Computer Science Performance Indicators

Note: When there is a relation between the Computer Science performance indicators and the Electrical and Computer Engineering performance indicators, the ECE area is noted in parentheses after the main CS student outcome.

3a. An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline (similar to ECE 3a)
   a1) Apply and perform the correct mathematical analysis.
   a2) Utilize appropriate computing principles for computer science.

3b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution (similar to ECE 3e)
   b1) Develop a clear and quantifiable statement of computing requirements.
   b2) Develop technical specifications for the computing requirements.
   b3) Select and implement the desirable solution and evaluate the results.

3c. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs (similar to ECE 3c)
   c1) Follow systematic and logical design procedures and define specifications to meet project requirements.
   c2) Identify and adhere to realistic constraints to meet desired needs.
   c3) Consider alternative designs and choose the optimal solution.

3d. An ability to function effectively on teams to accomplish a common goal (similar to ECE 3d)
   d1) Fulfill team duties and share in the work of the team.
   d2) Listen and communicate with other team members.
   d3) Research and gather information.
   d4) Meet deadlines and achieve project goals.
   d5) Cooperate on reports with a reasonable share of duties.

3e. An understanding of professional, ethical, legal, security and social issues and responsibilities (similar to ECE 3f)
   e1) Recognize ethical issues involved in a professional setting.
   e2) Recognize and describe current issues in security.
   e3) Recognize and describe legal and social issues in computing.

3f. An ability to communicate effectively with a range of audiences (similar to ECE 3g)
   f1) Write technical reports.
   f2) Prepare and deliver oral presentations.

3g. An ability to analyze the local and global impact of computing on individuals, organizations, and society (similar to ECE 3h)
   g1) Understand the impact of computing solutions on society and the environment in a global economic context.
   g2) Understand and explain non-technical issues such as sustainability and entrepreneurship.
   g3) Consider a variety of available options in computing design and make a proper choice based on their impact.

3h. Recognition of the need for and an ability to engage in continuing professional development (similar to ECE 3i)
   h1) Read and report on papers in the technical literature.
   h2) Involve oneself in professional activities (e.g. meeting, presentations, workshops).

3i. An ability to use current techniques, skills, and tools necessary for computing practice (similar to ECE 3k)
   i1) Use appropriate tools, simulation software, or hardware design tools to solve computing problems.
   i2) Utilize problem solving skills and techniques to complete the task.
   i3) Determine the appropriate choice of tools when several are available.

3j. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

    j1) Understand performance and cost as these relate to software/firmware-based and hardware-based implementations.

    j2) Apply appropriate mathematical foundations and computer science theory to design choices.

3k. An ability to apply design and development principles in the construction of software systems of varying complexity.

    k1) Understand the software/system life-cycle.

    k2) Write documentation for each phase of the development cycle.

Computer Science – Proposed Matrix

E = Even Years (2016/17, 2018/19, etc) O = Odd Years (2017/18, 2019/20, etc) A = All Years

(Note: Only core upper-division CMPS courses required by at least two concentrations are included in this matrix)

		3120	3140	3350	3420	3500	3560	3600	3620	3640	4910	4928	Summary
3a. Math/Sci for CS													**3a**
a1	Apply math						X		X				
a2	Comp. principles	X				X							
3b. Analyze Problem													**3b**
b1	Req. Statement			X									
b2	Specifications								X				
b3	Implement/Eval.						X						
3c. Design sys/proc													**3c**
c1	Logical Design										X	X	
c2	Real Constraints										X	X	
c3	Compare Design	X											
3d. Teamwork													**3d**
d1	Team Duties										X	X	
d2	Communicate										X	X	
d3	Research										X	X	
d4	Deadlines										X	X	
d5	Share Writing										X	X	
3e. Prof/Eth. Respon.													**3e**
e1	Ethical Issues									X			
e2	Security Issues								X				
e3	Legal/Social						X						
3f. Communicate													**3f**
f1	Written Comm.				X						X	X	
f2	Oral Comm.			X							X	X	
3g. Global Impact													**3g**
g1	Solution Impact										X	X	
g2	Non-technical										X	X	
g3	Choose Solution										X	X	
3h. Profess. Devel.													**3h**
h1	Literature/Paper										X	X	
h2	Prof. Activities										X	X	
3i. Current Skills													**3i**
i1	Use Tools				X								
i2	Problem Solving							X					
i3	Choose Tools										X	X	
3j. Algs/Theory													**3j**
j1	Performance		X										
j2	Math/Theory		X										
3k. Devel. Principles													**3k**
k1	Lifecycle			X									
k2	Documentation			X									