology, community organizations, healthcare organizations, and government agencies. There are policies in place to ensure faculty members possess the training, credentials, and qualifications to provide instruction in the proposed program. The University has sufficient library, technology, staff, and financial resources in place to support the program.

Approval request summary, including staff conclusion, follows in Attachment C.

The staff recommends adoption of the following resolutions:

*The Illinois Board of Higher Education hereby grants to Governors State University authorization to grant the Master of Science in Information Technology in the South Metro 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.*

*The Illinois Board of Higher Education hereby grants to the Southern Illinois University Carbondale the authorization to establish the Master of Science in Cybersecurity and Cyber Systems and the Master of Science in Strategic Analytics in the Southern 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.*

*The Illinois Board of Higher Education hereby grants to University of Illinois at Urbana-Champaign authorization to grant the Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science and the Master of Science in Health Technology in the Prairie 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.*

## **Governors State University**

**Proposed Program Title in the Region of Authorization:** Master of Science in Information Technology in the South Metro Region.

*Projected Enrollments and Degrees:* Governors State University projects enrollments of 12 students in the first year and 40 students in the fifth year. The University projects ten degrees will be awarded in the fifth year.

### **Background**

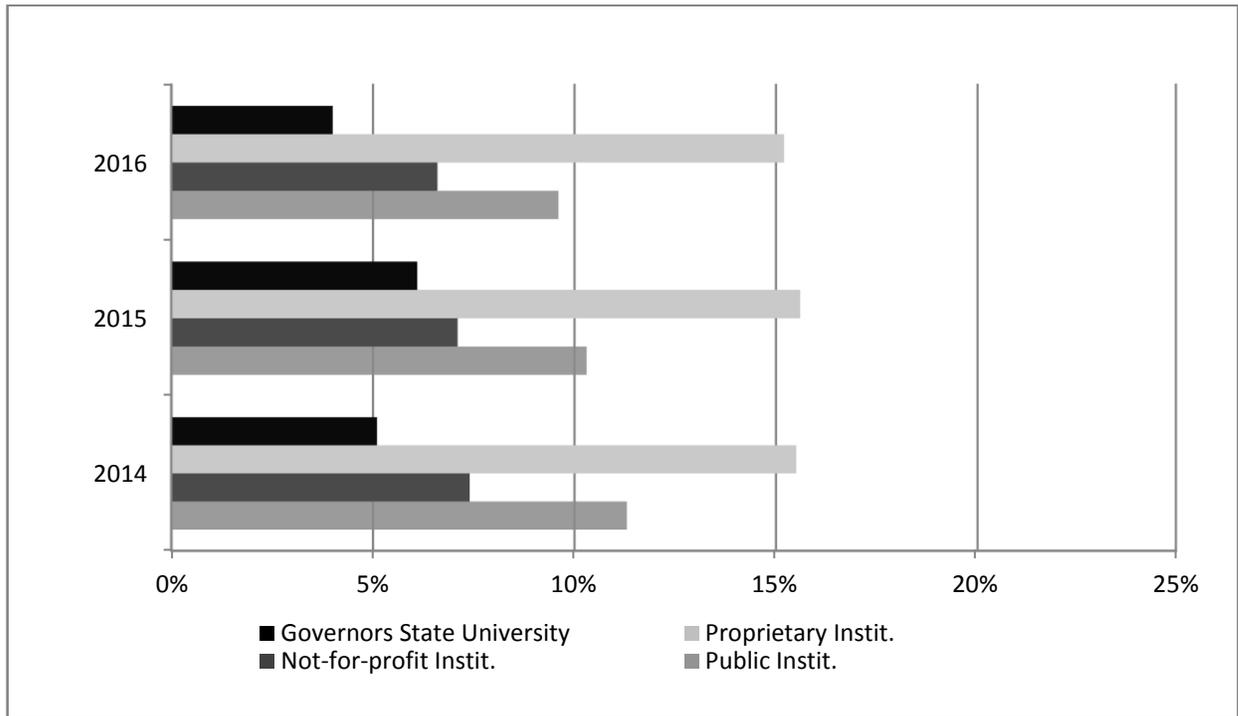
Governors State University (GSU or the University) is seeking authority to offer a Master of Science (MS) in Information Technology (IT) in the South Metro Region. The proposed 33-credit-hour program was designed in response to economic and professional demand in the South Metro region and will prepare working professionals for career advancement in infrastructure administration or cybersecurity. Graduates will be equipped to pursue advanced careers as network architects, software developers, computer programmers, web developers, research scientists, information security analysts, network administrators, and IT project managers among others. The MS in Information Technology will be housed administratively within the Division of Science, Mathematics, and Technology at the College of Arts and Sciences and will share resources with and build upon the existing Bachelor of Science in Information Technology, as well as other programs across disciplines. In partnership with area businesses, the required capstone project will provide hands-on experience for students to apply an information technology solution to a business-related problem that the organization is experiencing.

### **Institutional Data**

*1050.30(b)(1)(H): Success in student progression and graduation rates across all existing approved programs, 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 these factors based on results for similar institutions. (i) Graduation rates, certificate and degree completion rates, retention rates, and pass rates for licensure and certification aligned with thresholds set by State nor national regulatory bodies. (ii) The success rate shall be, at a minimum, higher than those 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.*

This section includes information about institutional and student success measures for each institution seeking program approval. The institution's rates will be compared to Illinois institutions from within a select comparison group and against the national standards or averages. For a proposed undergraduate program, this section will include undergraduate graduation rates, first to second year retention rates, student loan default rates, and any applicable licensure passage rates. For a proposed graduate program, this section will primarily focus on student loan default data since this measure also includes graduate students in the calculation.

### Three-Year Cohort Student Loan Default Rate



Source: National Center for Education Statistics, U.S. Department of Education  
 Note: Governors State University is a public institution. A lower number is a positive indicator.

#### Student Loan Default Rate

The three-year student loan default rate for Governors State University was 5.1 percent in 2014, 6.1 percent in 2015, and 4.0 percent in 2016. The three-year cohort student loan default rate is the percentage of a school’s borrowers who enter repayment on certain Federal Family Education Loan Program or William D. Ford Federal Direct Loan Program loans during a particular federal fiscal year, October 1 to September 30, and default or meet other specified conditions prior to the end of the second following fiscal year. The U.S. Department of Education stated that the Fiscal Year 2016 three-year national cohort default rate was 10.1 percent. The Fiscal Year 2016 three-year national cohort average default rate breakdown by institutional sector is: 9.6 percent for public institutions; 6.6 percent for not-for-profit institutions; and 15.2 percent for proprietary institutions.

Undergraduate-related data fields are not provided because the University proposes to offer a new graduate program.

#### Need

1050.30(a)(6): A) The unit of instruction, research or public service is educationally and economically consistent with the educational priorities and needs of the State 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 CompTIA, a leading technology association, Illinois ranks seventh among all states for tech-industry employment, and data from the Bureau of Labor Statistics for the Chicago-Joliet-Naperville metropolitan area shows 127,940 tech-industry jobs with continued growth projections. Bureau of Labor Statistics Occupational Employment Projections to 2022 indicate 18.4 percent growth in positions requiring a master's degree to obtain employment in certain fields. Simultaneously, the South Metro region is characterized as a geographically and ethnically diverse region that is economically and educationally disadvantaged with fewer than ten percent of the region's residents holding a graduate degree. GSU's proposal to offer the MS in Information Technology creates opportunities to improve Illinois' educational attainment by offering a high quality, affordable graduate program in Information Technology, which will improve students' professional qualifications and career opportunities while providing qualified IT professionals to the region, the larger Chicago metro area, and to Illinois. As the only public university in the region, Governors State University is well positioned to this program that meets economic and education attainability goals.

### ***The Illinois Public Agenda for College and Career Success***

The proposed program will contribute to Goal 1 of *The Illinois Public Agenda for College and Career Success* by reducing geographic disparities in educational attainment and increasing educational attainment to match best-performing states, which is consistent with the MS in Information Technology program at GSU, a minority-serving institution in Illinois. GSU's geographic location also makes it a critical institution for bridging the prosperity gap identified in the *Illinois Public Agenda* by serving as a conduit between existing economic opportunities in Chicago and citizens in the central-eastern region of Illinois, an area that has experienced some of the lowest levels of economic prosperity in the state. The South Metro Region is characterized as a highly diverse, primarily urban, and economically disadvantaged region with pockets of rural and suburban areas that are similarly disadvantaged.

More specifically, the program will provide greater educational access for the South Metro region's residents, fewer than ten percent of whom hold a graduate degree. The proposed program offers a pathway for its graduates to a growing career track through an affordable and relevant degree via in-person, online, and hybrid courses at the only public university in the South Metro Region. By design, the proposed MS in Information Technology requires students to work with industry partners, creating opportunities for employment and advancement that otherwise may not be accessible. Furthermore, the alignment of courses with industry-recognized certifications to demonstrate student mastery of important IT skills and concepts closes remaining gaps for students to achieve professional and personal opportunities in Illinois' burgeoning high-demand field of Information Technology. The proposed program reduces geographic disparities in educational attainment by increasing opportunities for college graduates and working professionals to earn a graduate degree that also aligns with industry certification standards.

### **Comparable Programs in Illinois**

Five similar master's level programs exist in information technology at public and private universities in Illinois: DePaul University; Eastern Illinois University; Lewis University; Loyola University; and Northwestern University. GSU's program is specifically targeted toward students in the South Metro region, an economically disadvantaged region. The proposed MS in Information Technology program further differentiates itself by offering two concentrations in infrastructure administration and cybersecurity and by requiring a professional capstone experience with industry partners that is coordinated by the institution and monitored and evaluated collaboratively among partnering employers and program faculty. Governors State University,

therefore, would be the only public university to offer a high-quality graduate credential in the growing and economically important discipline of information technology in the Chicago South Metro region.

### **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 proposed program is consistent with the purpose, goals, objectives, and mission of the institution. The requested degree title reflects the degree's program objectives and curriculum.

### **Curriculum and Assessment**

*1050.30(b)(1) [applicable only to units of instruction]: 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 programs 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.*

*1050.30(a)(2): The design, conduct and evaluation of the unit of instruction, research or public service are under the direct and continuous control of the sponsoring institution's established processes for academic planning and quality maintenance.*

### **Admission Requirements**

To be admitted to the MS in Information Technology program, applicants must have earned a bachelor's degree from a regionally accredited college or university in information technology or a related field. It is beneficial, but not required, that students have at least two years of professional work experience in the proposed area of study. Students may be granted conditional admission with the understanding that the following prerequisite or equivalent courses must be completed: Fundamentals of Information Technology; Introduction to Computer Networks; Windows Systems; Information Security; and Introduction to Virtualization.

### **Curriculum**

The MS in Information Technology program curriculum requires a total of 33 credit hours of coursework culminating in a research thesis and capstone course. Courses will be offered in a hybrid in-person and online environment to accommodate working professionals' schedules. Coursework requirements include nine credit hours of core courses in Fundamentals of Security Management and Distributed Systems and Network Security, and one from Infrastructure Management and Design, Information Technology Project and Team Management, Cybersecurity Fundamentals, or Cyber Attack Mythologies, depending on concentration; 18 hours of electives

from the student's selected concentration area of infrastructure administration or cybersecurity; and six credit hours of required thesis research and capstone project in cooperation with a partnering business. The proposed curriculum is aligned with industry-recognized certifications to ensure students will be prepared to sit for any of the following certifications: CompTIA Security+; CompTIA Advanced Security Practitioner; Microsoft Certified Solutions Expert (MCSE); Certified Associate in Project Management (CAPM PMI); GISF: GIAC Information Security Fundamentals; GSEC: GIAC Security Essentials; and CCNP Security. The thesis and capstone courses provide opportunities for students to apply theory and lab-based skills to solve a real problem at an industry partner or internship, which provides the foundation for the written thesis. In the capstone, students demonstrate their readiness for research and inquiry by developing a written plan for an industry-partner problem with identified objectives that align with program objectives. The thesis is written based on the research conducted in the capstone; the thesis course is aligned with the GIAC Gold Paper requirements, an industry standard of excellence demonstrating the writer's depth of technical knowledge and writing ability.

#### Assessment of Student Learning

Assessment of student learning will be accomplished through both direct and indirect methods administered periodically throughout the academic program. Direct assessment measures include virtual lab work, course projects, reports, presentations, and capstone and thesis projects. Indirect assessments include GPA calculations; retention, graduation, and time to degree completion rates; capstone project success rates and pass rate on certification exams; employer and graduate satisfaction surveys; internship and site supervisor evaluations; and faculty- and employer-evaluated capstone projects to determine satisfaction with the product.

#### Program Assessment

GSU has articulated a comprehensive assessment plan to determine the overall effectiveness of its programs and the degree to which students' needs are being met. The direct and indirect assessment measures of student learning listed above will inform the program improvement process for the proposed MS in Information Technology. The following mechanisms will be used to examine the program, identify areas for program improvement, and provide future direction: Program Advisory Committee comprised of industry professionals and faculty from other institutions, industry certifications earned by students, exit interviews, and survey feedback from employers and alumni. As part of the IBHE third- and eighth-year review process, an external consultant will be brought in to review the program for accomplishments and deficiencies. The proposed graduate program will follow these existing protocols for continuous improvement.

## **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 program will use existing facilities, equipment, and instructional technologies available in the Division of Science, Mathematics, and Technology. All proposed courses will be delivered at technical classrooms where students will always have access to the appropriate computer technologies. In addition, the University has a dedicated virtual environment that will allow the student to work with equipment remotely with an active Internet connection. With technology improvements and additions budgeted in the third and fourth years of the proposal, existing lab space, vendor relationships, and computer resources are sufficient to support the proposed program.

The University Library (UL) maintains a collection of more than 700,000 volumes and 14,757 current serial titles and provides access to numerous digital resources designed to support teaching, learning, and research. The UL further provides a wide range of services and resources to students, faculty, and staff. The Division of Science, Mathematics, and Technology receives support from a tenure-track librarian in maintaining the collection and in identifying and securing resources needed for scholarly work in the discipline. Current UL resources and facilities will support the proposed Master of Science in Information Technology.

## **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. B) The academic preparation and experience of faculty and staff, as evidenced by level of degrees held, professional experience in the field of study and demonstrated knowledge of the field, ensure that they are able to fulfill their academic responsibilities. At a minimum, faculty shall have a degree from an institution accredited by a U.S. Department of Education and/or Council for Higher Education Accreditation recognized accrediting body or a degree from another country evaluated for U.S. equivalency in the discipline they will teach or for which they will develop curricula at least one level above that of the courses being taught or developed. C) The involvement of faculty in the unit of instruction, research or public service is sufficient to cover the various fields of knowledge encompassed by the unit, to sustain scholarship appropriate to the unit, and to assure curricular continuity and consistency in student evaluation. ...E) Support personnel, including but not limited to counselors, administrators, clinical supervisors, and technical staff, that are directly assigned to the unit of instruction, research or public service, have the educational background and experience necessary to carry out their assigned responsibilities.*

The University has identified and implemented institutional policies ensuring that faculty and academic professionals hired possess the training, credentials, and other related professional qualifications to provide quality instruction at the institution. A formal faculty evaluation process is in place.

## **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 University has adequate faculty, staff, and other instructional resources to administer the proposed MS in Information Technology. The Division of Science, Mathematics and Technology Chair, who oversees the existing Bachelor of Science in Information Technology, will also oversee the proposed graduate program in Information Technology. Current faculty from the Computer Science department will teach in the proposed program, and a job vacancy has been posted to recruit two additional faculty specializing in information technology. Finally, when enrollment reaches 40 students, a graduate student laboratory assistant will be hired.

## **Accreditation and Licensure**

*1050.30(b)(3)[applicable only to units of instruction]: 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.*

The University does not intend to pursue programmatic accreditation at this time. However, the curriculum is aligned with industry recognized organizations and will prepare students to sit for certification examinations. Currently, no special licensure in information technology and cybersecurity is required.

## **Program Information**

*1050.30(b)(2)[applicable only to units of instruction]: A) The information which the institution provides for students and the public shall include the following: i) An accurate description of the unit of instruction, including its objectives, length, and residency requirements if any; ii) Schedule of tuition, fees, and all other charges and expenses necessary for completion of the unit of instruction, cancellation and refund policies; iii) Student rights and responsibilities; iv) A statement regarding the transferability of college credits, including the fact that the decision to accept transfer credits is determined by the receiving institutions; v) A statement as to how the institution will advise students on the nature of the transfer process, including the importance of consulting with institutions to which the student may seek to transfer; vi) Evidence of arrangements for the transfer of courses or credits or both to institutional counterparts, when these arrangements exist; these arrangements are also known as articulation agreements; vii) A statement of the institution's most recent graduation rates and the number of graduates and enrollments as provided by the institution to the Integrated Postsecondary Education Data System (IPEDS) and any submission of data to satisfy Board reporting requirements; and viii) Other material facts concerning the institution and the unit of instruction as are likely to affect the decision of the student to enroll. 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.*

Detailed information about the proposed program, including descriptions of the admission policies, university policies, tuition, fees, and curriculum are provided in the proposal and will be published on the University's website.

**Staff Conclusion**

The staff concludes that the Master of Science in Information Technology proposed by Governors 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.

## **Southern Illinois University Carbondale**

**Proposed Program Title in the Region of Authorization:** Master of Science in Cybersecurity and Cyber Systems in the Southern Region.

*Projected Enrollments and Degrees:* Southern Illinois University Carbondale projects the Master of Science in Cybersecurity and Cyber Systems will increase from approximately 15 students in the first year to 50 students in the fifth year. The University projects 25 degrees will be awarded in the fifth year.

**Proposed Program Title in the Region of Authorization:** Master of Science in Strategic Analytics in the Southern Region.

*Projected Enrollments and Degrees:* Southern Illinois University Carbondale projects the Master of Science in Strategic Analytics will increase from approximately 15 students in the first year to 50 students in the fifth year. The University projects 20 degrees will be awarded in the fifth year.

## **Background**

Southern Illinois University Carbondale (SIUC or the University) requests authorization to offer the Master of Science (MS) in Cybersecurity and Cyber Systems and the Master of Science (MS) in Strategic Analytics in the Southern region.

The Master of Science in Cybersecurity and Cyber Systems will be interdisciplinary in nature and supported by the Department of Electrical and Computer Engineering and the Department of Computer Science at SIUC. The program is designed to prepare students to acquire the skills and knowledge in the areas of cyber system design, data integrity, computer (software and hardware) and network security, and risk management.

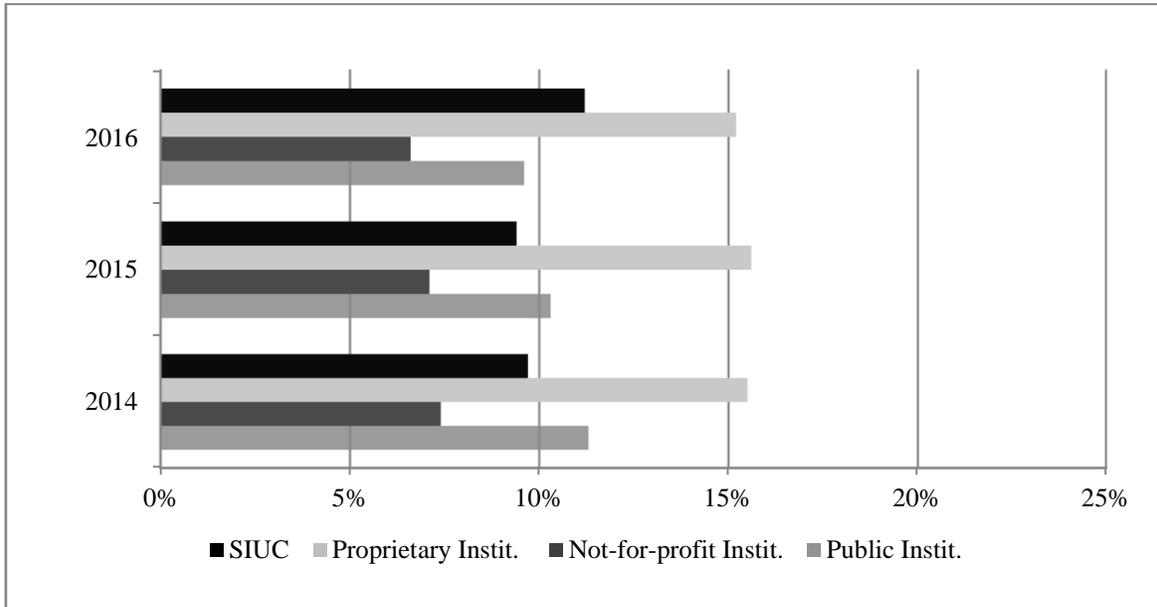
The Master of Science in Strategic Analytics will prepare students who wish to pursue careers in business administration or any field that depends on data-based decision making. The program is designed for students who are at all levels of organizational management or who are interested in data-based decision making in organizations.

## **Institutional Data**

*1050.30(b)(1)(H): Success in student progression and graduation rates across all existing approved programs, 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 these factors based on results for similar institutions. (i) Graduation rates, certificate and degree completion rates, retention rates, and pass rates for licensure and certification aligned with thresholds set by State nor national regulatory bodies. (ii) The success rate shall be, at a minimum, higher than those 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.*

This section includes information about institutional and student success measures for each institution seeking program approval. The institution's rates will be compared to Illinois institutions from within a select comparison group and against the national standards or averages. For a proposed undergraduate program, this section will include undergraduate graduation rates, first to second year retention rates, student loan default rates, and any applicable licensure passage rates. For a proposed graduate program, this section will primarily focus on student loan default data since this measure also includes graduate students in the calculation.

### Three Year Cohort Student Loan Default Rate



Source: National Center for Education Statistics, U.S. Department of Education  
 Note: Southern Illinois University Carbondale is a public institution. A lower number is a positive indicator.

### Student Loan Default Rate

The three-year student loan default rate for the University was 11.2 percent in 2016, 9.4 percent in 2015 and 9.7 percent in 2014. The three-year cohort student loan default rate is the percentage of a school's borrowers who enter repayment on certain Federal Family Education Loan Program or William D. Ford Federal Direct Loan Program loans during a particular federal fiscal year, October 1 to September 30, and default or meet other specified conditions prior to the end of the second following fiscal year. The U.S. Department of Education stated that the Fiscal Year 2016 three-year national cohort default rate was 10.1 percent. The Fiscal Year 2016 three-year national cohort average default rate breakdown by institutional sector is: 9.6 percent for public institutions; 6.6 percent for not-for-profit institutions; and 15.2 percent for proprietary institutions.

Undergraduate-related data fields are not provided because the University proposes to offer new graduate programs.

## Need

*1050.30(a)(6): A) The unit of instruction, research or public service is educationally and economically consistent with the educational priorities and needs of the State 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.*

### Master of Science in Cybersecurity and Cyber Systems

The Master of Science in Cybersecurity and Cyber Systems is an interdisciplinary program designed to prepare graduates with knowledge in the emerging field of cybersecurity and cyber systems. The proposal is primarily influenced by SIUC's restructuring plan which includes strategies to increase enrollment in high demand areas and increase research productivity. SIUC's proposal provides that cyber systems and cybersecurity have the potential to impact a number of sectors critical to the State's and country's security and competitiveness, including aerospace, automotive, chemical production, civil infrastructure, energy, healthcare, manufacturing, materials and transportation. The U.S. National Science Foundation (NSF) has identified cyber systems as a key area of research. Starting in late 2006, the NSF and other United States federal agencies sponsored several workshops on cyber-physical systems. According to U.S. Bureau of Labor Statistics, job opportunities in the focus area of information security are expected to grow by 28 percent from 2016 to 2026, much faster than the average for all occupations.

Considering the need of the program at the State level, it is estimated that the demand (with 9,623 job postings) for information security specialists in the Chicago metropolitan area will by far exceed the number of available workers (2,600), according to Burning Glass Technologies. Also, with many Illinois community colleges offering certificates/degrees in the area of computer security, cybersecurity, and cyber physical systems, there is an increasing demand for instructors in these areas. The proposed MS in Cybersecurity and Cyber Systems at SIUC will help to address this need for qualified faculty.

### Master of Science in Strategic Analytics

The Master of Science in Strategic Analytics is designed to prepare students to gain data-based management skills that can be applied in business administration field and other fields that depend on data-based decision making. The program is designed to bridge the gap between data science and management. Graduates will have the knowledge of data science, analytics, data visualization, and artificial intelligence as well as knowledge of business functions. The *McKinsey Global Institute Report* (May 2011) states that "There will be a shortage of talent necessary for organizations to take advantage of big data. By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions." The program will not only attract students who are new to the field of strategic analytics but will also target first-level, middle, and top-level managers and executives who wish to acquire data-based business management skills. According to the Illinois Department of Employment Security, Illinois has 483,000 people employed in management positions, including 30,000 Chief Executive Officers. The Bureau of Labor Statistics also estimates there are 23.8 million managers across the country, and the number will increase by 807,000 by 2026.

## *The Illinois Public Agenda for College and Career Success*

### Master of Science in Cybersecurity and Cyber Systems

The University indicates that the proposed program will address Goals 1, 2, 3, and 4 of the *Illinois Public Agenda for College and Career Success*. Goal 1 is to increase educational attainment to match the best-performing states. The University's strategic plans support the development of an interdisciplinary graduate program in high demand areas. SIUC researchers in related areas have attracted extramural funding from federal agencies such as the National Science Foundation, the National Institutes of Health, the Department of Defense, the Department of Energy, and high-tech industries. With SIUC's existing program offering in computer systems and engagement in network security and hardware design, the proposed program will expand opportunities for students seeking an interdisciplinary graduate program in the area of cybersecurity and cyber systems to gain the desired skills to succeed in their careers. Goal 2 is to ensure college affordability for students, families, and taxpayers. Students in the program will have the opportunity to apply for graduate assistantships that offer a tuition waiver and salary. Non-resident new first-time graduate students who demonstrate high academic achievement on the GRE will pay an alternate tuition rate of 1.0 times the current in-state graduate tuition rate. Also, the program will allow working professionals to earn a living and advance their education at the same time. Goal 3 is to increase the number of high-quality postsecondary credentials to meet the demands of the economy and an increasingly global society. The MS in Cybersecurity and Cyber Systems will be a high-demand program that is expected to meet the increasing worldwide demand in the areas of cyber system design, data integrity, computer (software and hardware) and network security, and risk management. Employment opportunities exist for graduates of the program within a wide range of organizations, at both State and national levels, such as the aerospace industry, automotive industry, defense agencies, electric utilities, electrical systems companies, semiconductor industry, software engineering, software development, telecommunications, smart systems, biomedical industry, start-ups and consulting. Goal 4 is to better integrate Illinois' educational, research, and innovation assets to meet economic needs of the state and its regions. The Cybersecurity and Cyber Systems program will offer internship and externship opportunities and research experiences through industry-sponsored research centers and/or federal/state/university funding. New opportunities for research collaborations with universities in the State will be explored through seminars, symposiums, summer workshops, and joint grant proposals. An online repository for the program will be developed where tutorials, technical presentations, research tools and outcomes, employment and collaboration opportunities will be posted on a regular basis to further the efforts to integrate Illinois' educational, research, and innovation assets.

### Master of Science in Strategic Analytics

The University indicates that the proposed MS in Strategic Analytics program will address Goals 1, 3, and 4 of the *Illinois Public Agenda for College and Career Success*. Goal 1 is to increase educational attainment to match the best-performing states. The program is structured so that students can complete the program within two years in an accelerated, eight-week, online format. The program also allows for flexibility as students can enter the program any semester and complete the program at a slower pace. The program will have strong industry ties through the Pontikes Center for Advanced Analytics and Artificial Intelligence. This center's mission is to collect and integrate analytics educators, researchers, and programs from across the College of Business and SIUC. Much of the analytics research today is carried out in industry. The Pontikes Center Board of Advisors includes top Illinois-based companies (Boeing, Caterpillar, Prentice Health, CME Group) and others (Nike, Edward Jones) and is actively pursuing partnerships with international companies and universities in other countries. Goal 3 is to increase the number of high-quality

postsecondary credentials to meet the demands of the economy and an increasingly global society. The MS in Strategic Analytics will provide for-profit and not-for-profit organizations in Illinois, the region, the nation, and worldwide with managers and executives with advanced training to make data-based strategic decisions. Goal 4 is to better integrate Illinois' educational, research, and innovation assets to meet economic needs of the state and its regions. The integration of Illinois, national, and international educators, researchers, and innovators through the Pontikes Center for Advanced Analytics and Artificial Intelligence allows the Master of Science in Strategic Analytics program to be at the forefront of analytics and artificial intelligence in strategic management.

### **Comparable Programs in Illinois**

#### Master of Science in Cybersecurity and Cyber Systems

About eight institutions in the State of Illinois offer programs similar to SIUC's proposed MS in Cybersecurity and Cyber Systems. Most of the programs serve northern and central Illinois. SIUC's program will primarily serve southern Illinois. SIUC's program will also provide interdisciplinary education that will attract students from a wide range of disciplines, including computer science, engineering, physics, mathematics, and information systems.

#### Master of Science in Strategic Analytics

About 12 institutions in the State offer programs at the master's level similar to SIUC's proposed Master of Science in Strategic Analytics. However, these programs tend to be very technical in nature, with less emphasis on how technology can be used to make strategic or managerial data-based decisions. The SIUC College of Business MS in Strategic Analytics will provide broader options to students that combines technical topics within a contextual framework of business.

### **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 proposed programs are in alignment with the overall mission of the University. The programs are consistent with the purpose, goals, objectives, and mission of the University. The requested degree titles reflect the degrees' program objectives and curriculum.

### **Curriculum and Assessment**

*1050.30(b)(1) [applicable only to units of instruction]: 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 programs 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.*

*1050.30(a)(2): The design, conduct and evaluation of the unit of instruction, research or public service are under the direct and continuous control of the sponsoring institution's established processes for academic planning and quality maintenance.*

## Admission Requirements

### Master of Science in Cybersecurity and Cyber Systems

Applicants for admission to the proposed MS in Cybersecurity and Cyber Systems must meet SIUC's graduate school admission requirements. Applicants must possess a baccalaureate degree and have completed a program of study in computer science, engineering, physics, mathematics, information systems or equivalent degrees. For applicants lacking the required specific background, the program offers conditional admission status subject to completion of prerequisite courses. Candidates are also required to have a minimum cumulative GPA of at least 2.75 on a 4.0 scale on approximately the last 60 semester hours of undergraduate coursework. Although GRE scores are not required for admission to the program, they are important to qualify for the institution's high achievers tuition rate, which allows non-resident new first-time graduate students who demonstrate high academic achievement on the GRE, the Graduate Management Admission Test (GMAT), or Miller Analogies Test (MAT) graduate school entrance exams to pay an alternate tuition rate of 1.0 times the current in-state graduate tuition rate.

### Master of Science in Strategic Analytics

Applicants for admission to the proposed MS in Strategic Analytics must meet SIUC's graduate school admission requirements. Applicants must possess a baccalaureate degree and have completed a program of study in business or a closely related/equivalent field. Candidates are also required to have a minimum cumulative GPA of at least 2.7 on a 4.0 scale. The GMAT is required for admission to the program.

## Curriculum

### Master of Science in Cybersecurity and Cyber Systems

The Master of Science in Cybersecurity and Cyber Systems program requires 30 credit hours. The curriculum consists of three foundation courses covering fundamentals in computer security, systems programming, and network systems. Students have the option to seek a concentration either in cybersecurity or in cyber systems by selecting at least five elective courses in cybersecurity or in cyber systems. In the cybersecurity concentration, students must complete four courses in cybersecurity and one course in cyber systems. In the cyber systems concentration, students must complete four courses in cyber systems and one course in cybersecurity. A fundamental area may be satisfied by a course that was taken prior to admission or a documented record of accomplishment in the subject matter content. In this case, the student must select an additional elective course either in cybersecurity or in cyber systems for each satisfied fundamental area.

### Master of Science in Strategic Analytics

The MS in Strategic Analytics requires 36 credit hours and will be offered online in an accelerated, eight-week format in order to expedite completion. Graduates will be pared for

management and executive careers that use data-based decision making. Students will acquire advanced skills in analytics techniques and artificial intelligence to apply in making strategic business management decisions. Students will learn to understand and evaluate the analytics model and apply the model for problem solving. Course material will cover analytics-specific topics including data science, artificial intelligence, data visualization, database design, and big data analytics. Topics specific to business include, but are not limited to, effective accounting, financial management, organizational behavior, marketing management, and management of information systems.

#### Assessment of Student Learning.

The University has a standard process for assessing student learning outcomes in all its degree programs. The institution's approach incorporates direct and indirect measures administered periodically throughout the academic program. Some of the direct measures include readings, written assignments, course exams, and evaluation of project reports. Indirect assessments include formal student evaluation of faculty, graduation placements, alumni surveys, retention rates, and graduation rates.

#### Program Assessment

The University has an established assessment plan to determine the overall effectiveness of its programs and to ensure students' needs are being met. The Associate Provost for Academic Programs office has an established program review process ensuring all programs are systematically and continuously monitored by both on- and off-campus reviewers. Programs are expected to report annually on their assessment of student learning outcomes and to track annual performance indicators, such as faculty performance, fiscal performance, and job placement performance. All collected and evaluated data will be reviewed by a faculty committee to ensure a process of continuous quality improvement. The University will follow these existing protocols for continuous improvement.

#### **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.*

Facilities at the University are sufficient for implementing the proposed programs. Classroom and lab spaces, computer resources, and library services are sufficient for the programs' needs. Morris Library is the main library for Southern Illinois University Carbondale. The Library holds more than 2.6 million volumes, 3.6 million microform units, and over 36,000 current periodicals and serials. Library users have access to I-Share (the statewide automated system) and to a comprehensive array of databases and other electronic data files. Morris Library provides a wide range of services, including reference assistance, instructional and technical support, distance learning, geographic information systems, and multimedia courseware development. All databases, e-books, and the catalog are available 24 hours a day, seven days a week. Students have remote access to databases using Desire2Learn file sharing functions as a coursework prerequisite.

Morris Library is part of the Consortium of Academic and Research Libraries in Illinois, Association of Research Libraries, and the Greater Western Library Alliance.

### **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. B) The academic preparation and experience of faculty and staff, as evidenced by level of degrees held, professional experience in the field of study and demonstrated knowledge of the field, ensure that they are able to fulfill their academic responsibilities. At a minimum, faculty shall have a degree from an institution accredited by a U.S. Department of Education and/or Council for Higher Education Accreditation recognized accrediting body or a degree from another country evaluated for U.S. equivalency in the discipline they will teach or for which they will develop curricula at least one level above that of the courses being taught or developed. C) The involvement of faculty in the unit of instruction, research or public service is sufficient to cover the various fields of knowledge encompassed by the unit, to sustain scholarship appropriate to the unit, and to assure curricular continuity and consistency in student evaluation. ...E) Support personnel, including but not limited to counselors, administrators, clinical supervisors, and technical staff, that are directly assigned to the unit of instruction, research or public service, have the educational background and experience necessary to carry out their assigned responsibilities.*

The University has identified institutional policies that ensure academic professionals hired possess the training, credentials, and other related qualifications in order to provide instruction at the institution. Faculty teaching in the proposed programs will have the appropriate qualifications. A formal faculty evaluation process is in place.

### **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 University has adequate faculty, staff, and other instructional resources to administer the proposed programs.

### **Accreditation and Licensure**

*1050.30(b)(3)[applicable only to units of instruction]: 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.*

No specialized accreditation is required for the proposed programs.

### **Program Information**

*1050.30(b)(2)[applicable only to units of instruction]: A) The information which the institution provides for students and the public shall include the following: i) An accurate description of the unit of instruction, including its objectives, length, and residency requirements if any; ii) Schedule*

*of tuition, fees, and all other charges and expenses necessary for completion of the unit of instruction, cancellation and refund policies; iii) Student rights and responsibilities; iv) A statement regarding the transferability of college credits, including the fact that the decision to accept transfer credits is determined by the receiving institutions; v) A statement as to how the institution will advise students on the nature of the transfer process, including the importance of consulting with institutions to which the student may seek to transfer; vi) Evidence of arrangements for the transfer of courses or credits or both to institutional counterparts, when these arrangements exist; these arrangements are also known as articulation agreements; vii) A statement of the institution's most recent graduation rates and the number of graduates and enrollments as provided by the institution to the Integrated Postsecondary Education Data System (IPEDS) and any submission of data to satisfy Board reporting requirements; and viii) Other material facts concerning the institution and the unit of instruction as are likely to affect the decision of the student to enroll. 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.*

Detailed information about the proposed programs, including detailed descriptions of the admission policies, University policies, tuition, fees and curriculum are provided in the proposal and will be published on the University's website.

### **Staff Conclusion**

The staff concludes that the proposed programs by the Southern Illinois University Carbondale 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.

## **University of Illinois at Urbana-Champaign**

**Proposed Program Title in the Region of Authorization:** Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science in the Prairie Region

*Projected Enrollments and Degrees:* The University of Illinois at Urbana-Champaign projects enrollment in the Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science will grow from 50 students the first year to 150-200 students the fifth year. The University projects 40-50 degrees will be awarded in the fifth year.

**Proposed Program Title in the Region of Authorization:** Master of Science in Health Technology in the Prairie Region

*Projected Enrollments and Degrees:* The University of Illinois at Urbana-Champaign projects enrollment in the proposed Master Science in Health Technology will grow from 10 students the first year to a maximum of 30 students the fifth year. Because the program takes one year to complete, projected degrees awarded are the same as enrollment numbers.

## **Background**

### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

The University of Illinois at Urbana-Champaign is seeking authority to offer a Bachelor of Science in Liberal Arts and Sciences (BSLAS) in Brain and Cognitive Science in the Prairie Region. The proposed program will prepare graduates for careers directly related to the field of computer science. Additionally, students will be well positioned for jobs designing, managing, and applying information systems within the healthcare, government and education sectors, as well as in the manufacturing industry. The BSLAS in Brain and Cognitive Science will be administered by the Department of Psychology with collaborations among the following campus units: Anthropology; Computer Science; Industrial Engineering; Informatics; Integrative Biology; Linguistics; Molecular and Cellular Biology; Philosophy; Speech and Hearing Science; and Bioengineering. This new major will intentionally configure existing courses to create an interdisciplinary program allowing students to integrate multiple perspectives that will contribute to more efficient design and implementation of intelligent systems demanded by a technology-dependent society. It will build on current university-wide initiatives including the Health Science Strategy Task Force, the Siebel Center for Design, and the Center for Brain Plasticity.

### Master of Science in Health Technology

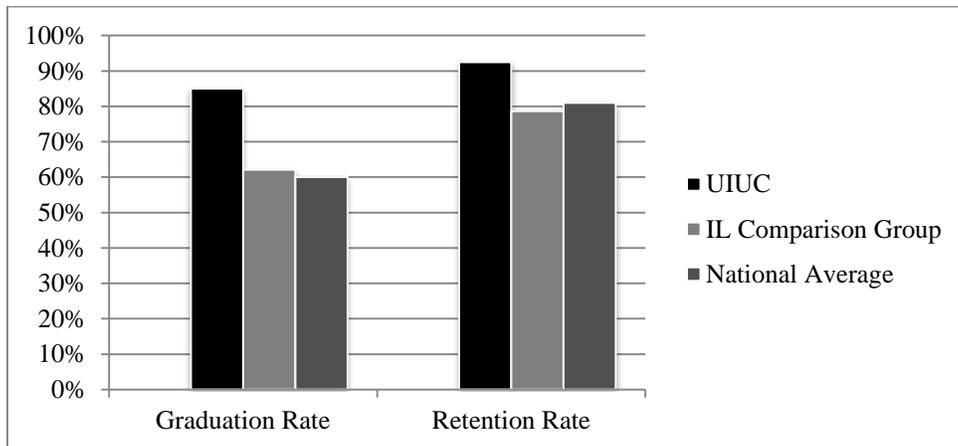
The University of Illinois at Urbana Champaign requests authorization to offer a Master of Science (MS) in Health Technology in the Prairie Region. The proposed program will prepare graduates for career opportunities in the emerging industry of applied health technology, community organizations, healthcare organizations, and government agencies. The MS in Health Technology will be housed administratively within the Department of Kinesiology and Community Health in the College of Applied Health Sciences and will forge collaborations with units in the Grainger College of Engineering. It will build on current university initiatives including the Carle Illinois College of Medicine, the Siebel Center for Design, and the Living in Interactive Future Environment (LIFE) Home research facility. The structure of coursework and the required capstone project will bring end users, industry professionals, and allied health professionals together with students and faculty in a multidisciplinary environment to identify existing problems and develop technologies to solve them.

## Institutional Data

*1050.30(b)(1)(H): Success in student progression and graduation rates across all existing approved programs, 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 these factors based on results for similar institutions. (i) Graduation rates, certificate and degree completion rates, retention rates, and pass rates for licensure and certification aligned with thresholds set by State nor national regulatory bodies. (ii) The success rate shall be, at a minimum, higher than those 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.*

This section includes information about institutional and student success measures for each institution seeking program approval. The institution's rates will be compared to Illinois institutions from within a select comparison group and against the national standards or averages. For a proposed undergraduate program, this section will include undergraduate graduation rates, first to second year retention rates, student loan default rates, and any applicable licensure passage rates. For a proposed graduate program, this section will primarily focus on student loan default data since this measure also includes graduate students in the calculation.

### Undergraduate Retention and Graduation Rates



*Source: National System for Education Statistics, U.S. Department of Education  
Note: University of Illinois Urbana-Champaign is in the four-year, selective Illinois comparison group. Higher percentages are positive indicators.*

#### Undergraduate Graduation Rate

The University's 2016-2017 graduation rate was 85 percent and the average among comparable Illinois institutions was 62.1 percent. The most current published national 2016-2017 average graduation rate available for public four-year institutions was 60 percent. The graduation rate measures the rate at which entering freshmen graduate within 150 percent of normal program length. Data are provided for six-year graduation rates for first-time, full-time bachelor's degree-seeking students and three-year graduation rates for full-time associate degree-seeking students.

The national standard for graduation rates is reported annually by the National Center for Education Statistics (NCES).

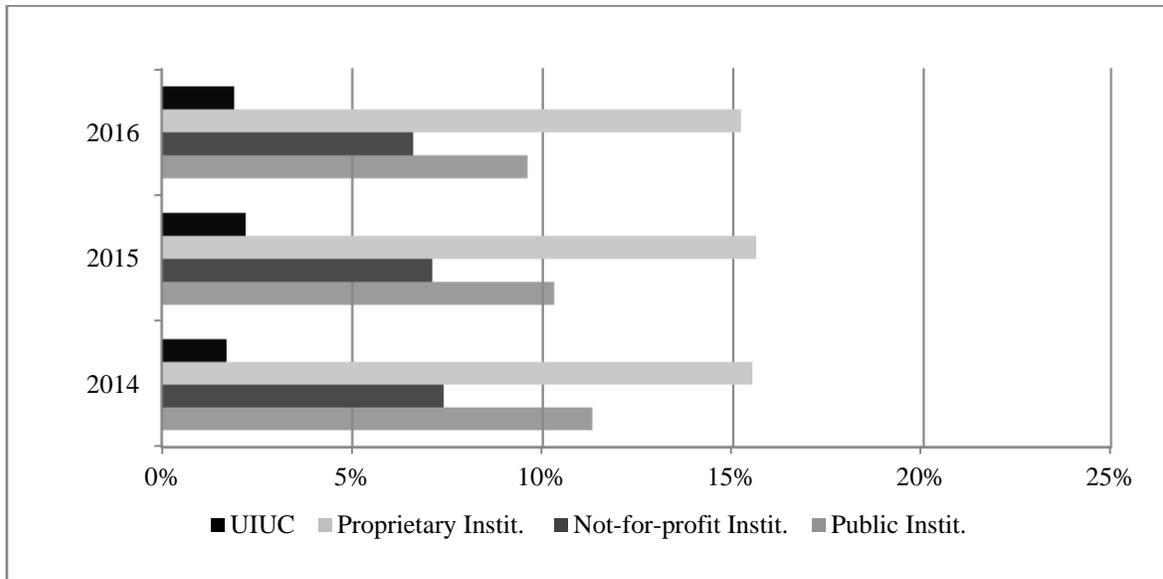
### Undergraduate Retention Rate

The University’s 2016-2017 retention rate was 92.5 percent and the average among comparable Illinois institutions was 78.6 percent. The most current published national 2016-2017 average graduation rate available for public four-year institutions was 81 percent. Retention rates examine the percentage of first-time degree seeking students enrolled in the fall of the prior year that are still enrolled in the fall of the current year. The national standard for retention rates is reported annually by NCES.

### Undergraduate Completions per 100 FTE

The University’s 2016-2017 completions per 100 full-time equivalent (FTE) rate was not applicable. The average among comparable Illinois institutions was 24.6. The FTE data is a unit of measurement intended to represent one student enrolled full-time for one academic year. The calculation is based upon credit/contact hours offered at an institution divided by a standard minimum (12 credit hour) full-time course load. For the University of Illinois at Urbana Champaign, the undergraduate completion per 100 FTE is not an accurate indicator. The majority of students at the University are full-time, and substantial numbers double major and take overloads of credit hours (over 12, up to 18 credit hours), and the standard calculation does not account for these factors.

### Three Year Cohort Student Loan Default Rate



Source: National Center for Education Statistics, U.S. Department of Education

Note: UIUC is a public institution. A lower number is a positive indicator

### Student Loan Default Rate

The three-year student loan default rate for the University was 1.9 percent in 2016, 2.2 percent in 2015, and 1.7 percent in 2014. The three-year cohort student loan default rate is the percentage of a school’s borrowers who enter repayment on certain Federal Family Education Loan

Program or William D. Ford Federal Direct Loan Program loans during a particular federal fiscal year, October 1 to September 30, and default or meet other specified conditions prior to the end of the second following fiscal year. The U.S. Department of Education stated that the Fiscal Year 2016 three-year national cohort default rate was 10.1 percent. The Fiscal Year 2016 three-year national cohort average default rate breakdown by institutional sector is: 9.6 percent for public institutions; 6.6 percent for not-for-profit institutions; and 15.2 percent for proprietary institutions.

## Need

*1050.30(a)(6): A) The unit of instruction, research or public service is educationally and economically consistent with the educational priorities and needs of the State 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.*

### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

The study of how humans interact with, process, and understand information is becoming increasingly important with advances in technology, and creating job growth in specialty areas of brain science and cognitive psychology, such as human-computer interaction and software development is vital. The proposed BSLAS in Brain and Cognitive Science is designed to provide students with an interdisciplinary foundation preparing them for these types of jobs in the computer and information systems industries. The Bureau of Labor Statistics projects that industries with the fastest growth between 2016 and 2026 include: information services with a 48.4 percent change in employment; management, scientific, and technical consulting services at 23.2 percent growth; and computer systems design and related services at 21.3 percent. Illinois labor projections mirror the national projections for growth and employment in the proposed program area. According to the Illinois Department of Employment Security's Long-Term Occupational Projections for 2016-2026, there is 12.32 percent expected employment growth in computer and mathematical occupations, 27.57 percent growth for mathematical scientists, 10.19 percent for computer and information systems managers, 20.49 percent for computer/information research scientists, 28.39 percent in software developers, 15.07 percent in web developers, 8.96 percent in database administrators, 11.99 percent in computer hardware engineers, and 2.19 percent in biomedical engineers.

### Master of Science in Health Technology

The proposed MS in Health Technology is designed to meet an identified need for a better trained workforce of individuals with skills and expertise in consumer health technologies. Employment projections released by the Bureau of Labor Statistics indicates that the health care and social assistance sector will add nearly four million jobs by 2026. The share of healthcare and social assistance employment is projected to increase from 12.2 percent in 2016 to 13.8 percent in 2026, becoming the largest major sector in 2026.

The Illinois Business Consulting program within the Gies College of Business conducted a survey of 150 students at the University of Illinois at Urbana-Champaign and other universities and found that 77 percent of those surveyed were interested in pursuing a health-related master's program. The survey also revealed no other programs equivalent to the MS in Health Technology exist nationwide. A survey was conducted with 65 industry experts in the field of health technology revealing that 92 percent thought the MS in Health Technology would be valuable, while 52 percent said it would be extremely valuable. Sixty-five percent of these experts surveyed identified that

they would be likely to hire graduates of this proposed program. There is evident demand for graduates in the applied health fields.

### ***The Illinois Public Agenda for College and Career Success***

#### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

The proposed BSLAS in Brain and Cognitive Science supports Goal 3 and Goal 4 of the *Illinois Public Agenda for College and Career Success*. Goal 3 is to increase the number of high-quality post-secondary credentials to meet the demands of the economy and an increasingly global society. Goal 4 is to better integrate Illinois' educational, research, and innovation assets to meet economic needs of the state and its regions. The program will produce skilled graduates prepared to meet workforce needs and demands of the state economy within the growing field associated with intelligent systems. With this program, the University of Illinois at Urbana-Champaign will be one of the educational leaders in this area.

#### Master of Science in Health Technology

The proposed MS in Health Technology supports Goal 3 of the *Illinois Public Agenda for College and Career Success*. Goal 3 is to increase the number of high-quality post-secondary credentials to meet the demands of the economy and an increasingly global society. This program will train professionals to meet the economic demand in the emerging field of health technology. It is a technology-based and problem-solving-centered program which will train students in the desired skills needed in the 21st century workforce. Students will be on-site at locations working alongside experts in industry, government agencies, community-based organizations, and academia partners during their capstone project. Based on the industry survey conducted about the MS in Health Technology program (2018), 92 percent of the respondents reported that they thought the degree would be valuable for educating applied health professionals, thus meeting industry demand.

### **Comparable Programs in Illinois**

#### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

Benedictine University and Olivet Nazarene University offer a Bachelor of Science in Data Science, and the University of Illinois at Chicago offers a Bachelor of Science in Information and Decision Sciences. Northwestern University offers a Bachelor of Arts in Cognitive Science that is similar to the BSLAS in Brain and Cognitive Science. Unlike any of these programs, the proposed program takes an interdisciplinary approach and distinguishes itself by offering a stronger computational and programming focus with ties to engineering, neuroscience, and molecular and cellular biology. Additionally, it will be the only such program offered by a public institution.

#### Master of Science in Health Technology

The Master of Science in Health Technology will be the first of its kind nationwide. Related, but different, programs in Illinois include the online MS in Health Informatics offered in partnership with Northwestern University's Feinberg School of Medicine, MS in Engineering Design Innovation at Northwestern University, and the MS in Human-Computer Interaction at DePaul University. Unlike any of the programs listed above, the proposed program will train professionals to develop, test, and implement consumer-facing health technologies.

## **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 proposed programs are in alignment with the overall mission of the University and are consistent with the purpose, goals, and objectives of the institution. The requested degree titles reflect the degree program objectives and curriculum.

## **Curriculum and Assessment**

*1050.30(b)(1) [applicable only to units of instruction]: 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 programs 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.*

*1050.30(a)(2): The design, conduct and evaluation of the unit of instruction, research or public service are under the direct and continuous control of the sponsoring institution's established processes for academic planning and quality maintenance.*

## **Admission Requirements**

### **Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science**

Applicants for the BSLAS in Brain and Cognitive Science program will be admitted to the University of Illinois at Urbana-Champaign through the College of Liberal Arts and Sciences (LAS). High school requirements for admission include: four years of English, three years of math, two years of social sciences, two years of lab sciences, two years of Language other than English, and two years of flexible academic units. LAS also considers high school academic rigor and GPA, test scores, extracurricular activities, and essays expressing interest in the proposed area of study, although no articulated minimums exist in these domains. Transfer students must have a college GPA of at least 3.0 to be admitted to the program.

### **Master of Science in Health Technology**

To be admitted to the Master of Science in Health Technology program, applicants should have an undergraduate degree in a health science-related field or engineering with a minimum GPA of 3.00/4.00 or equivalent for the last two years of undergraduate study. Students with less than a 3.0 GPA may be considered for a limited-status admission. Required prerequisites or equivalents for the program include: Calculus I; Introduction to Computer Science; Introduction to Health Statistics; Introduction to Psychology; Introduction to Public Health; Linear Algebra; and Public Health Research Methods. All applicants must submit GRE scores.

## Curriculum

### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

The BSLAS in Brain and Cognitive Science program's curriculum requires students to complete a minimum of 42 credit hours of coursework which includes 14 required core courses in programming, statistics, machine learning, and artificial intelligence, and brain and cognitive science; 12-13 credit hours of 100-200-level electives covering topics such as anthropology, philosophy, linguistics, and psychology; and 16 hours of advanced coursework electives including a four-hour lab. The lab courses are designed to give students hands on experience applying statistical programming knowledge to the design of research and the analysis of research data in specific content areas of human behavior. Advanced electives cover topics ranging from psychology to philosophy and allow students to augment their knowledge of statistics and computer science.

### Master of Science in Health Technology

The MS in Health Technology program curriculum requires a total of 36 credit hours of coursework culminating in a summer capstone project. Coursework requirements include 16 required core courses in health technology, methods, and engineering as related to health technology; 12 hours of electives from an approved list of courses; and eight hours of required capstone experience courses in cooperation with an industry, community, or government partner. At the conclusion of the capstone project, students will prepare a technical report and short video presentation about their experience and deliverables to the capstone site partner.

## Assessment of Student Learning

### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

Assessment of student learning will be accomplished through both direct and indirect methods administered periodically throughout the academic program. Direct assessment measures require students to score at least a 75 percent on vignette-based pre-and post-assessment to test skills and knowledge, score at least 80 percent on the Collaborative Institutional Training Initiative (CITI) ethics training and follow up evaluation, and maintain at least a 2.0/4.0 GPA in all courses to demonstrate they have met the learning objectives. Indirect methods of assessment include administering a survey that will allow graduating seniors to self-appraise how their training prepared them for the next step in their career as well as using an institutional survey to track job placement and graduate school acceptance rates.

### Master of Science in Health Technology

Assessment of student learning will be accomplished through both direct and indirect methods. Each faculty member will conduct individual assessment through direct measures such as assignments, exams, and projects consistent with course objectives and structure. Conversations with alumni and capstone partners will provide an indirect assessment of how well students have mastered the learning outcomes. The site supervisor for the capstone project will conduct an end-of-semester evaluation on student performance, deliverables to the site, and how well students mastered learning outcomes. Students must pass all courses with a grade of C or better and earn high competency ratings on capstone evaluations in order to complete the degree.

## Program Assessment

### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

Assessment of student learning outcomes will be led by the department undergraduate curriculum advisory committees with the assistance of instructors, teaching assistants, and advising staff. Several data sources will be used to evaluate and improve the program. First, institutional data on student retention, time to degree, and graduation rates will be reviewed. Second, results from the campus' First Destination Survey will be examined to identify whether post-graduation experiences reflect that knowledge and skills obtained through the proposed program are being utilized. Third, responses to the Chancellor's Senior Survey will be reviewed for types of extracurricular participation, overall learning, campus climate, and overall satisfaction with their experience. Fourth, information collected from the departmental senior survey will be analyzed to ascertain practical and scholarly achievements associated with enrollment in the program. Finally, the department's annual review of faculty research, teaching, service, and productivity will measure key program faculty outcomes in these areas. Assessment data and results will be used to improve and update the curriculum in order to meet the needs of students, improve their learning, and better prepare them for their future careers.

### Master of Science in Health Technology

Assessment of the MS in Health Technology program will be led by the Director and Assistant Director of the Health Technology Education Program, and findings will be shared with faculty, admissions and curriculum committee, and the Head of the Department of Kinesiology and Community Health, and Associate Dean of Academic Affairs in the College of Applied Health Sciences. Staff will monitor student retention, graduation rates, and diversity to track and understand student trends and plan for interventions or changes in programing as needed. Feedback will also be gathered through student surveys to evaluate program coursework selection, student experience, and overall satisfaction. Assessment data and results will be used to improve and update the curriculum in order to meet the needs of students, improve learning, and better prepare them for a career in health technology. Finally, alumni surveys will measure career trajectory, program satisfaction, and career preparedness. This information will be used to evaluate the program, adjust curriculum, implement career development opportunities, and improve capstone experiences to create a better program.

### **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.*

### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

The proposed program will use existing facilities, equipment, and instructional technologies. The majority of the courses will be taught in the Psychology Building on East Daniel Street. If a larger classroom is needed, standard campus mechanisms will be used to reassign current classrooms. Partnerships exist with several affiliate interdisciplinary laboratories at the

University to provide students with undergraduate research opportunities. Most of the courses and topics for this program are already in existence, therefore the University Library will support the program without interruption, providing access to books, full-text article databases, and core journals.

### Master of Science in Health Technology

The proposed program will use existing facilities, equipment, and instructional technologies. Courses for the proposed program will be taught in Huff Hall, Armory, and Freer Hall. Technologies and devices will be developed, deployed, and tested with end-users in the LIFE Home. The University Library will support the Master of Science in Health Technology degree, providing access to books, full-text article databases, and core journals. A librarian devoted to Health Sciences is available to assist students and faculty in this program.

### 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. B) The academic preparation and experience of faculty and staff, as evidenced by level of degrees held, professional experience in the field of study and demonstrated knowledge of the field, ensure that they are able to fulfill their academic responsibilities. At a minimum, faculty shall have a degree from an institution accredited by a U.S. Department of Education and/or Council for Higher Education Accreditation recognized accrediting body or a degree from another country evaluated for U.S. equivalency in the discipline they will teach or for which they will develop curricula at least one level above that of the courses being taught or developed. C) The involvement of faculty in the unit of instruction, research or public service is sufficient to cover the various fields of knowledge encompassed by the unit, to sustain scholarship appropriate to the unit, and to assure curricular continuity and consistency in student evaluation. ...E) Support personnel, including but not limited to counselors, administrators, clinical supervisors, and technical staff, that are directly assigned to the unit of instruction, research or public service, have the educational background and experience necessary to carry out their assigned responsibilities.*

The University has identified institutional policies that ensure academic professionals hired possess the training, credentials, and other related qualifications in order to provide instruction at the institution. Program administrators and faculty teaching in the proposed programs will have the appropriate qualifications. A formal faculty evaluation process is in place.

### 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.*

### Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science

The University has adequate faculty, staff, and other instructional resources in place to administer the proposed BSLAS in Brain and Cognitive Science. The Psychology Department already hired three new assistant professors in anticipation of launching the proposed program and

eventually developing a neuroscience major. The Department currently has four staff that handle academic advising for all Psychology majors. If enrollment for the program increases dramatically, it may be necessary to hire an additional staff member for advising. Should the need arise, departmental funds are available to cover such costs.

### Master of Science in Health Technology

The University has adequate faculty, staff, and other instructional resources to administer the proposed MS in Health Technology. Initial financial support was provided through a \$2 million award from the University to include a full-time Assistant Director, a part-time Director, and the hiring of two specialized teaching faculty for the program in addition to a half-time administrative support staff member. The College of Applied Health Sciences is hiring a career support professional. This position will also aid in job placement for the MSHT program graduates. The program will initially be supported by the Investment for Growth Award from the University of Illinois at Urbana-Champaign and sustained by commitments from the College of Applied Health Sciences and the Grainger College of Engineering. The program will be self-sufficient by FY 2025.

### Accreditation and Licensure

*1050.30(b)(3)[applicable only to units of instruction]: 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.*

There is no specialized accreditation or licensure for the BSLAS in Brain and Cognitive Science. For the MS in Health Technology, once the program is established, the University intends to seek accreditation from the Human Factors and Ergonomics Society for their Graduate Program Accreditation. Licensure or certification is not applicable.

### Program Information

*1050.30(b)(2)[applicable only to units of instruction]: A) The information which the institution provides for students and the public shall include the following: i) An accurate description of the unit of instruction, including its objectives, length, and residency requirements if any; ii) Schedule of tuition, fees, and all other charges and expenses necessary for completion of the unit of instruction, cancellation and refund policies; iii) Student rights and responsibilities; iv) A statement regarding the transferability of college credits, including the fact that the decision to accept transfer credits is determined by the receiving institutions; v) A statement as to how the institution will advise students on the nature of the transfer process, including the importance of consulting with institutions to which the student may seek to transfer; vi) Evidence of arrangements for the transfer of courses or credits or both to institutional counterparts, when these arrangements exist; these arrangements are also known as articulation agreements; vii) A statement of the institution's most recent graduation rates and the number of graduates and enrollments as provided by the institution to the Integrated Postsecondary Education Data System (IPEDS) and any submission of data to satisfy Board reporting requirements; and viii) Other material facts concerning the institution and the unit of instruction as are likely to affect the decision of the student to enroll. 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.*

Detailed information about the proposed programs, including a description of the admission policies, tuition, fees, and curriculum, as well as University policies will be published on the University's website.

**Staff Conclusion**

The staff concludes that the Bachelor of Science in Liberal Arts and Sciences in Brain and Cognitive Science and the Master of Science in Health Technology proposed by the University of Illinois at Urbana-Champaign 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.