

**KANSAS BOARD OF REGENTS
ACADEMIC AFFAIRS STANDING COMMITTEE**

**VIRTUAL MEETING AGENDA
Tuesday, February 1, 2022
9:00 – 10:30 a.m.**

The Board Academic Affairs Standing Committee (BAASC) will meet virtually via Zoom. You can listen to the meeting at the Board offices, located at 1000 SW Jackson, Suite 520, Topeka, Kansas, 66612. Meeting information will be sent to participants via email, or you may contact arobinson@ksbor.org.

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|--|---|-------|
| I. Call to Order | Regent Kiblinger, Chair | |
| A. Roll Call and Introductions | | |
| B. Approve minutes from January 19, 2022 meeting | | p. 3 |
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| II. Discussion Items | | |
| A. Potential Next Steps for Program Review | Daniel Archer | p. 5 |
| • rpk GROUP Presentation | Rick Staisloff, Senior Partner
Katie Hagan, Senior Associate | |
|
 | | |
| III. Consent Items | | |
| A. MS in Computer Science – FHSU | Jill Arensdorf | p. 8 |
| B. BS in Computer Science – PSU | Howard Smith | p. 14 |
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 | | |
| IV. Suggested Agenda Items for February 16th Meeting | | |
| A. Kansas Health Science Center Update | | |
| B. TAAC Quality Assurance Report | | |
| C. AKCC and DSP Updates | | |
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 | | |
| V. Adjournment | | |

BOARD ACADEMIC AFFAIRS STANDING COMMITTEE

Four Regents serve on the Board Academic Affairs Standing Committee (BAASC), established in 2002. The Regents are appointed annually by the Chair and approved by the Board. BAASC meets virtually approximately two weeks prior to each Board meeting. The Committee also meets the morning of the first day of the monthly Board meeting. Membership includes:

Shelly Kiblinger, Chair

Jon Rolph

Allen Schmidt

Wint Winter

**Board Academic Affairs Standing Committee
AY 2022 Meeting Schedule**

<i>BAASC Academic Year 2021- 2022 Meeting Dates</i>			
Meeting Dates	Location	Time	Agenda Materials Due
August 31, 2021	Virtual Meeting	9:00 a.m.	August 10, 2021
September 15, 2021	Hybrid Meeting	1:30 p.m.	August 25, 2021
	*No Meetings in October		
November 2, 2021	Virtual Meeting	9:00 a.m.	October 12, 2021
November 17, 2021	Hybrid Meeting	10:30 a.m.	October 27, 2021
November 29, 2021	Virtual Meeting	9:00 a.m.	November 9, 2021
December 15, 2021	Hybrid Meeting	11:00 a.m.	November 24, 2021
January 4, 2022	Virtual Meeting	9:00 a.m.	December 14, 2021
January 19, 2022	Virtual (Topeka option available)	10:30 a.m.	December 29, 2021
February 1, 2022	Virtual Meeting	9:00 a.m.	January 11, 2022
February 16, 2022	Topeka	11:00 a.m.	January 26, 2022
March 1, 2022	Virtual Meeting	9:00 a.m.	February 8, 2022
March 16, 2022	Topeka	11:00 a.m.	February 23, 2022
April 5, 2022	Virtual Meeting	9:00 a.m.	March 15, 2022
April 20, 2022	FHSU	11:00 a.m.	March 30, 2022
May 3, 2022	Virtual Meeting	9:00 a.m.	April 12, 2022
May 18, 2022	Topeka	11:00 a.m.	April 27, 2022
May 31, 2022	Virtual Meeting	9:00 a.m.	May 10, 2022
June 15, 2022	Topeka	11:00 a.m.	May 25, 2022

*Please note virtual meeting times have changed to 9 a.m., and Board day meetings have changed to 11 a.m., unless otherwise noted.

**Board Academic Affairs Standing Committee
MINUTES**

Wednesday, January 19, 2022

The January 19, 2022 meeting of the Board Academic Affairs Standing Committee (BAASC) of the Kansas Board of Regents (KBOR) was called to order by Regent Rolph at 10:30 a.m. The meeting was held through Zoom, with an option to view the virtual meeting at the Board office.

In Attendance:

Members:	Regent Rolph	Regent Winter	Regent Schmidt
Staff:	Daniel Archer Tara Lebar Marti Leisinger Natalie Yoza	Sam Christy-Dangermond Lisa Beck Travis White Karla Wiscombe	Amy Robinson Hector Martinez Tom Kugler
Others:	Adam Borth, Fort Scott CC Ben Schears, NWKTC Cindy Hoss, Hutchinson CC Deborah Fox, Highland CC Howard Smith, PSU Janet Stramel, FHSU Jennifer Roberts, KU JoLanna Kord, ESU Linnea GlenMaye, WSU Lucy Steyer, ESU Mark Watkins, Labette CC Mihir Chand, KCKCC Remy Lequesne, KU Sharon Kibbe, Highland CC Susan Bradley, Butler CC Tom Nevill, Butler CC Jill Arensdorf, FHSU	Aron Potter, Coffeyville CC Brenda Koerner, ESU David Schmidt, K-State Esam Mohammad, Butler CC Heather Morgan, KACCT Jason Sharp, Labette CC Jerry Pope, KCKCC Kim Krull, Butler CC Lisa Kolm, Pratt CC Luke Dowell, SCCC Michael Calvert, Pratt CC Monette DePew, Pratt CC Robert Klein, KUMC Stanton Gartin, SATC Tanya Gonzalez, K-State Tonya Ricklefs, Washburn Tiffany Bohm, KCKCC	Amber Knoettgen, Cloud County CC Chuck Taber, K-State Dennis Rittle, Cowley CC Elaine Simmons, Barton CC Jane Holwerda, Dodge City CC Jean Redeker, KU JuliAnn Mazachek, Washburn Kim Zant, Cloud County CC Lisa Blair, NWKTC Mark Faber, FHSU Michelle Schoon, Cowley CC Marlon Thornburg, Coffeyville CC Shawnee Hendershot, PSU Steve Loewen, FHSU Taylor Crawshaw, Independence CC Anita Chappuie, Independence CC Vincent Bowhay, Independence CC

Roll call was taken for members and presenters.

Approval of Minutes

Regent Schmidt moved to approve the January 4, 2022 meeting minutes, and Regent Winter seconded the motion. With no corrections, the motion passed.

AY 2020 Performance Reports

Sam Christy-Dangermond presented AY 2020 Performance Reports for review. In June 2020, BAASC approved changes to the [Performance Agreement: Funding Guidelines](#), which allow institutions to move up more than one funding level if they identified how the pandemic negatively affected performance indicators. Performance Agreement information can be found at https://www.kansasregents.org/academic_affairs/performance-agreements.

The following nine institutions provided a case to move up to the 100% funding level. Institutional representatives provided a summary of their reports, and the Regents asked follow-up questions.

- Butler Community College
- Coffeyville Community College
- Independence Community College
- Pratt Community College
- Northwest Kansas Technical College
- Cloud County Community College
- Highland Community College
- Kansas City Kansas Community College
- Seward County Community College

Regent Rolph moved to approve the nine institutions to receive 100% of any new funding for which they are eligible in 2022. Following the second of Regent Schmidt, the motion passed unanimously through a roll call vote.

Direct Support Professional (DSP) Update

Regent Schmidt will update during the February 16, 2022, meeting.

Discussion Item

K-State requested its AAS in Unmanned Aircraft Systems proposal be tabled for one month to continue conversations with partners. K-State has had conversations with WSU Tech and Cloud County CC, and K-State may come back with possible changes to the proposal.

Regent Rolph moved to table K-State's AAS in Unmanned Aircraft Systems until the February 16, 2022, meeting. Following the second of Regent Winter, the motion passed unanimously through a roll call vote.

Adjournment

The next BAASC meeting is scheduled for February 1, 2022, at 9:00 a.m.

Regent Winter moved to adjourn the meeting, and Regent Schmidt seconded. With no further discussion, the meeting adjourned at 12:10 p.m.

Summary

Today, rpk GROUP will present a proposal to conduct a system-level program analysis. Background information, a summary of the proposed project and deliverables, and details about rpk GROUP are included herein.

February 1, 2022

Background

With decreased enrollments, declining state support, and increased scrutiny, there is a growing need to produce alternative revenue streams, increase efficiencies, strengthen student affordability, enhance academic quality, and increase graduation rates. Knowing that these challenges will persist, it is understood that the Board wishes to reexamine many traditional practices and identify new strategies that will promote innovation and/or enhance cost-effectiveness. When looking at these issues in relation to academic affairs, the Board has expressed a desire to reconstruct the academic program review process and subsequently review all programs under the revised process. A partnership with rpk GROUP (rpk), a higher education consulting firm that supports clients across the country and internationally to design, build, and implement business models that last, provides an avenue to execute this project.

In recent years, the University of Kansas and Pittsburg State University partnered with rpk to review their degree programs. Additionally, rpk has also worked on system-level projects, including a project in which it reviewed all the degree programs in the Vermont State College System. Today, rpk will present its program review proposal to BAASC. A summary of the proposed project and deliverables as well as information about rpk are detailed below.

Project Summary

The goal of this project is to help ensure the six KBOR bachelors-degree granting institutions are offering programs that students are interested in pursuing, successfully complete, and that lead to employment. This effort will also aim to understand current duplication of effort across the six institutions and will provide the Regents transparency into opportunities for academic portfolio optimization to reduce that duplication of effort. The analysis would cover a five year time horizon, from academic year 2017 to 2021.

Deliverables

The proposed deliverables are based on over a decade of work with state systems and institutions like those served by KBOR. Deliverables would examine each bachelors-degree granting institution separately, and also as a more aligned set of institutions.

1. Current Program Evaluation: Establish framework for evaluation of current academic programs within the KBOR portfolio.

This deliverable would focus on data collection and analysis at individual institutions by academic program, then a roll-up of all programs across the system to capture trends across institutions, highlight duplication of effort, and inform opportunities for improvement to better meet the needs of students and the labor market.

The framework would answer key questions, such as:

- What is the student demand?
- What is the program's size (enrollment) and how has enrollment changed over time?
- Who does the program serve (student demographics)?

- What is the program’s current modality (or modalities)? Where there are multiple modalities, how do program size and demographics vary by modality?
- Is the program successful with the different types of students served (retention and graduation rates)? How has student success changed over time? Does student success vary by modality?
- Is there demand in the labor market for graduates of the program – at the local, state, and national levels?

2. Gap Analysis: Identify gaps in the current KBOR academic portfolio relative to Kansas and national labor market demand.

While the evaluation of the current portfolio will focus on existing offerings, it will also be important for stakeholders to know if there are opportunities to add new programs or modify existing programs to better align with labor market demand. This deliverable will uncover the gaps in the academic portfolio and identify opportunities for improved labor market alignment.

3. Recommendations: Recommend an ideal portfolio that meets the needs of Kansas students and employers.

Based on the evaluation of current KBOR programs and the gap analysis, rpk will make recommendations for KBOR and the institutions to adjust the academic portfolio for ideal student success.

4. General Project Services

rpk will provide all of the following services:

1. Establish and coordinate a Steering Team throughout the project to inform project development and communication
2. Create all project communication for all stakeholders
3. Virtual project launch and additional virtual engagements beyond the project Steering Team as appropriate

Timeline This project could be completed within six to eight months, depending on data availability and coordination from KBOR and the individual institutions.

About rpk GROUP

rpk GROUP is a leading national consulting firm supporting colleges and universities, systems and nonprofits with their growth and resource allocation (and reallocation) strategies. Founded in 2010, rpk emerged from over two decades of leadership positions in the higher education sector, where team members developed their expertise in finance, innovation, and higher education from the perspective of state legislatures, higher education commissions, public and private, two- and four-year institutions.

Our firm has worked with institutions and postsecondary education systems nationwide and internationally, helping them to combine cutting-edge research on higher education strategic finance with systems change. rpk is also a leading voice in developing new business models for higher education, working closely with the State Higher Education Executive Officers Association, the Association of Governing Boards, the Bill and Melinda Gates Foundation, the Lumina Foundation, the National Association of College and University Business Officers (NACUBO), and others to develop a new language and metrics around sustainable innovation, cost, and efficiencies for the higher education sector. This combination of a research focus around new business models, and an ability to work with higher education institutions and systems to implement best practices emerging from this research makes rpk GROUP unique among consulting practices. rpk’s subject matter expertise is further demonstrated by its published works and activities that have been highlighted in the industry’s leading media, including the recent Chronicle of Higher Education collection, “[The Post-Pandemic](#)

[College.](#)” as well as in the Lumina Foundation’s publication, “[Improving College Affordability with New Business Models.](#)”

rpk utilizes a proven Mission, Market, and Margin® strategy to partner with institutions and systems in connecting resources to mission and student success. Using this approach, institutions and systems have been freed from an emphasis on budget balancing and cutting, to a new focus on return on investment (ROI). An ROI focus emphasizes a reallocation of resources to achieve student success, academic excellence, and sustainable business models, while also highlighting potential cost savings.

The application of the ROI lens is central to the ability of any state or system that seeks to combine resource allocation with strategy and performance. We start with the end in mind, supporting states and systems in the identification of quantifiable strategies for serving student and work force needs. This question of “what will good look like” is informed by our work nationally, understanding best practice in resource allocation and performance funding. rpk’s deep analytical expertise further allows us to understand cost within institutions and systems at a unit level, connecting spending to expected outcomes.

We serve as a leader in this work, supporting the field in understanding market demand and yield, student success, contribution margins, and opportunities to better utilize available resources. rpk has also developed best practice in streamlining administrative functions, providing both cost savings and improved quality of service. Recent clients that have benefited from our approach include the State University of New York System, the University of Virginia, the University of Kansas, and the Ohio Community College System. Our work with these partners included reviews of the academic portfolio and academic efficiency, analyses to support more productive performance of administrative services, national benchmarking, market analysis that linked academic programs to national and state labor data, and business model sustainability. rpk also actively supports and advises the Vermont State College System in their ongoing efforts to transform the system of higher education in Vermont, primarily through merging the three existing four-year degree-granting institutions into a single institution (see rpk GROUP’s framework for system transformation in Vermont [here](#)). Finally, rpk has continued its work to develop new metrics that increase the level of transparency and accountability across all of higher education.

Program Approval

Summary

Universities may apply for approval of new academic programs following the guidelines in the Kansas Board of Regents Policy Manual. Fort Hays State University has submitted an application for approval and the proposing academic unit has responded to all of the requirements of the program approval process. Board staff concurs with the Council of Presidents and the Council of Chief Academic Officers in recommending approval.

February 1, 2022

I. General Information

A. Institution Fort Hays State University

B. Program Identification

Degree Level: Master's
Program Title: Computer Science
Degree to be Offered: Master of Science in Computer Science
Responsible Department or Unit: Department of Computer Science and Information Science Engineering
CIP Code: 11.0201
Modality: Online
Proposed Implementation Date: Fall 2022

Total Number of Semester Credit Hours for the Degree: 33 credit hours

II. Clinical Sites: Does this program require the use of Clinical Sites? No

III. Justification

A master's degree provides a career boost by enabling professionals to expand their expertise in the areas of data science, network security, software development, or artificial intelligence. Earning a Master's Degree in Computer Science provides a competitive edge over other candidates when searching for new employment. More than 850 full-time job listings at Google currently mention a master's degree as a preferred qualification. Employers typically expect computer and information research scientists to hold master's degrees at minimum. Our Master's Degree in Computer Science will focus on data science which is currently an area of high demand. (Google Careers, n.d.)

The FHSU Bachelor of Science in Computer Science has grown from 220 students in 2017 to 457 in 2020. Much of this growth has come from our online program, and with this growth has come requests for a master's program. Currently, the only Kansas university that offers a master's in Computer Science with the same CIP as our proposed program is Kansas State University (MSE in Software Engineering), although K-State, KU, and Wichita State offer MS in Computer Science with a different CIP, and K-State and WSU offer an MS in Electrical Engineering. Also, KU is in the process of KBOR approval for an M. Eng. Electrical Engineering & Computer Science. Since our program is online, it will be completely accessible to a large area of place-bound students with undergraduate credentials in computer science in our service region.

IV. Program Demand

A. Survey of Student Interest

Number of surveys administered:	386
Number of completed surveys returned:	147
Percentage of students interested in program: ...	68%

The survey was sent to 327 online students and 59 on-campus students in fall 2019. Eighty-eight online surveys were returned and 59 on-campus surveys were returned. Seventy-three percent of the online students replied that they are interested in a master’s program in Computer Science, and 25% indicated that they are possibly interested. Sixty-one percent of on-campus students indicated that they are interested in the program. Overall, 68% of all respondents indicated interest in pursuing a Master’s Degree in Computer Science. Another 16% replied that they might be interested in the program.

B. Market Analysis

According to the U.S. Department of Labor Bureau of Labor Statistics, the rate of growth in the computer and information technology field is expected to be 13 percent from 2016 – 2026, exceeding the growth rate of all other occupations. By that time, an additional 557,100 jobs will be added. On the supply side, there may be a shortage of 1.1 million workers globally in technology, media, and telecommunications industries, and this shortage could increase to 4.3 million by 2030 (National University, 2019).

The 2019 Hanover Research, Market Opportunity Scan identifies a Master’s Degree in Computer Science as high growth in student demand, labor demand, and overall growth. Seventeen Computer Science Master’s programs are available in the Plains states of which only one is offered online (Hanover, 2019).

Large companies rely on data analysis to make decisions. Algorithms used by companies such as Google, Amazon, and Facebook require large amounts of data to be analyzed efficiently. Data science provides the ability to collect, manage, and analyze data to create the algorithms. Because of the need for data scientists, the U.S. Bureau of Labor Statistics predicts an increase of about 28% in jobs in data science by 2026. (Zita, 2021)

LinkedIn named data scientist as the second fastest-growing job in 2017 (LinkedIn, 2017), and Glassdoor ranked data scientist as the best job in the United States in 2018 (Forbes, 2018). At the regional/state level, The Kansas Department of Labor identifies software developers and software quality assurance analysts and testers, computer system analysts, computer programmers, and other computer occupations as high demand, high wage occupations (Kansas Department of Labor, January 2021). Information specific to master’s degrees was not provided.

V. Projected Enrollment for the Initial Three Years of the Program

Year	Headcount Per Year		Sem Credit Hrs Per Year	
	Full- Time	Part- Time	Full- Time	Part- Time
Implementation	15	0	270	0
Year 2	30	0	495	0
Year 3	30	0	495	0

Enrollment projections are based on the available capacity of our courses if one new position is created to aid in the implementation of this program. Although some students will be part-time students, enrollment projections are stated as the equivalent of 15 or 30 full-time students enrolled in 9 credit hours of courses for three semesters and 6 credit hours for one semester.

VI. Employment

This program will reinforce knowledge and skills in software, digital storage and retrieval, networks, human-computer interaction, information security, digital design, and electronic media. Students will develop a high degree of specialization in data science, an important area of computer science that holds great growth potential (see Market Analysis above).

A Master's degree in Computer Science provides a graduate with the opportunity to advance his/her career within an organization and lead to higher earnings. Individuals with a master's degree in Computer Science earn significantly higher annual salaries than people who have a bachelor's degree. According to PayScale.com, professionals who had completed their Master's of Computer Science earned an average salary of \$103,179 as of March 2021, whereas those with a Bachelor's of Computer Science averaged \$86,095 per year at the same time period. (PayScale, n.d.).

VII. Admission and Curriculum

A. Admission Criteria

Students must have completed a bachelor's in Computer Science or a related field from a regionally accredited college or university and have earned a minimum GPA of 3.0 in the most recent 60 hours of undergraduate college credits. Students will complete the graduate school application for admission and provide a personal statement of interest, undergraduate transcripts, and a minimum of two recommendation letters. A student may enter the program in the spring or fall as required courses may be taken in either order.

B. Curriculum

Year 1: Fall

SCH = Semester Credit Hours

Course #	Course Name	SCH....
CSCI 601	Advanced Programming	3
CSCI 811	Advanced Database Management	3
CSCI 663	Introduction to Cryptography	3

Year 1: Spring

Course #	Course Name	SCH....
CSCI 831	Advanced Operating Systems	3
CSCI 841	Advanced Software Engineering	3
CSCI 612	Fundamentals of Research	3

Year 2: Fall

Course #	Course Name	SCH....
CSCI 896	Digital Image Processing	3
CSCI 866	Data Mining	3
CSCI 851	Advanced Data Structures	3

Year 2: Spring

Course #	Course Name	SCH....
CSCI 897	Project	6

Total Number of Semester Credit Hours [33]

VIII. Core Faculty

Note: * Next to Faculty Name Denotes Director of the Program, if applicable
 FTE: 1.0 FTE = Full-Time Equivalency Devoted to Program

Faculty Name	Rank	Highest Degree	Tenure Track Y/N	Academic Area of Specialization	FTE to Proposed Program
Hong Zeng	Professor	PhD	Y	Algorithm Design	0.2
Anas Hourani	Asst. Professor	PhD	Y	Machine Learning	0.2
Hussam Ghunaim	Asst. Professor	PhD	Y	Data Mining	0.2
Dr. Hieu Vu*	Asst. Professor	PhD	N	Cloud Computing	0.0
Pending hire	Asst. Professor	PhD	Y		0.2
New hire	Asst. Professor	PhD	Y		0.2

* Dr. Vu will continue to support the undergraduate program.

Number of graduate assistants assigned to this program **[0]**

IX. Expenditure and Funding Sources (List amounts in dollars. Provide explanations as necessary.)

A. EXPENDITURES	First FY	Second FY	Third FY
Personnel – Reassigned or Existing Positions			
Faculty	\$64,000	\$64,640	\$65,286
Administrators (other than instruction time)	\$0	\$0	\$0
Graduate Assistants	\$0	\$0	\$0
Support Staff for Administration (e.g., secretarial)	\$0	\$0	\$0
Fringe Benefits (total for all groups)	\$14,080	\$14,220	\$14,363
Other Personnel Costs	\$0	\$0	\$0
Total Existing Personnel Costs – Reassigned or Existing	\$78,080	\$78,860	\$79,649
Personnel – New Positions			
Faculty	\$16,000	\$16,160	\$16,322
Administrators (other than instruction time)	\$0	\$0	\$0
Graduate Assistants	\$0	\$0	\$0
Support Staff for Administration (e.g., secretarial)	\$0	\$0	\$0
Fringe Benefits (total for all groups)	\$3,520	\$3,555	\$3,591
Other Personnel Costs	\$0	\$0	\$0
Total Existing Personnel Costs – New Positions	\$19,520	\$19,715	\$19,913
Start-up Costs - One-Time Expenses			
Library/learning resources	\$0	\$0	\$0
Equipment/Technology	\$3,000	\$1,000	\$1000
Physical Facilities: Construction or Renovation	\$0	\$0	\$0

Other	\$0	\$0	\$0
Total Start-up Costs	\$3,000	\$1,000	\$1000
Operating Costs – Recurring Expenses			
Supplies/Expenses	\$1,000	\$1,000	\$1,000
Library/learning resources	\$0	\$0	\$0
Equipment/Technology	\$0	\$0	\$0
Travel			
Other	\$0	\$0	\$0
Total Operating Costs	\$2,500	\$2,500	\$2,500
GRAND TOTAL COSTS	\$103,100	\$102,075	\$103,062

B. FUNDING SOURCES (projected as appropriate)	Current	First FY (New)	Second FY (New)	Third FY (New)
Tuition / State Funds		\$80,609	\$147,782	\$147,782
Student Fees		\$0	\$0	\$0
Other Sources		\$0	\$0	\$0
GRAND TOTAL FUNDING		\$80,609	\$147,782	\$147,782
C. Projected Surplus/Deficit (+/-) (Grand Total Funding <i>minus</i> Grand Total Costs)		-\$22,491	\$45,707	\$44,720

X. Expenditures and Funding Sources Explanations

A. Expenditures

Personnel – Reassigned or Existing Positions

Personnel expenditures are based on 1.0 FTE among five faculty members. Five graduate courses will be taught by these faculty members each semester.

This proposal is part of the undergraduate expansion proposal. The remaining .8 FTE for each faculty member will be dedicated to undergraduate offerings and development of master’s courses. The undergraduate expansion proposal includes the addition of two faculty members to the existing four full-time faculty members, Dr. Zeng, Dr. Hourani, Dr. Ghunaim, and Dr. Vu.

Personnel – New Positions

One new position in addition to the pending hire will be added with 0.2 FTE dedicated to this program. The addition of one position with a 0.8 undergraduate/0.2 graduate split in responsibilities will allow for the other four faculty members to each dedicate 0.2 FTE to the master’s program.

Start-up Costs – One-Time Expenses

The only anticipated start-up costs involve the purchase of licenses for software.

Operating Costs – Recurring Expenses

Money identified in recurring costs will contribute to the purchasing of office supplies and normal operating expenses. Administrative support is currently provided by the department's senior administrative assistant, and she will be assisted by the student secretary for the Department of Mathematics. Faculty development costs are included in Travel.

B. Revenue: Funding Sources

Revenue will be generated through online graduate tuition and fees at \$298.55 per credit hour for 15 students taking eighteen hours per year for the first year, and 15 second-year students taking 15 hours and 15 first-year students taking 18 hours the second year and the third year. The projected increase in SCH is expected to provide funding needed to support the master's program after the first year as shown in Section IX.

C. Projected Surplus/Deficit

Assuming the program attracts the equivalent of 15 new full-time students each year, a deficit of \$22,491 is expected the first year, a surplus of \$45,707 is expected the second year, and a surplus of \$44,720 is expected the third year. The program would break even in Year 1 with 20 full-time (18 graduate credit hours per year) students.

XI. References

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Google Careers. (n.d.).

https://careers.google.com/jobs/results/?company=Google&company=YouTube°ree=MASTERS&distance=50&employment_type=FULL_TIME&hl=en_US&jlo=en_US&q=master%27s%20degree&sort_by=relevance

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<https://blog.linkedin.com/2017/december/7/the-fastest-growing-jobs-in-the-u-s-based-on-linkedin-data>

National University. (2019). *Are Computer Science Jobs in Demand?* <https://www.nu.edu/resources/are-computer-science-jobs-in-demand/>

PayScale. (n.d.). payscale.com

Zita, Christopher. (January 26, 2021). *Is Data Science Still a Rising Career in 2021?*

<https://towardsdatascience.com/is-data-science-still-a-rising-career-in-2021-722281f7074c>

Program Approval

Summary

Universities may apply for approval of new academic programs following the guidelines in the Kansas Board of Regents Policy Manual. Pittsburg State University has submitted an application for approval and the proposing academic unit has responded to all of the requirements of the program approval process. Board staff concurs with the Council of Presidents and the Council of Chief Academic Officers in recommending approval.

February 1, 2022

I. General Information

A. Institution Pittsburg State University

B. Program Identification

Degree Level: Bachelor
Program Title: Computer Science
Degree to be Offered: Bachelor of Science in Computer Science
Responsible Department or Unit: Department of Mathematics
CIP Code: 11.0701
Modality: Hybrid
Proposed Implementation Date: August 2022

Total Number of Semester Credit Hours for the Degree: 120

II. Clinical Sites: Does this program require the use of Clinical Sites? No

III. Justification

Across the nation, the demand for Computer Science programs is high. According to a recent article from the *New York Times*, demand is so high that some universities, such as the University of Maryland, must limit enrollment. In an example closer to PSU, the University of Central Missouri graduated 56 Computer Science majors in a recent year. Demand is growing in the field as jobs are going unfilled. The University has been approached by local entrepreneurs and employers who have strongly encouraged the creation of a degree in Computer Science to help fill local and regional needs for qualified people in this field. Ability to draw computer scientists educated elsewhere to the region has been challenging. This is echoed by the University's own IT staff. While it is recognized that universities cannot afford to have programs in every discipline, some disciplines are common to almost all universities due to the nature of the level of need, being more local or regional to national or international. Computer Science is one of those disciplines. A survey of universities similar to PSU in size and mission finds that Computer Science programs are ubiquitous. The five other Regents' universities offer a BS in Computer Science, but there is still a great need for more computer programmers nationwide and locally (as illustrated in part VI below). Demand is such that a new program at PSU is warranted. This is reflected by the fact that Computer Science is one of the top programs requested by students interested in attending PSU.

When mature, the Computer Science program will draw students who also have an interest in mathematics,

physics, information systems, engineering technology, and other similar, technically oriented programs. These programs have been suffering from a Computer Science shaped hole in PSU's offerings. It will operate synergistically with them. Computer Science has been a missing piece of the STEM ecosystem.

IV. Program Demand

A. Survey of Student Interest

Number of surveys administered:	4,155
Number of completed surveys returned:	407
Percentage of students interested in program: ...	19%

Of the 407 students who responded to the survey, 348 thought that PSU should have a computer science major. Of those, 77 were interested in such a major themselves. Of those 407 who responded, almost a quarter of them left comments. The following are typical:

I think this is a field that will undoubtedly be a backbone of our society for a long time to come with the rate at which technology is making advancements every day with no foreseeable end in sight. I would imagine this program could be a great advantage for students seeking jobs after graduation.

I think a computer science major would fit well at PSU.

This would be a phenomenal program to add. I am in full support.

Computers are an essential part of today's world. The need for computers and people who fully understand them will never go away, the need will only grow.

YES. Adding this degree at PSU is vital.

With the massive increase for STEM related fields, this program would fit in great at PSU.

B. Market Analysis

The job market for majors graduating with computer science degrees is extremely compelling. According to the U.S. Bureau of Labor Statistics (BLS), the 2019 median salary of someone holding the role of "Software Developer" (someone who creates applications or systems that run on computers or other devices) is \$107,510 per year. Typical entry-level education for this profession is a bachelor's degree in computer science or a related field. As of 2019, the job growth outlook for 2019-2029 is 22%, which is noted as "much faster than average."

In addition to extremely rapid growth, there are an exceptionally large number of jobs currently unfilled for software developers or similar jobs for computer science graduates due to lack of supply. This contributes to the high salaries of individuals in these positions. According to code.org, an educational computer science advocacy institution, there are 400,000 current job openings in the united states that could be filled by computer science majors. Given the trends noted by the BLS, it is safe to conclude that this number will continue to grow.

Another indicator of the current market status can be found when analyzing the generous signing bonuses that large companies are giving to new computer science graduates/employees. Google, for instance, often awards signing bonuses for new employees in the \$15,000 to \$35,000 range. Many other companies do the same, some opting to give these employees stock in their companies as well. The conclusion that can be drawn from this is that, given the extremely high number of job openings for computer science graduates, companies have no choice but to continue to increase compensation and incentives for new recruits.

To conclude, the combination of rapid job growth, many unfilled job openings, and high salaries and incentives shows that the current market for graduates with computer science degrees puts new graduates in a highly desirable position.

V. Projected Enrollment for the Initial Three Years of the Program

Year	Headcount Per Year		Sem Credit Hrs Per Year	
	Full- Time	Part- Time	Full- Time	Part- Time
Implementation	15		450	
Year 2	30		900	
Year 3	45		1,350	

VI. Employment

Students with computer science degrees enjoy a range of lucrative employment opportunities across a wide variety of industries. Indeed, one could say that today, every company is in some form a “tech company,” from financial, to music, to sports, to manufacturing, even the companies we may not think of as traditional technology companies have been forced to engage that space. This means that students who are interested in almost any area can participate in that overall industry with a computer science degree.

Specific numbers for total current job openings and median salary can be found in the “Market Analysis” section.

A small sampling of large regional employers for graduates with computer science degrees in large numbers:

- Cerner
- Koch Industries
- Garmin
- Jack Henry
- Federal Reserve Bank of Kanas City

A small sampling of large national employers for graduates with computer science degrees in large numbers:

- Google
- Amazon
- Twitter
- Facebook
- Square
- Walmart
- IBM
- Microsoft

A small sampling of local employers for graduates with computer science degrees:

- Limelight (of Pittsburg, Kansas)
- WATCO
- Crossland
- Millers
- Midwestern Interactive
- CDL

- Jake's Fireworks
- Pittsburg State University

One important overall note about employment with a computer science degree is that there is increasing flexibility for and availability of remote work. This trend is becoming so prevalent that a recent study showed that 86% of IT/development professionals work remotely to some degree, with 1/3 of those working from home full time. This flexibility is becoming highly desirable, and uniquely positions Pittsburg State University graduates to succeed, as they are not geographically restricted when finding employment before/after graduation. They may choose to live in their hometowns while working remotely for concerns in metro areas.

VII. Admission and Curriculum

A. Admission Criteria

The program is open to all students who have been admitted to Pittsburg State University.

B. Curriculum

See the appendix for the list courses in the program and the requirements.

Year 1: Fall

SCH = Semester Credit Hours

Course #	Course Name	SCH 15
MATH 122	Plane Trigonometry	3
CIS 230	Introduction to Programming	3
	Pitt Pathway and electives	9

Year 1: Spring

Course #	Course Name	SCH 15
MATH 326	Mathematics for Programming	3
MATH 212	Matrix Algebra	2
EET 244	Logic Circuits	3
	Pitt Pathway and electives	7

Year 2: Fall

Course #	Course Name	SCH 15
CIS 380	Systems Analysis and Design	3
MATH 413	Introduction to Mathematical Thought	3
	Pitt Pathway and electives	9

Year 2: Spring

Course #	Course Name	SCH 15
MATH 513	Discrete Structures	3
CIS 240	Intermediate Programming	3
	Pitt Pathway and electives	9

Year 3: Fall

Course #	Course Name	SCH 15
CS 405	Principals of Software Architecture	3

CS 300	Web Application Development I	3
	Pitt Pathway and electives	9

Year 3: Spring

Course #	Course Name	SCH 15
CS 305	Web Application Development II	3
CIS 615	Database Management	3
	Pitt Pathway and electives	9

Year 4: Fall

Course #	Course Name	SCH 15
MATH 626	Data Structures and Algorithms	3
EET 344	Microcomputer Systems	3
	Pitt Pathway and electives	9

Year 4: Spring

Course #	Course Name	SCH 15
CS 410	Introduction to Frontend Frameworks	3
CS 500	Advanced Programming	3
	Pitt Pathway and electives	9

VIII. Core Faculty

Note: * Next to Faculty Name Denotes Director of the Program
 FTE: 1.0 FTE = Full-Time Equivalency Devoted to Program

Faculty Name	Rank	Highest Degree	Tenure Track Y/N	Academic Area of Specialization	FTE to Proposed Program
Tim Flood*	Professor	PhD	Y	Number Theory	0.25
Scott Thuong	Associate Professor	PhD	Y	Topology	0.25
Retired Faculty line	Assistant Professor	PhD	Y	Computer Science	1
David Newcomb	Instructor	MS	N	Programming/Introductory Math	1
Terry Martin	Instructor	MS	N	Introductory Math	0.125
Bobby Winters	Professor	PhD	Y	Topology	0.125
Eric Mayer	Professor	PhD	Y	Embedded Systems	0.25

Number of graduate assistants assigned to this program **[0]**

IX. Expenditure and Funding Sources (List amounts in dollars. Provide explanations as necessary.)

A. EXPENDITURES	First FY	Second FY	Third FY
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Personnel – Reassigned or Existing Positions			
Faculty	\$34,111.11	\$44,695.63	\$155,086.00
Administrators (<i>other than instruction time</i>)			
Graduate Assistants			
Support Staff for Administration (<i>e.g., secretarial</i>)			
Fringe Benefits (<i>total for all groups</i>)	\$11,001.34	\$14,868.44	\$20,289.04
Other Personnel Costs			
Total Existing Personnel Costs – Reassigned or Existing	\$45,112.45	\$59,564.07	\$175,375.04
Personnel – New Positions			
Faculty	0	0	0
Administrators (<i>other than instruction time</i>)	0	0	0
Graduate Assistants	0	0	0
Support Staff for Administration (<i>e.g., secretarial</i>)	0	0	0
Fringe Benefits (<i>total for all groups</i>)	0	0	0
Other Personnel Costs	0	0	0
Total Existing Personnel Costs – New Positions			
Start-up Costs - One-Time Expenses			
Library/learning resources	0	0	0
Equipment/Technology	0	0	0
Physical Facilities: Construction or Renovation	0	0	0
Other	0	0	0
Total Start-up Costs	0	0	0
Operating Costs – Recurring Expenses			
Supplies/Expenses	0	0	0
Library/learning resources	0	0	0
Equipment/Technology	0	0	0
Travel	0	0	0
Other	0	0	0
Total Operating Costs	0	0	0
GRAND TOTAL COSTS	\$45,112.45	\$59,564.07	\$175,375.04

B. FUNDING SOURCES <i>(projected as appropriate)</i>	Current	First FY (New)	Second FY (New)	Third FY (New)
Tuition / State Funds	In state	\$172,880	\$345,760	\$518,640
Student Fees				

Other Sources				
GRAND TOTAL FUNDING		\$172,880	\$345,760	\$518,640
C. Projected Surplus/Deficit (+/-) (Grand Total Funding <i>minus</i> Grand Total Costs)		\$172,767	\$286,196	\$315,290

X. Expenditures and Funding Sources Explanations

A. Expenditures

Personnel – Reassigned or Existing Positions

Year 1 & Year 2

- This is based on the assumption that there will be only zero-hour freshmen enrolled at the beginning of the program, i.e. we will not be able to accept students who transfer into junior- and senior-level computer science courses during the first two years of the program. During that time, we will only need 0.75 of a faculty position during the first year and 1.25 faculty positions during the second. The salaries were calculated from particular faculty currently on staff.

Year 3

- This year we will convert the position of a professor who is on phased retirement. There is currently one member of the department of mathematics (with a salary of \$72,000) who will be retired full before 2023. In addition, there will be another faculty member (with a salary of \$50,000) in the department who will be going on half-time phased retirement at the end of AY2021. The plan is to use the salary savings to hire someone who is qualified to teach computer science.

Personnel – New Positions

None.

Start-up Costs – One-Time Expenses

None. Currently, there is a surplus of computers and computer labs on campus due to decreasing enrollment. Ultimately, given growth, we will probably have to invested in additional local computer resources, but at present the necessary infrastructure is in place.

Operating Costs – Recurring Expenses

Taken from current operating budgets.

B. Revenue: Funding Sources

Funding is from tuition only. It is based on 15 new students a year, with 10 in-state (tuition rate \$7,744/year) and 5 out-of-state students (tuition rate \$19,088/year).

C. Projected Surplus/Deficit

We project a minimum of \$170,000 surplus during each year of the program.

XI. References

- Bolden-Barrett, V. (2019, July 19). *Working remotely is now the norm for developers, new study shows*. HR Dive. <https://www.hrdiver.com/news/working-remotely-is-now-the-norm-for-developers-new-study-shows/559013/#:~:text=Eighty%2Dsix%20percent%20of%20IT,%2C%20a%20cloud%2Dbased%20platform>.
- Code. (2021). *Why computer science?* <https://code.org/promote>
- Tuttle, B. (2019, April 15). *The massive pay on offer to entry-level Google recruits*. Financial Careers. <https://www.efinancialcareers.co.uk/news/2019/04/google-student-pay>
- U.S. Bureau of Labor Statistics. (2020, September). *Software developers, quality assurance analysts, and testers*. Occupational Outlook Handbook. <https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm>

Appendix

The Computer Science Major

Code		credit
	Core	35
MATH 122	Plane Trigonometry	3
MATH 212	Matrix Algebra	2
EET 244	Logic Circuits	3
MATH 326	Mathematics for Programming	3
MATH 413	Introduction to Mathematical Thought	3
MATH 513	Discrete Structures	3
CIS 380	Systems Analysis and Design	3
CIS 615	Database Management	3
CIS 230	Introduction to Programming	3
CIS 240	Intermediate Programming	3
MATH 626	Data Structures and Algorithms	3
CS 405	Principles of Software Architecture	3
	Choose 15 hours from the following	15
CS 300	Web Application Development I	3
CS 500	Advanced Programming	3
CS 305	Web Application Development II	3
CS 400	Mobile Application Development	3
CS 410	Introduction to Front End Frameworks	3
EET 344	Micro Computer Systems	3
EET 449	Programmable Logic Devices	3
EET 549	Micro Controllers	3
EET 647	Digital Signal Processing	3
		24
	Total hours in program	50
	Upper Division in program	36
	Upper Division electives	9
	Total Upper Division	45
	Balance to be filled with general education and electives	70
	Total Degree	120