Appendix I – Additional Program Information

Contents

Table 1. Basic-Level Curriculum

(Computer Science and Engineering Program)

		Category (Credit Hours)				
Year/Qtr	**Course (Dept., No., Title)**	**Math & Basic Sc.**	**Eng. Topics**	Ck. if Contains Desgn. (√)	**Gen. Edu.**	**Other**
Year 1 Autumn	Math 151 Calculus & Anal. Geo.	5				
	Chem 121 General Chemistry	5				
	Eng 100 Engineering Survey					1
	EG 166 Eng. Graphics & Problem Solving		4			
Year 1 Winter	Math 152 Calculus & Anal. Geo.	5				
	Chem 125 General Chemistry	4				
	CIS 221 Software Dev. Using Components		4	√		
Year 1 Spring	Math 153 Calculus & Anal. Geo.	5				
	Phys 131 Intro. Phys:Particles & Motion	5				
	CIS 222 Dev. of Software Components		4	√		
Year 1 Qtr. Varies	Engl 110 First Year English Composition				5	

Table 1. Basic-Level Curriculum (Contd.)
Computer Science and Engineering Program

		Category (Credit Hours)				
Year/Qtr	**Course (Dept., No., Title)**	**Math & Basic Sc.**	**Eng. Topics**	Ck. if Contains Design (√)	**Gen. Edu.**	**Other**
Year 2 Autumn	CIS 321 Design and Analysis of Component based software		4	√		
	Math 254 Calculus & Anal. Geo.	5				
	Phys 132 Intro. Phys: Electricity & Magnetism	5				
	Math 366 Discrete Mathematics	3				
Year 2 Winter	CIS 360 Intoduction to Computer Systems		4	√		
	Math 415 Ordinary & Partial Diff. Eqns.	4				
	Phys 133 Intro. Phys: Thermal Phys, Waves, and Quantum Phys.	5				
	MSE 405 Intro. to Mat. Sc. & Eng.		4			
Year 2 Spring	CIS 570 File Design & Analysis		3	√		
	EM 400 Intro. to Solid Mechanics	5				
	EE 261 Intro. to Logic Design		3	√		
	CIS 459.xx Prog. Lang. for Programmers†		1			
Year 2 Qtr. Varies	Elective Second Writing Course‡				5	

†CIS 459.xx (Programming languages for programmers) is a set of 1-credit courses on a variety of programming languages; students are required to take at least one of these courses.

‡The College of Engineering determines which courses are acceptable as the second writing course; while the topic varies from course to course, each of the approved courses has a strong focus on developing written communication skills of the student.

Table 1. Basic-Level Curriculum (Contd.)
Computer Science and Engineering Program

		Category (Credit Hours)				
Year/Qtr	**Course (Dept., No., Title)**	**Math & Basic Sc.**	**Eng. Topics**	Ck. if Contains Design (√)	**Gen. Edu.**	**Other**
Year 3 Autumn	CIS 560 System Software Design, Development, & Documentation		5	√		
	CIS 675.01 Intro. to Computer Architecture		3			
	Stat 427 Intro. to Prob. & Stat. for Engineeing & the Sciences I	3				
	EE 206 Switching Circuits Lab.		1	√		
Year 3 Winter	CIS 660 Intoduction to Operating Systems		3	√		
	CIS 625 Intro. to Automata & Formal Lang.		3			
	Stat 428 Intro. to Prob. & Stat. for Engineeing & the Sciences II	3				
	EE 300 Electrical Circuits		3			
	EE 309 Electrical Circuits Lab.		1	√		
Year 3 Spring	CIS 541 Elem. Numerical Methods		3	√		
	CIS 680 Data Structures		3	√		
	Technical Elective†					
	EE 320 Electronic Devices & Controls		3	√		
	ME 500 Eng. Thermal Sciences		3			

†The number of hours of technical electives that individual students take in particular quarters varies substantially from student to student. Most students take most of their technical electives during the senior year (year 4) and late junior year.

Table 1. Basic-Level Curriculum (Contd.)
Computer Science and Engineering Program

		Category (Credit Hours)				
Year/Qtr	**Course (Dept., No., Title)**	**Math & Basic Sc.**	**Eng. Topics**	Ck. if Contains Design (√)	**Gen. Edu.**	**Other**
Year 4 Autumn	CIS 655 Intro. to the Principles of, Programming Languages		4	√		
	ISE 504 Eng. Economic Analysis		3			
	EE 567 Microprocessor Laboratory I		2	√		
	Technical Elective					
Year 4 Winter	CIS 601 Social and Ethical Issues in Computing		1			
	Technical Elective					
Year 4 Spring	One of: CIS 731, 758, 762, 772, 776, 778 (Capstone Design Course)		3(4)	√		
	Technical Elective					
Year and Quarter Vary	Social Sciences				9	
	Historical Survey				10	
	Arts & Humanities Literature (1 course) Other Humanities (1 course)				9	
	Additional General Education†				7	
TOTALS – ABET BASIC-LEVEL REQUIREMENTS‡		62	75 (76)		45	1

†These 7 hours must be from the College-approved list of GEC courses.

‡The totals on this line exceed the minimum hours required by ABET, of 48 quarter hours (32 semester hours) for Math & Basic Sciences, and 72 quarter hours (48 semester hours) for Engineering Topics. Students are further required to take an additional 18 (17) hours of technical electives that are not included in these totals, strengthening the program further.

Tables 2, 3, 4, 5 go here.

Page numbers: 5, 6, 7, 8, 9

B. Course Syllabi

B.1 Explanation of Terminology Used in Syllabi

In the syllabi of individual courses, course objectives are stated in terms of intended student learning outcomes; i.e., each objective is implicitly prefaced by “The student is expected to . . . ”. We use the following terminology to describe familiarity level (most to least) with respect to various kinds of material and procedures. A student who receives an “A”in a course should have met substantially all the objectives as stated, and a student who merely passes the course should have met all the objectives at least at the next lower familiarity level.

- Master means the student will be able to exhibit knowledge of the material and/or skill with the procedure, even in a new context, and even when not instructed to do so.
- Be familiar with means the student will be able to answer questions about the material and/or to use the procedure, even in a new context, when instructed to do so.
- Be exposed to means the student will have heard the term and/or seen the procedure, but may not be able to discuss or use it effectively without further instruction.

Computer science and engineering deals with the general problem of making precise descriptions of “things”: static situations, dynamic behaviors, procedures, processes, relationships, assertions, proofs–just about anything. The languages and notations used in these descriptions are themselves objects of attention in many courses. Therefore, many course objectives use the following terminology for skill level (least to most) to describe a student’s facility in dealing with various languages and notations.

- Reading means the student will be able to recognize a syntactically and semantically well-formed instance of the notation, and to understand its meaning.
- Using means the student will be able to read the notation, and will be able to apply the understanding to perform some task.
- Writing means the student will be able to use the notation, and will be able to create new instances of it to perform some task.

Terminology used in the tables

The syllabus of each course contains two tables, one summarizing the relation between the course and various Criterion 3 outcomes, the other summarizing the relation between the course and various CSE program educational objectives and outcomes (see Section B.2.1). In these tables, we distinguish three levels of relationship (most to least).

- *XXX* means the substance of the Criterion 3 or program outcome is a primary theme of the course; a significant fraction of course time (perhaps 3 weeks or more, often woven through the fabric of the course) is directly related to this criterion or objective.
- *XX* means the substance of the Criterion 3 or program outcome is a secondary theme of the course; a smaller fraction of course time (perhaps 1-2 weeks) is directly related to this criterion or objective.
- *X* means the substance of the Criterion 3 or program outcome is not a theme of the course, but it is still treated in the course a non-trivial way; a smaller fraction of course time (perhaps 1-2 hours) is directly related to this criterion or objective.

The tables in the next two pages summarize the relation between each of the courses in the program and the Criterion 3 outcomes and CSE program outcomes.

B.2 Relation between Courses and Program Outcomes

The following tables summarize the relation between the various courses in the curriculum and the individual program outcomes 1a through 4b (Section B.2.1). The 'XXX' notation used in the tables is explained in Section B.1 of this appendix.

Required CIS Courses:

Course	CSE 1a	CSE 1b	CSE 1c	CSE 2a	CSE 2b	CSE 3a	CSE 3b	CSE 3c	CSE 4a	CSE 4b
CIS 221	XXX	XX	XXX	X	X	X		X	X	X
CIS 222	XXX	XX	XXX		X	X		X	X	X
CIS 321	XXX	XX	XXX		XX	X		X	X	X
CIS 360	XXX	XX	XX			X		X	X	
CIS 459			X						XXX	
CIS 541	XX	XXX	XX	XX					XX	XX
CIS 560	XXX		XX		XXX	XXX		X	XX	X
CIS 570	XXX	XX	XXX			X		X	XX	
CIS 601					X	XXX	XXX	XXX	XXX	XXX
CIS 625	XX	XXX	XX							XXX
CIS 655	XX	XXX	XX			X			XX	XX
CIS 660	XXX		X						XXX	XXX
CIS 675	XXX	XX	X						XX	XX
CIS 680	XXX	XXX	XX					X	X	XXX

Capstone Design Courses (Students are required to choose one):

Course	CSE 1a	CSE 1b	CSE 1c	CSE 2a	CSE 2b	CSE 3a	CSE 3b	CSE 3c	CSE 4a	CSE 4b
CIS 731	XXX	X	XXX		XX	XX		X	XXX	XX
CIS 758	XXX	X	XXX		XXX	XXX		X	XXX	X
CIS 762	XXX	X	XXX			X		X	XXX	XX
CIS 772	XXX	X	XXX		XXX	XX		X	XXX	X
CIS 776	XX	X	XXX		XXX	XXX		X	XXX	X
CIS 778	XXX	XXX	XX			XX		X	XXX	XX

Relation between Courses and Program Outcomes (contd.)

Some Popular CIS Electives:

Course	CSE 1a	CSE 1b	CSE 1c	CSE 2a	CSE 2b	CSE 3a	CSE 3b	CSE 3c	CSE 4a	CSE 4b
CIS 630	XXX	XX	XX			X		X	XX	XX
CIS 662	XXX	X	XXX			X		X	XXX	X
CIS 670	XXX	XX	XX					X	XXX	X
CIS 677	XX	XX	XX			X		X	XXX	X
CIS 678	XXX	XX	XX					X	XXX	X
CIS 681	XXX	XX	XXX			X		X	XXX	XX
CIS 757	XXX	XX	XXX		X	X		X	XXX	XX
CIS 770	XXX	XX	XX					X	XXX	XX
CIS 775	XXX	XX	XX					X	XXX	XXX

Math and Statistics Courses:

Course	CSE 1a	CSE 1b	CSE 1c	CSE 2a	CSE 2b	CSE 3a	CSE 3b	CSE 3c	CSE 4a	CSE 4b
Math 151		XX		XXX						
Math 152		XX		XXX						
Math 153		XX		XXX						
Math 254		XX		XXX						
Math 366		XXX	X							
Math 415		XX		XXX						
Stat 427		XXX	X							
Stat 428		XXX	X							

Basic Science Courses:

Course	CSE 1a	CSE 1b	CSE 1c	CSE 2a	CSE 2b	CSE 3a	CSE 3b	CSE 3c	CSE 4a	CSE 4b
Phys 131		XX		XXX						
Phys 132		XX		XXX						
Phys 133		XX		XXX						
Chem 121				XXX						
Chem 125				XXX						

Relation between Courses and Program Outcomes (contd.)

Other Engineering Courses:

Course	CSE 1a	CSE 1b	CSE 1c	CSE 2a	CSE 2b	CSE 3a	CSE 3b	CSE 3c	CSE 4a	CSE 4b
EE 206	XXX	XX	XXX							
EE 261	XXX	XX	XXX							
EE 300		XX		XXX						
EE 309		XX		XXX						
EE 320		XXX		XXX						
EE 567	XXX		XXX		XXX					
EG 166				XXX		X				
EM 400				XXX						
ISE 504				XXX				X		
ME 500				XXX						
MSE 405				XXX						

GEC Courses:

Course	CSE 1a	CSE 1b	CSE 1c	CSE 2a	CSE 2b	CSE 3a	CSE 3b	CSE 3c	CSE 4a	CSE 4b
Engl 110						XXX			X	
Soc. Sc.							XXX			
Historical Survey							XXX			
Arts and Humanities							XXX			

B.3 Relation between Courses and ABET Criterion 3 Outcomes

The following tables summarize the relation between the various courses in the curriculum and the ABET Criterion 3 outcomes (3.a) through (3.k). The ‘XXX’ notation used in the tables is explained in Section B.1 of this appendix.

Required CIS Courses:

Course	ABET (3.a)	ABET (3.b)	ABET (3.c)	ABET (3.d)	ABET (3.e)	ABET (3.f)	ABET (3.g)	ABET (3.h)	ABET (3.i)	ABET (3.j)	ABET (3.k)
CIS 221	XX	X	XXX	X	XX	X	X		X		XXX
CIS 222	XX	X	XXX	X	XX	X	X		X		XXX
CIS 321	XX	X	XX	XX	XX	X	X		X		XXX
CIS 360	XX	XX	XX		X	X	X		X		XX
CIS 459			X					X	XX		XX
CIS 541	XXX	XX	XX		X				X		XX
CIS 560	XX	XX	XXX	XXX	X	X	XXX				XX
CIS 570	XX	XX	XX		XX	X	X				XX
CIS 601	X	X		X	X	XXX	XXX	XXX	XX	XXX	XX
CIS 625	XXX				XX				X		
CIS 655	XXX	XX	XX		XX		X	X	XXX		XX
CIS 660	XX	XX	X		XX				XXX		XXX
CIS 675	XXX	XX			XX				XX		
CIS 680	XXX	XXX	X		XX	X			X		XX

Capstone Design Courses (Students are required to choose one):

Course	ABET (3.a)	ABET (3.b)	ABET (3.c)	ABET (3.d)	ABET (3.e)	ABET (3.f)	ABET (3.g)	ABET (3.h)	ABET (3.i)	ABET (3.j)	ABET (3.k)
CIS 731	XXX	XX	XXX	XX	XXX	XX	XX	X	X		XXX
CIS 758	XXX	X	XXX	XXX	XXX	XX	XXX				XXX
CIS 762	XXX	XX	XX		XX	X	X		X		XXX
CIS 772	XXX	XX	XXX	XXX	XXX	XX	XX		X		XXX
CIS 776	XXX	XXX	XXX	XXX	XXX	X	XXX				XXX
CIS 778	XX	XX	XXX		XX		XX		XX		XXX

Relation between Courses and ABET Criterion 3 Outcomes (contd.)

Some Popular CIS Electives:

Course	ABET (3.a)	ABET (3.b)	ABET (3.c)	ABET (3.d)	ABET (3.e)	ABET (3.f)	ABET (3.g)	ABET (3.h)	ABET (3.i)	ABET (3.j)	ABET (3.k)
CIS 630	XXX	X	XX		XX	X	X		X		XX
CIS 662	XXX	XX	XXX		XX	X	X	X	X		XXX
CIS 670	XXX	X	XX		XX	X					XXX
CIS 677	XX	XX	XXX		XX		X	XX	X	XX	XX
CIS 678	XXX	XX	XXX		XX	X		X	X		XXX
CIS 681	XXX	XX	XXX		XX	X	X		X		XXX
CIS 757	XXX	XXX	XXX		XXX	XX	X	X	X		XXX
CIS 770	XXX	X	XXX		XX	X		X	X		XXX
CIS 775	XX	XXX	XXX		XX	X			X		XX

Math and Statistics Courses:

Course	ABET (3.a)	ABET (3.b)	ABET (3.c)	ABET (3.d)	ABET (3.e)	ABET (3.f)	ABET (3.g)	ABET (3.h)	ABET (3.i)	ABET (3.j)	ABET (3.k)
Math 151	XXX				X						
Math 152	XXX				X						
Math 153	XXX				X						
Math 254	XXX				X						
Math 366	XXX				X						
Math 415	XXX				X						
Stat 427	XXX				X						
Stat 428	XXX				X						

Basic Science Courses:

Course	ABET (3.a)	ABET (3.b)	ABET (3.c)	ABET (3.d)	ABET (3.e)	ABET (3.f)	ABET (3.g)	ABET (3.h)	ABET (3.i)	ABET (3.j)	ABET (3.k)
Phys 131	XXX	XXX			XX						
Phys 132	XXX	XXX			XX						
Phys 133	XXX	XXX			XX						
Chem 121	XXX	XXX			XX						
Chem 125	XXX	XXX			XX						

Relation between Courses and ABET Criterion 3 Outcomes (contd.)

Other Engineering Courses:

Course	ABET (3.a)	ABET (3.b)	ABET (3.c)	ABET (3.d)	ABET (3.e)	ABET (3.f)	ABET (3.g)	ABET (3.h)	ABET (3.i)	ABET (3.j)	ABET (3.k)
EE 206	XX	XX	XXX		XXX						X
EE 261	XXX		XX		XXX						
EE 300	XXX		XX		XX						
EE 309	XXX	XX	XXX		XXX						
EE 320	XXX	X	XXX		XXX						XX
EE 567	XXX	XX	XXX	XXX			X				XXX
EG 166	XXX						X				X
EM 400	XXX				XXX						
ISE 504	XXX				XXX			XXX			
ME 500	XXX				XXX						
MSE 405	XXX				XXX						

GEC Courses:

Course	ABET (3.a)	ABET (3.b)	ABET (3.c)	ABET (3.d)	ABET (3.e)	ABET (3.f)	ABET (3.g)	ABET (3.h)	ABET (3.i)	ABET (3.j)	ABET (3.k)
Engl 110				X			XXX			X	
Soc. Sc.							X	X		XXX	
Historical Survey							X	X		XXX	
Arts and Humanities							X	XXX		XXX	

B.4 Course Syllabi

The course syllabi are organized into groups of related courses. The CIS courses required of all CSE majors form the first group. The second group consists of the six CIS courses designated as capstone design courses. The third group consist of a set of popular CIS elective courses. The fourth group consists of all the other required (non-CIS) engineering courses. The fifth group consists of the required mathematics and statistics courses. The sixth group consists of the required physics and chemistry courses. The seventh group contains only one course, English 110.

The syllabi in the first three groups are the official syllabi for these courses, and are taken from the CIS department's web pages. These pages are maintained by the Curriculum Committee of the department. The coordinators of individual courses are responsible for initiating changes and updates to the syllabi for their courses. The syllabi for the courses in the other groups were provided by the respective departments that teach those courses.

B.4.1 Required Computing Courses

There are seventeen courses in this group, these being CIS 221, 222, 321, 360, 459.21, 459.22, 459.23, 459.31, 541, 560, 570, 601, 625, 655, 660, 675.01, and 680. Each of the CIS 459's is a 1-credit course on a specifid programming language. Students are required to choose one as part of their program. (They may take additional 459's as part of their technical electives.)

The syllabi for required CIS courses: CIS 221, 222, 321, 360, 459.21, 459.22, 459.23, 459.31, 541, 560, 570, 601, 625, 655, 660, 675.01, and 680 go here.

Page numbers 18 through 51.

B.4.2 Capstone Design Courses

As detailed in Section B.4.1 of the Accreditation Summary, six CIS courses have been designated as Capstone Design courses. Each CSE major is required to choose one of these, depending upon his or her technical interests, as the capstone design course. The six capstone design courses are CIS 731, 758, 762, 772, 776, and 778. The syllabi for these courses appear in the following pages.

The syllabi for the capstone design courses: 731, 758, 762, 772, 776, 778 go here.

Page numbers: 53 through 64.

B.4.3 Syllabi of some Elective Computing Courses

In order to give a feel for the range of technical electives that are available to our students, we provide the syllabi for nine of the most popular CIS elective courses in the following pages. Among these are courses on AI, operating systems, computer networks, computer graphics, software engineering, databases, and computer architecture.

The syllabi for 9 elective courses go here; these courses are: CIS 630, 662, 670, 677, 678, 681, 757, 770, 775.

Page numbers: 66 through 83.

B.4.4 Syllabi of Other Required Engineering Courses

This section contains the syllabi of other (non-CIS) engineering courses. The syllabi for these courses were provided by the respective departments and are not in the same format as the CIS-syllabi.

The syllabi for 9 elective courses go here; these courses are: CIS 630, 662, 670, 677, 678, 681, 757, 770, 775.

Page numbers: 85 through 106.

B.4.5 Syllabi of Math and Statistics Courses

This section contains the syllabi of math and statistics courses that CSE majors are required to take. The syllabi for these courses were provided by the respective departments and are not in the same format as the CIS-syllabi.

The syllabi for 5 math and 2 stat courses go here;

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B.4.6 Syllabi of Required Science Courses

This section contains the syllabi of physics and chemistry courses that CSE majors are required to take. The syllabi for these courses were provided by the respective departments and are not in the same format as the CIS-syllabi.

The syllabi for phys and chem courses

Page numbers: 123 through 139

B.4.7 Syllabi of Engl 110, Eng 100

There are two courses in this section. The first is Engl 110 which all CSE majors are required to take. The second is Eng 100, a 1-credit introduction to the College of Engineering and its programs; all engineering students, including CSE majors, are required to take this course.

Students are also required to take additional GEC courses in Social Sciences (9 credit hours), Historical Survey (10 credit hours), and Arts & Humanities (9 credit hours). The College of Engineering maintains lists of approved courses in each category and students choose from these approved courses. In addition, students are required to take 7 hours of additional GEC courses.

The syllabi for English 110, Eng 100

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C Faculty Curriculum Vitae

This section contains two-page curriculum vitae for the faculty who teach the CIS courses.

Vitae

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