

New Program Proposal

Date Submitted: 03/22/23 4:43 pm

Viewing: **BS-ECYB : Bachelor of Science in Economics and Cybersecurity**

Last edit: 03/22/23 6:13 pm

Changes proposed by: rcalia

Program Status	Active		
Requestor	Name	Roland Calia	E-mail
	rcalia@stuart.iit.edu		
Origination Date	2023-3-22		
Is this an interdisciplinary program?	No		
Academic Unit	Business Administration		
College	Stuart School of Business		
Program Title	Bachelor of Science in Economics and Cybersecurity		
Effective Academic Year	2023 - 2024	Effective Term	
	Fall 2023		
Academic Level	Undergraduate		
Program Type	Degree		
Degree Type	Bachelor of Science (BS)		
CIP Code			

In Workflow

1. SB Associate Dean
2. Academic Affairs
3. Undergraduate Academic Affairs
4. Director of Assessment
5. SB Dean
6. Marketing and Communications
7. Undergraduate Studies Committee Chair
8. Faculty Council Chair
9. Faculty Council Chair
10. Provost
11. President
12. Board of Trustees
13. Academic Affairs

Approval Path

1. 03/19/23 8:58 pm
M Krishna Erramilli (krish): Approved for SB Associate Dean
2. 03/20/23 4:12 pm
Patty Johnson Winston (winston): Rollback to Initiator
3. 03/20/23 9:00 pm
M Krishna Erramilli (krish): Approved for SB Associate Dean
4. 03/21/23 11:38 am
Patty Johnson Winston (winston): Rollback to Initiator
5. 03/21/23 3:54 pm
M Krishna Erramilli

(krish): Approved
for SB Associate
Dean

6. 03/22/23 4:32 pm
Patty Johnson
Winston (winston):
Rollback to Initiator

7. 03/22/23 5:46 pm
M Krishna Erramilli
(krish): Approved
for SB Associate
Dean

8. 03/22/23 6:16 pm
Patty Johnson
Winston (winston):
Approved for
Academic Affairs

9. 03/23/23 10:32 am
Joseph Gorzkowski
(jgorzkow):
Approved for
Undergraduate
Academic Affairs

10. 03/24/23 3:17 pm
Lauren Woods
(lwoods1):
Approved for
Director of
Assessment

11. 03/24/23 3:20 pm
Liad Wagman
(lwagman):
Approved for SB
Dean

30.3901 - Economics and Computer Science.

Is there more than one Academic Unit proposer?

No

Program Code BS-ECYB

Program Attribute

Total Program 126

Credit Hours

Program Narrative and Justification

Narrative description of how the institution determined the need for the program. For example, describe what need this program will address and how the institution became aware of that need. If the program is replacing a current program(s), identify the current program(s) that is being replaced by the new program(s) and provide details describing the benefits of the new program(s). If the program will be offered in connection with, or in response to, an initiative by a governmental entity, provide details of that initiative.

This program is part of the undergraduate program incubator.

See https://docs.google.com/document/d/1e5MIgsk_Fh4CJgkSBxhUjW--KqFrzZa3QMAYNd8uDO0/edit

The Bachelor of Science in Economics and Cybersecurity degree is a cross-disciplinary program that provides a technical and security-focused degree with a strong grounding in business. The curriculum combines core economics and business knowledge with an understanding of the conceptual and practical computer science and cybersecurity skills that will enable them to contribute to ensuring the reliability and security of cyberspace. Graduates will be prepared to become cybersecurity and information technology practitioners, investigators, managers, and leaders in one of the fastest growing job sectors.

Narrative description of how the program was designed to meet local market needs, or for an online program, regional or national market needs. For example, indicate if Bureau of Labor Statistics data or State labor data systems information was used, and/or if State, regional, or local workforce agencies were consulted. Include how the course content, program length, academic level, admission requirements, and prerequisites were decided; including information received from potential employers about course content; and information regarding the target students and employers.

The Bachelor of Science in Economics and Cybersecurity was developed by the Stuart School of Business in consultation with the faculty and leadership of was developed by the Stuart School of Business faculty in consultation with the faculty and leadership of the Department of Information Technology and Management in the College of Computing as well as industry experts and practitioners.

Narrative description of any wage analysis the institution may have performed, including any consideration of Bureau of Labor Statistics wage data related to the new program.

A Bachelor of Science in Economics and Cybersecurity degree can provide an excellent preparation for private sector job markets, particular in the technology sector. Students with this degree have a relatively high mean salary of between \$102,000 to \$113,000 according to the Bureau of Labor Statistics. The job outlook is good, with job growth projected to increase by 35% for information security analysts and 36% for data science analysts. See <https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm#tab-8> and <https://www.bls.gov/ooh/math/data-scientists.htm>.

Narrative description of how the program was reviewed or approved by, or developed in conjunction with, one or more of the following: a) business advisory committees; b) program integrity boards; c) public or private oversight or regulatory agencies (not including the state licensing/authorization agency and accrediting agency); and d) businesses that would likely employ graduates of the program. For example, describe the steps taken to develop the program, identify when and with whom discussions were held, provide relevant details of any proposals or correspondence generated, and/or describe any process used to evaluate the program.

The Bachelor of Science in Economics and Cybersecurity was developed by the Stuart School of Business in consultation with the faculty and leadership of was developed by the Stuart School of Business faculty in consultation with the faculty and leadership of the Department of Information Technology and Management in the College of Computing as well as industry experts and practitioners.

What are the enrollment estimates?

Year 1	5	Year 2	10	Year 3	12
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Attach Additional
Program
Justification
Document(s)

Academic Information

Advising

Since quality advising is a key component of good retention, graduation, and career placement, how will students be mentored? What student professional organizations will be formed? How will the department work with the Career Services office to develop industry connections?

Students will be primarily advised by the Stuart Undergraduate Program Director with the assistance of a designated advisor in the Department of Information Technology and Management.

Program Resources

Which program
resources are
necessary to offer
this program?

Personnel
Facilities

Describe the personnel requirements necessary to offer the program. Describe how and when resources will be made available to hire any additional personnel that are required.

No new personnel are required.

Describe the facilities requirements necessary to offer the program. Describe how and when resources will be made available to obtain any additional facilities that are required.

No new facilities are required.

Proposed Bulletin Entry

Admission

Requirements

The Bachelor of Science in Economics and Cybersecurity degree is a cross-disciplinary program that provides a technical and security-focused degree with a strong grounding in business. The curriculum combines core economics and business knowledge with an understanding of the conceptual and practical computer science and cybersecurity skills that will enable them to contribute to ensuring the reliability and security of cyberspace. Graduates will be prepared to become cybersecurity and information technology practitioners, investigators, managers, and leaders in one of the fastest growing job sectors.

Course Requirements

Required Economics Courses		(42)
<u>BUS 100</u>	Introduction to Business and Economics	3
<u>BUS 102</u>	Computing Tools for Business Analysis	3
<u>BUS 221</u>	Business Statistics	3
<u>BUS 321</u>	Optimization and Decision-Making	3
<u>BUS 480</u>	Strategic Management and Design Thinking	3
<u>ECON 151</u>	Microeconomics	3
<u>ECON 152</u>	Macroeconomics	3
<u>ECON 251</u>	Introduction to Econometrics	3
<u>ECON 311</u>	Intermediate Microeconomics	3
<u>ECON 312</u>	Intermediate Macroeconomics	3
<u>ECON 382</u>	Business Economics	3
<u>ECON 423</u>	Economics of Capital Investments	3
Economics Electives - Choose two courses		6
<u>BUS 210</u>	Introduction to Accounting	3
<u>BUS 211</u>	Financial Accounting	3
<u>BUS 212</u>	Managerial Accounting	3
<u>BUS 301</u>	Organizational Behavior	3
<u>BUS 305</u>	Operation and Supply Chain Design	3
<u>BUS 311</u>	Strategic Cost Management	3
<u>BUS 341</u>	Business Law	3
<u>BUS 361</u>	Entrepreneurship	3
<u>BUS 371</u>	Marketing Fundamentals	3
<u>BUS 452</u>	International Finance	3
<u>BUS 454</u>	Investments	3
<u>BUS 455</u>	Corporate Finance	3
<u>BUS 457</u>	Financial Modeling	3
<u>BUS 458</u>	Financial Derivatives	3

<u>BUS 472</u>	New Product Development	3
<u>BUS 473</u>	Marketing Research	3
<u>BUS 475</u>	Sales Management	3
<u>BUS 476</u>	Consumer Behavior	3
<u>ECON 383</u>	Sports Economics	
Information Technology and Cybersecurity Required Courses		(36)
<u>ITM 301</u>	Introduction to Contemporary Operating Systems and Hardware I	3
<u>ITM 313</u>	Introduction to Open Source Application Development ¹	3
<u>ITMD 321</u>	Data Modeling and Applications	3
<u>ITMO 340</u>	Introduction to Data Networks and the Internet	3
<u>ITMO 356</u>	Introduction to Open Source Operating Systems	3
<u>ITMS 418</u>	Coding Security ²	3
<u>ITMS 438</u>	Cyber Forensics	3
<u>ITMS 443</u>	Vulnerability Analysis and Control	3
<u>ITMS 448</u>	Cyber Security Technologies	3
<u>ITMS 458</u>	Operating System Security	3
<u>ITMS 478</u>	Cyber Security Management	3
<u>ITMS 483</u>	Digital Evidence	3
Mathematics Requirement		(7)
<u>MATH 180</u>	Fundamentals of Discrete Mathematics	3
<u>MATH 148</u>	Preparation for Calculus	4
or <u>MATH 151</u>	Calculus I	
or <u>MATH 191</u>	Business Calculus	
Natural Science and Engineering Requirements		(10)
<u>See Illinois Tech Core Curriculum, section D</u>		10
Humanities and Social Science Requirements		(21)
<u>See Illinois Tech Core Curriculum, section B and C</u>		21
Interprofessional Projects (IPRO)		(10)
<u>See Illinois Tech Core Curriculum, section E</u>		6
Free Electives		4
Total Credit Hours		126
1		
ITM 313 satisfies Computer Science Requirement		
2		
Prerequisite ITMD 411--conditional permission to enroll in ITMS 418		

Sample
Curriculum/Program
Requirements

		Year 1	
Semester 1	Credit Hours	Semester 2	Credit Hours
<u>BUS 100</u>	3	<u>BUS 102</u>	3
<u>ECON 151</u>	3	<u>ECON 152</u>	3
<u>ITM 301</u>	3	<u>ITM 313</u> ¹	3
Humanities Elective (200 Level)	3	<u>MATH 180</u>	3
<u>MATH 148</u> or <u>151</u>	4	Science Elective	4
	16		16

Semester 1		Credit Hours	Semester 2		Credit Hours	Year 2
<u>BUS 321</u>		3	<u>BUS 221</u>		3	
<u>ECON 311</u>			<u>ECON 312</u>			
<u>ITMO 340</u>		3	<u>ITMS 448</u>		3	
<u>ITMO 356</u>		3	<u>ITMD 321</u>		3	
Science Elective		3	Science Elective		3	
		12			12	

Semester 1		Credit Hours	Semester 2		Credit Hours	Year 3
<u>ECON 251</u>			<u>ECON 382</u>			
<u>ITMS 443</u>		3	<u>ITMS 418</u>²		3	
<u>ITMS 478</u>		3	<u>ITMS 458</u>		3	
Humanities Elective (300+)		3	Humanities Elective (300+)		3	
Social Science Elective		3	I PRO Elective I		3	
		12			12	

Semester 1		Credit Hours	Semester 2		Credit Hours	Year 4
<u>ECON 423</u>		3	<u>BUS 480</u>		3	
Economics Elective		3	Economics Elective		3	
<u>ITMS 438</u>		3	<u>ITMS 483</u>		3	
I PRO Elective II		3	Humanities or Social Science Elective		3	
Social Science Elective (300+)		3	Social Science Elective (300+)		3	
Free Elective		4				
		19			15	

Total Credit Hours: 114

- 1 ITM 313 satisfies Computer Science Requirement
- 2 Prerequisite ITMD 411 - conditional permission to enroll in ITM 418

Specialization
Requirements

Program Outcomes and Assessment Process

What are the learning goals for this program?

Learning goal	Courses/student work used to assess achievement of this goal
SSB Common Goal 1 a: Oral Communications Skills Students will prepare and deliver oral presentations that are well-structured, technically	BUS 305

Learning goal	Courses/student work used to assess achievement of this goal
<p>competent and make good use of aids to support evidence-driven conclusions.</p> <p>SSB Common Goal 1 b: Written Communications Skills Students will prepare documents in text-based media that are clear, accurate, and appropriate for the intended audience</p>	
<p>SSB Common Goal 2: Critical Thinking Skills Students will analyze and critique presented arguments as well as develop well-reasoned arguments that are supported by arguments..</p>	BUS 480
<p>BSBA Analytical Skills - Graduates will possess the analytical skills to support business decision making.</p>	BUS 455
<p>BE Application of Business Principles</p>	BUS 321, BUS 351
<p>ITMS Coding Security: Design and implement an enterprise security program using policy, technology, and awareness to implement appropriate controls and technically secure enterprise information assets and resources to deter, detect, and prevent the success of attacks and intrusions</p>	ITMS 418
<p>In what semesters will the data be collected to assess this learning goal, and by whom? Each semester in which program courses are offered.</p> <p>Provide the name of the rubric that will be used to assess the extent to which students are achieving this learning goal. See above</p> <p>How often and by whom will the data</p>	

be analyzed? What benchmarks or targets will be used to interpret your results?

Each semester. The data will be analyzed by assigned faculty evaluators. Benchmarks are set by faculty.

Briefly describe the process that will be used to share the results with faculty and use these to motivate program improvement.

The Program Director meets with faculty on a regular basis to evaluate results of evaluations and to develop improvement programs. Students have access to IIT Career Center as well as Stuart Career Management Center services.

Attach Additional Assessment Document(s)

[ITMS418Rubric.pdf](#)

[Application of Business Principles.xlsx](#)

[BUS Analytical Skills.xlsx](#)

[SSBCommonCriticalThinkingFinal.xls](#)

[SSBCommonCommunication Final.xls](#)

Undergraduate Program Requirements

Undergraduate Degree Requirements

Minimum credit hours 126

Specialization required?
No

Minor required?
No

Proposed General Curriculum

List Major Course Requirements

Required Economics Courses		
BUS 100	Introduction to Business and Economics	3
BUS 102	Computing Tools for Business Analysis	3
BUS 221	Business Statistics	3
BUS 321	Optimization and Decision-Making	3
BUS 480	Strategic Management and Design Thinking	3
ECON 151	Microeconomics	3
ECON 152	Macroeconomics	3
ECON 251	Introduction to Econometrics	3
ECON 311	Intermediate Microeconomics	3
ECON 312	Intermediate Macroeconomics	3
ECON 382	Business Economics	3
ECON 423	Economics of Capital Investments	3
Information Technology and Cybersecurity Required Courses		
ITM 301	Introduction to Contemporary Operating Systems and Hardware I	3
ITM 313	Introduction to Open Source Application Development	3
ITMD 321	Data Modeling and Applications	3
ITMO 340	Introduction to Data Networks and the Internet	3
ITMO 356	Introduction to Open Source Operating Systems	3
ITMS 418	Coding Security	3
ITMS 438	Cyber Forensics	3
ITMS 443	Vulnerability Analysis and Control	3
ITMS 448	Cyber Security Technologies	3
ITMS 458	Operating System Security	3
ITMS 478	Cyber Security Management	3
ITMS 483	Digital Evidence	3
Total Credit Hours		72
List Mathematics Requirements		
MATH 180	Fundamentals of Discrete Mathematics	3
MATH 148	Preparation for Calculus	4
or MATH 151	Calculus I	
or MATH 191	Business Calculus	
Total Credit Hours		7
List Science Requirements		
Natural Science and Engineering Requirements		
See Illinois Tech Core Curriculum, section D		10
Total Credit Hours		10
List Computer Science Requirements		
Computer Science Requirement		
Fulfilled by ITM 313		
Total Credit Hours		0
Humanities and Social Science Requirements		

List Humanities and Social Sciences Requirements			
See Illinois Tech Core Curriculum, section D			21
Total Credit Hours			21
List Interprofessional Project (IPRO) Requirements			
Interprofessional Projects (IPRO)			
See Illinois Tech Core Curriculum, section E			6
Total Credit Hours			6
List Technical Elective Course Options			
Economics Electives - Choose 2 courses			6
BUS 210	Introduction to Accounting		3
BUS 211	Financial Accounting		3
BUS 212	Managerial Accounting		3
BUS 301	Organizational Behavior		3
BUS 305	Operation and Supply Chain Design		3
BUS 311	Strategic Cost Management		3
BUS 341	Business Law		3
BUS 361	Entrepreneurship		3
BUS 371	Marketing Fundamentals		3
BUS 452	International Finance		3
BUS 454	Investments		3
BUS 455	Corporate Finance		3
BUS 457	Financial Modeling		3
BUS 458	Financial Derivatives		3
BUS 472	New Product Development		3
BUS 473	Marketing Research		3
BUS 475	Sales Management		3
BUS 476	Consumer Behavior		3
ECON 383	Sports Economics		
Total Credit Hours			6
List Free Elective Credit Hours (if applicable)	4		
Semester-by- semester plan of study for the degree program			

Semester 1	Credit Hours	Semester 2	Credit Hours
BUS 100	3	BUS 102	3
ECON 151	3	ECON 152	3
ITM 301	3	ITM 313	3
Humanities Elective (200 Level)	3	MATH 180	3
MATH 148 or 151	4	Science Elective	4
	16		16
Year 2			
Semester 1	Credit Hours	Semester 2	Credit Hours
BUS 321	3	BUS 221	3
ECON 311	3	ECON 312	3
ITMO 340	3	ITMS 448	3
ITMO 356	3	ITMD 321	3
Science Elective	3	Science Elective	3
	15		15
Year 3			
Semester 1	Credit Hours	Semester 2	Credit Hours
ECON 251	3	ECON 382	3
ITMS 443	3	ITMS 418 (Prerequisite ITMD 411 - conditional permission to enroll in ITM 418)	3
ITMS 478	3	ITMS 458	3
Humanities Elective (300+)	3	Humanities Elective (300+)	3
Social Science Elective	3	IPRO Elective I	3
	15		15
Year 4			
Semester 1	Credit Hours	Semester 2	Credit Hours
ECON 423	3	BUS 480	3
Economics Elective	3	Economics Elective	3
ITMS 438	3	ITMS 483	3
IPRO Elective II	3	Humanities or Social Science Elective	3
Social Sciences Elective (300+)	3	Social Science Elective (300+)	3
Free Elective	4		
	19		15
Total Credit Hours: 126			

Reviewer

Comments

Patty Johnson Winston (winston) (03/20/23 4:12 pm): Rollback: Rollback per request of Roland Calia.

Patty Johnson Winston (winston) (03/21/23 11:38 am): Rollback: Please review the Course Requirements Section to insure that the Computer Science Requirement is correctly represented and located the right section, e.g., Illinois Tech Core Curriculum, section...

Patty Johnson Winston (winston) (03/22/23 4:32 pm): Rollback: Please review the Course Requirements and Sample Curriculum to insure that the footnotes entered are correct. Footnote #1 is based today's discussion, and footnote #2 is based on information found in the initial Plan of Study table that you entered. If the wording for footnote #2 does not accurately reflect what's intended, please forward (winston@iit.edu) the correct language.