Dear Randy and Katie,

Please find attached a proposal to revise the BS CIS. The proposal was fully approved by the ASC Curriculum Committee (ASCC) on Friday, November 17, 2017.

We are now advancing the proposal for review by CAA. The attached documents are: (1) rationale for the changes, (2) updated advising sheet and sample 4-year plan, and (3) Natural and Mathematical Sciences Panel cover letter to ASCC.

Please use this email as a cover letter indicating that the proposal has been duly reviewed and approved by the appropriate ASC curricular bodies (including the full ASC Curriculum Committee).

I am including Neelam Soundarajan on this e-mail. It is my understanding that a similar proposal pertaining to the BS CSE is making its way to CAA from the College of Engineering. Neelam would like that the changes to the BS CIS and BS CSE be reviewed in tandem by CAA.

Please let me know if you have any questions.

Best regards,
Bernadette

THE OHIO STATE UNIVERSITY

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Proposed Changes in the BS-CIS Program

1. Background

There are three majors programs in the CSE Department, these being BS-CIS and BA-CIS in Arts & Sciences, and BS-CSE in Engineering. Over the years, we have attempted to keep the *computer science* of the BS-CIS and BS-CSE programs as close to identical as possible. This was a deliberate decision, intended to ensure that gradutes of either program are equally attractive to potential employers.

Recently, the BS-CSE prorgram which is accredited by the *Computing Accreditation Commission* (CAC) and by the *Engineering Accreditation Commission* (EAC), both of ABET (www.abet.org), went through its periodic reevaluation by ABET. The CAC accreditation criteria for computer science programs include the requirement that the curriculum include coverage of *programming language concepts*. Some of the courses currently required of all students in both the BS-CSE and BS-CIS programs, such as CSE 2221 and 2231, do include coverage of some topics that are normally included under the rubric of programming-language-concepts, but other topics are not included. We do offer a course, CSE 3341, *Principles of programming languages*, 3 credit hours, that is devoted to in-depth coverage of programming-language-concepts but this course is a *core-choice* course; i.e., students may choose to take either CSE 3341 or an alternative course, CSE 3321, *Automata and formal languages*, 3 credit hours. Students may also take both of these courses in which case the second one counts as a technical elective in their program. Although CSE 3321 includes some topics that are relevant to the discussion of programming language concepts, the approach is formal and focuses on theoretical results rather than practical considerations that are expected in discussions of programming language concepts.

2. Recent developments

During the recent ABET evaluation of the BS-CSE program, the evaluators cited us for insufficient coverage of programming language concepts in the curriculum that all students in that program must complete. The evaluators noted that while many students do indeed take *CSE 3341*, not all students do so, hence the shortcoming.

3. Proposed change and Process

Following this finding, the departmental faculty had an extensive e-mail discussion about the appropriate course of action to address this finding by ABET. One proposal considered was to make CSE 3341 a *required* course rather than a *core-choice* course, with CSE 3321 becoming strictly a technical elective course; this would apply to all students who enter the university after the proposal is approved.

A selection of juniors and seniors who are currently taking CSE 3341, some of whom had completed CSE 3321 previously, were polled for their opinions on this proposal. An email message describing the proposed change was to sent to all students currently in either major. Although there was some concern among faculty that this change would reduce the flexibility of the programs, there was consensus that, given ABET's finding, we have to take this action. Most students also agreed that making CSE 3341 a required course with 3321 becoming a technical elective was appropriate.

The proposal to make *CSE 3341*, Principles of Programming Languages, a required course for all future students in the BS-CIS (and BS-CSE) program(s), with *CSE 3321* becoming a technical elective, was discussed and approved unanimously at a meeting of the CSE faculty on Oct. 25, 2017.

4. Summary

The *only* change being proposed is that BS-CIS (and BS-CSE) majors will be required to take *CSE 3341* instead of being required to take either CSE 3341 or CSE 3321. As is the case currently, students may take both courses in which case CSE 3321 will count as a technical elective. All other aspects of the program, including the total number of credit hours for the program, will remain unchanged. This change, once implemented, will ensure that the program is consistent with the curricular requirements of the accreditation criteria of the CAC. We request speedy approval of this change by the NMS Curriculum Committee and by CAA.

BS CIS Requirements

Required Math and Science		Hours
ArtsSci 1100	Arts and Sciences Survey	1
Math 1151	Calculus I	5
Math 1152	Calculus II	5
Math 3345	Foundations of Higher Mathematics	3
Physics 1250	Mechanics, Thermal Physics, Waves	5

Major Program (minimum grade of C- required in each course and minimum 2.0 GPA overall)		

Core Requirements

CSE 2221	Software I: Software Components	4
CSE 2231	Software II: Software Development and Design	4
CSE 2321	Foundations I: Discrete Structures	3
CSE 2331	Foundations II: Data Structures and Algorithms	3
CSE 2421	Systems I: Introduction to Low-Level Programming and Computer Organization	4
CSE 2431	Systems II: Introduction to Operating Systems	3
CSE 3341	Principles of Programming Languages	3
ECE 2060	Introduction to Digital Logic	3
Stat 3470	Introduction to Probability and Statistics for Engineers	3
CSE 3231 or CSE 3241	Software Engineering Techniques or Introduction to Database Systems	3
~~CSE 3321 or CSE 3341~~	~~Automata and Formal Languages or Principles of Programming Languages~~	~~3~~
CSE 3421 or CSE 3461	Introduction to Computer Architecture or Computer Networking and Internet Technologies	3
CSE 3521 or CSE 3541	Survey of Artificial Intelligence I: Basic Techniques or Computer Game and Animation Techniques	3

Choose one of the following:

CSE 2501	Social, Ethical, and Professional Issues in Computing	1
Philos 1338	Ethics in the Professions: Introduction to Computing Ethics and Effective Presentation	4

Choose one of the following:

CSE 3901	Project: Design, Development, and Documentation of Web Applications	4
CSE 3902	Project: Design, Development, and Documentation of Interactive Systems	4
CSE 3903	Project: Design, Development, and Documentation of System Software	4

Choose one of the following:

CSE 5911	Capstone Design: Software Applications	4
CSE 5912	Capstone Design: Game Design and Development	4
CSE 5913	Capstone Design: Computer Animation	4
CSE 5914	Capstone Design: Knowledge-Based Systems	4
CSE 5915	Capstone Design: Information Systems	4

CSE Technical Electives (choose at least 16 hours that meet the following criteria)

Any CSE course 3000-level or above not already used to fulfill another requirement
At most 1 hour of CSE 4251-4255
At most 2 hours of CSE 4193, 4193H, 4998, 4998H, 4999 or 4999H
At most 7 hours of non-CSE courses at the 2000-level and above approved by the academic advisor

BS CIS Sample Schedule

	Autumn		Spring	
Year 1	*ArtsSci 1100*	1	*CSE 2221*	4
	Math 1151	5	Math 1152	5
	GE	3	*English 1110*	3
	GE	3	*Physics 1250*	5
	CSE 1223	3		
		15		**17**
Year 2	CSE 2231	4	CSE 2331	3
	CSE 2321	3	CSE 2421	4
	Stat 3470	3	ECE 2060	3
	GE (Foreign Language)	4	Math 3345	3
	GE	3	GE (Foreign Language)	4
		17		**17**
Year 3	CSE 2431	3	CSE 32X1	3
	CSE 2501	1	CSE 34X1	3
	CSE 390X	4	CSE 35X1	3
	GE (Foreign Language)	4	GE (Science)	4-5
	GE	3	GE	3
			Technical Elective	1
		14-18		**17-18**
Year 4	CSE ~~33X1~~ 3341	3	CSE 591X	4
	Technical Elective	3	Technical Elective	3
	Technical Elective	3	Technical Elective	3
	Technical Elective	3	GE	3
	GE (Science)	4-5	GE	3
		16-17		**16**

Additional hours may be necessary depending on course selection. Technical electives may range from 1 to 4 credit hours.

Admission to the CIS major requires:
- Completion of the courses shown above in *italics* or honors versions thereof
- At least 15 hours earned at Ohio State
- Cumulative GPA of at least 3.2 and a major GPA of at least 2.0 **OR** cumulative GPA of at least 3.0 and a major GPA of at least 3.2 (must have completed through CSE 2321)

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November 14, 2017
To: Dr. Meg Daly, Chair of ASCC
From: Charles J. Daniels, Chair ASCC Natural and Mathematical Sciences Panel

Dear Meg,

On November 6ᵗʰ the Natural and Mathematical Sciences Panel reviewed the request from the Department of Computer Science and Engineering for a small revision to the BS degree program.

Dr. Neelam Soundarajan from CSE met with the committee and presented the proposal. The changes to the BS program were minor and requested moving CSE 3341 "Principles of Programming Languages" from a core-choice course (students take 3341 or 3321, "Automata and formal languages") to a required core course. CSE 3321 would remain as a technical elective. The rational for this change stems from a review by the *Computing Accreditation Commission* (CAC) and by the *Engineering Accreditation Commission* (EAC) who requested that the OSU program specifically increase its coverage of programming language concepts. Moving CSE 3341 to a required core course would satisfy this deficiency. The proposal was discussed and approved by the CSE faculty, and a group of students who had completed CSE3321 were consulted and agreed that the change was appropriate.

The NMS committee asked if there was a transition plan for students already in the program and Dr. Soundarajan indicated that the changes would apply only to newly admitted students in the program. There were no additional questions and the committee voted unanimously to approve the request.

The committee also asked for an updated advising sheet and a sample 4-year plan; these were provided in the updated document.

Respectfully,

Charles J. Daniels, Ph.D.