

From: [Vankeerbergen, Bernadette](#)
To: [Smith, Randy](#); [Reed, Katie](#)
Cc: [Martin, Andrew W.](#); [Jenkins, Mary Ellen](#); [Ottesen, Jennifer](#); [Steele, Rachel](#); [Morris, Jeremy](#)
Subject: Informational item--BS CIS (Information & Computation Assurance Specialization)
Date: Wednesday, April 24, 2024 4:20:45 PM
Attachments: [Update to BS CIS ICA Specialization.pdf](#)
[image001.png](#)

Dear Randy and Katie,

Please find attached an informational item pertaining to the BS Computer and Information Science to share at an upcoming CAA meeting.

Professor Jennifer Ottesen, Chair of ASCC, shared the proposed changes as an informational item at the most recent ASC Curriculum Committee meeting on Friday, April 19. I am including Professor Morris (Dept of Computer Science and Engineering) on this email in case CAA should have any questions for him.

Best regards,
Bernadette



Bernadette Vankeerbergen, Ph.D.

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March 25, 2024

To: Jennifer Ottesen, ASCC Chair

Re: Change to CIS Program

We are requesting the following change to the BS CIS Program effective Autumn of 2024:

Update our CIS Specialization sheet with new requirements for students taking the Information & Computation Assurance Specialization

The CSE Faculty voted unanimously to approve this change on 1/29/2024.

Currently students in our BS CIS program are required to select a Specialization as part of their degree. Our list of specializations includes a program for Information and Computation Assurance. We are also designated as a National Center for Academic Excellence in Cybersecurity education and as part of this designation our Information and Computation Assurance (ICA) specialization is required to align with the NCAE's Program of Study (POS). The requirements for this coursework has recently changed and we need to update our ICA Specialization to keep them in alignment. We would like to have this change in our ICA specialization effective for students entering the University starting Autumn of 2024.

This specialization plan now requires more courses than the previous iteration. Specializations in our department generally require 3 courses (usually 9 credit hours) while this specialization will require 6 courses (19 credit hours). However, 3 of the required courses (CSE 3241, 3461, and 3901 - marked in green on the new specialization sheet) overlap with required course choices that students need for the major. This specialization path dictates which of the choices in each of the three related "pick lists" the students taking this specialization must take rather than being extra coursework. This leaves 3 courses (9 hours) of specialization coursework that does not overlap with other requirements, which is consistent with our other specializations. As such this change will not impact the number of credit hours required for students in this specialization to graduate.

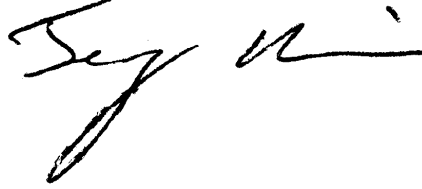
Students enrolled before Autumn of 2024 will be allowed to complete the specialization under the current requirements. They will also be allowed to opt-in to the new requirements if they choose to have a set of coursework that is consistent with current cybersecurity guidelines. Since as described above the extra courses in the specialization involve student choice of pick-list courses that students in the ICA specialization were already encouraged to take this should not be a burden on students who choose to opt-in to this new path.

I have included both the new and current Specialization information sheets for our CIS program so you can see the changes. I have also included the BS CIS major program sheet so that the context of how this fits into our program for students is clear.

Link to more information about CS&E's designation as a CAE-CD: <https://cse.osu.edu/current-students/undergraduate/it-entrepreneurship/center-academic-excellence-cybersecurity-education-cae-cd>

If you have any further questions, please contact me at morris.343@osu.edu.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeremy Morris". The signature is fluid and cursive, with the first name "Jeremy" written in a larger, more prominent script than the last name "Morris".

Jeremy Morris
Assistant Professor of Practice
Computer Science & Engineering



BS CIS/CSE Specialization Options

The BS CIS/CSE major must select and complete one of the following specialized options. The courses listed below may dictate CSE core choices and technical elective choices. To declare or change focus area please see the CSE academic advisors in DL 376. For questions about course content or selection please see your assigned faculty advisor.

Artificial Intelligence (AIT)

Required Courses

		Hours
CSE 3521	Survey of Artificial Intelligence I: Basic Techniques	3

Choose two of the following:

CSE 5523	Machine Learning and Statistical Pattern Recognition	3
CSE 5524	Computer Vision for Human-Computer Interaction	3
CSE 5525	Foundations of Speech and Language Processing	3
CSE 5526	Introduction to Neural Networks	3
CSE 5243	Introduction to Data Mining	3
CSE 5914	Capstone: Knowledge-Based Systems	4

Computer Graphics and Game Design (CGG)

Required Courses

CSE 3541	Computer Game and Animation Techniques	3
CSE 3902	Project: Design, Development, and Documentation of Interactive Systems	4

Choose one of the following:

CSE 5542	Real-Time Rendering	3
CSE 5543	Geometric Modeling	3
CSE 5544	Introduction to Data Visualization	3
CSE 5545	Advanced Computer Graphics	3
CSE 5546	Virtual Reality	3
CSE 5912	Capstone Design: Game Design and Development	4
CSE 5913	Capstone Design: Computer Animation	4

Database Systems and Data Analytics (DBA)

Required Courses

CSE 3241	Introduction to Database Systems	3
CSE 5242	Advanced Database Management Systems	3

Choose one of the following:

CSE 5243	Introduction to Data Mining	3
CSE 5523	Machine Learning and Statistical Pattern Recognition	3

Information and Computation Assurance (ICA)

Required Courses

CSE 3461	Computer Networking and Internet Technologies	3
CSE 4471	Information Security	3

Choose one of the following:

CSE 5472	Information Security Projects	3
CSE 5473	Network Security	3

Additional Recommended Courses: CSE 3901, 5351, 5432; relevant courses in business, economics or law



Computer Networking (CNT)

Required Courses

CSE 3461	Computer Networking and Internet Technologies	3
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Choose two of the following:

CSE 5432	Mobile Handset Systems and Networking	3
CSE 5462	Network Programming	3
CSE 5463	Introduction to Wireless Networking	3
CSE 5472	Information Security Projects	3
CSE 5473	Network Security	3

Additional Recommended Courses: CSE 3901, 5351

Computer Systems (CSY)

Required Courses

CSE 3421	Introduction to Computer Architecture	3
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Choose one of the following:

CSE 5433	Operating Systems Laboratory	3
CSE 5441	Introduction to Parallel Computing	3

Choose one of the following:

CSE 5433	Operating Systems Laboratory	3
CSE 5441	Introduction to Parallel Computing	3
CSE 3461	Computer Networking and Internet Technologies	3
CSE 5243	Introduction to Data Mining	3

Additional Recommended Courses: CSE 5434, 6421*, 6431*, 6441*

Software Engineering (SWS)

Required Courses

CSE 3231	Software Engineering Techniques	3
CSE 3232	Software Requirements Analysis	3

Choose one of the following:

CSE 3321	Automata and Formal Languages	3
CSE 5234	Distributed Enterprise Computing	3
CSE 5235	Applied Enterprise Architectures and Services	3
CSE 5236	Mobile Application Development	3

Individualized Option (IND)

Required Courses

Students should consult with their faculty advisors to identify the most reasonable set of courses that would be appropriate, given their specific interests.

*Courses only available by petition



BS CIS/CSE Specialization Options

The BS CIS/CSE major must select and complete one of the following specialized options. The courses listed below may dictate CSE core choices and technical elective choices. To declare or change your specialization, please see the CSE academic advisors in DL 376.

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Required Courses

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CSE 3902	Project: Design, Development, and Documentation of Interactive Systems	4

Choose one of the following:

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CSE 5544	Introduction to Data Visualization	3
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CSE 5242	Advanced Database Management Systems	3

Choose one of the following:

CSE 5243	Introduction to Data Mining	3
CSE 5523	Machine Learning and Statistical Pattern Recognition	3

Information and Computation Assurance (ICA)

Required Courses

CSE 3241	Introduction to Database Systems	3
CSE 3461	Computer Networking and Internet Technologies	3
CSE 3901	Project: Design, Development, and Documentation of Web Applications	4
CSE 4471	Information Security	3
CSE 5473	Network Security	3
CSE 5474	Software Security	3

Additional Recommended Courses: CSE 5351, CSE 5472



Computer Networking (CNT)

Required Courses

CSE 3461	Computer Networking and Internet Technologies	3
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Choose two of the following:

CSE 5432	Mobile Handset Systems and Networking	3
CSE 5462	Network Programming	3
CSE 5463	Introduction to Wireless Networking	3
CSE 5472	Information Security Projects	3
CSE 5473	Network Security	3

Additional Recommended Courses: CSE 3901, 5351

Computer Systems (CSY)

Required Courses

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Choose one of the following:

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Additional Recommended Courses: CSE 5434, 6421*, 6431*, 6441*

Software Engineering (SWS)

Required Courses

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CSE 3232	Software Requirements Analysis	3

Choose one of the following:

CSE 3321	Automata and Formal Languages	3
CSE 5234	Distributed Enterprise Computing	3
CSE 5235	Applied Enterprise Architectures and Services	3
CSE 5236	Mobile Application Development	3

Individualized Option (IND)

Required Courses

Students should consult with their faculty advisors to identify the most reasonable set of courses that would be appropriate, given their specific interests.

*Courses only available by petition

Bachelor of Science

Major: Computer and Information Science

Individualized Specialization Option

The Individualized Option provides students the opportunity to select a combination of technical electives that may not fit with one of the other options. Students are expected to consult with an advisor to determine appropriate courses. Students in this major will complete a minimum of 124 credit hours as outlined below

General Education Requirements		
Requirement	Course Options	Hours
GE Launch Seminar	AcadAff 1201	1
Foundations: Writing and Information Literacy ^a	Student Choice	3
Foundations: Mathematical & Quantitative Reasoning/Data Analysis	Math 1151	Overlap w/ Major requirement
Foundations: Literary, Visual and Performing Arts	Student Choice	3
Foundations: Historical & Cultural Studies	Student Choice	3
Foundations: Natural Science	Physics 1250	Overlap w/ Major requirement
Foundations: Social & Behavioral Sciences	Student Choice	3
Foundations: Race, Ethnic and Gender Diversity	Student Choice	3
Theme: Citizenship for a Diverse & Just World	Student Choice	4
Theme: Student Choice	Student Choice	4
GE Reflection	Capstone	Embedded into Major Core Capstone
General Education Credit Hours:		24

College/Degree Requirements		
Requirement	Course Options	Hours
Math 1151 (Math & Quantitative Reasoning / Data Analysis)		5
Physics 1250 (Natural Science)		5
ASC 1100		1
Foreign Language		12
Credit Hours:		23

General Education Requirements	24
College/Degree Requirements	23
Major Core	42
Required Non-Major Courses	19
Required Technical/Directed/Targeted Electives	16
Minimum Total Credit Hours	124

Course	Title	Hours
Major Core		
CSE 2221 and 2231	Software 1 and 2	8 (4+4)
CSE 2321 and 2331	Foundations 1 and 2	6 (3+3)
CSE 2421 and 2431	Systems 1 and 2	7 (4+3)
CSE 3341	Principles of Programming Languages	3
CSE 2501 or PHILOS 2338	Social, Ethical, and Professional Issues in Computing or Computing Ethics for a Just and Diverse World	1 or 4
CSE 3901 or 3902 or 3903	Project: Design, Development, and Documentation (Web Applications or Interactive Systems or Systems Software)	4
CSE 3231 or 3241	Introduction to Software Engineering or Introduction to Databases	3
CSE 3421 or 3461	Computer Architecture or Introduction to Networking	3
CSE 3521 or 3541	Introduction to Artificial Intelligence or Introduction to Computer Graphics	3
CSE 5911 or 5912 or 5913 or 5914 or 5915 or 5916	Capstone Experience (Software Applications or Game Design and Development or Computer Animation or Knowledge-Based Systems or Information Systems or Research-Focused Projects)	4
Total Major Core		42-45
Required Non-Major Courses		
Math 1152	Calculus II	5
Math 3345	Foundations of Higher Math	3
Stat 3470	Statistics for Engineers	3
Science	Elective	5
ECE 2060	Introduction to Digital Logic	3
Total Required Non-Major Courses		19
Required Technical / Directed / Targeted Electives; Career Courses		
CSE courses 3000-level or higher*		>= 9
Approved non-CSE courses 2000-level or higher*		<= 7
Total Required Technical Electives		16
Total Required Major and Non-Major Credit Hours:		77

Additional information:

*Technical electives:

- At most 2 hours of CSE 4251-4256 may be counted toward technical electives
- At most 2 hours of CSE 4193, 3 hours of CSE 4998, or 6 hours of CSE 4999, with no more than 6 hours total of CSE 4193, 4998, and 4999 combined, may be counted toward technical electives
- Non-CSE technical electives may be satisfied by completing an approved minor or through select courses (see list). Minors or courses not listed may be petitioned. More information is available at <https://cse.osu.edu/current-students/bachelor-science-computer-information-science-bs-cis>

**Application to the major:

- An application to the major must be submitted online at <https://advising.engineering.osu.edu/current-students/applying-your-major> during the term in which admission requirements are being completed

***Graduation application:

- A Major Program Form from the CSE Advising Office must be filed with ASC Advising to begin the graduation application process. Students are encouraged to obtain and submit it one semester prior to the graduation term to gain graduating-senior scheduling priority for the graduation term.

	Autumn		Spring	
Year 1	ASC 1100	1	CSE 2221 (need <i>C</i> or better)	4
	Math 1151	5	Math 1152	5
	Physics 1250	5	GE-Writing	3
	CSE 1223	3	Science	5
	GE Launch Seminar	1		
		15		17
Year 2	CSE 2231	4	CSE 2331	3
	CSE 2321	3	CSE 2421	4
	Stat 3470	3	Math 3345	3
	Foreign Language 1	4	Foreign Language 2	4
			GE-Diversity	3
		14		17
Year 3	CSE 2431	3	CSE 32X1	3
	CSE 390X	4	CSE 34X1	3
	ECE 2060	3	CSE 35X1	3
	Foreign Language 3	4	GE-SBS	3
	GE-History	3	CSE 2501 or PHILOS 2338	1 or 4
		17		16-17
Year 4	CSE 3341	3	CSE 591X (includes bookend)	4
	Technical Elective	3	Technical Elective	3
	Technical Elective	3	Technical Elective	3
	Technical Elective	3	Technical Elective	1
	GE-Lit/VPA	3	GE-Theme	4
		15		15