BS in Artificial Intelligence – Curriculum Map EY 2019

Program Outcomes:
1. Understand how to distill a real-world challenge as an artificial intelligence problem, involving explicit representation and learning of symbolic and numeric models; reasoning about such models; and using such models for decision making, action selection, and interaction with humans;
2. Design, analyze, implement, and use state-of-the art AI and machine learning techniques for dealing with real-world data, including data involving vision, language, perception, and uncertainty;
3. Master the core concepts of computer science, with emphasis on data structures, programming, computing systems, and algorithm design, performance, and correctness across a variety of metrics (e.g., time, space, parallel vs. sequential implementation, what is computable);
4. Master the fundamentals of discrete mathematics, logic, theorem proving and explanation, probability and statistics, and optimization;
5. Describe, specify, and develop large-scale, open-ended artificial intelligence systems subject to constraints such as performance, available data, and need for transparency;
6. Communicate technical material effectively to technical and non-technical audiences;
7. Work productively both individually and in teams; and
8. Recognize the social impact of artificial intelligence and the underlying responsibility to consider the ethical, privacy, moral, and legal implications of artificial intelligence technologies.

Program Requirements	Program Outcomes							
	1	2	3	4	5	6	7	8
07-128 First Year Immigration						•	•	•
07-180 Concepts in AI	•					•		•
10-315 Intro to Machine Learning	•	•		•				•
11-411 Natural Language Processing*	•	•		•			•	
15-122 Imperative Computation			•	•	•			
15-150 Functional Programming			•	•				
15-151 Math Foundations of CS			•	•				
15-210 Parallel/Seq. Algo./Structs.			•	•				
15-213 Computer Systems			•		•			
15-251 Great Theoretical Ideas/CS			•	•			•	
15-281 Intro to AI: Repr & Prob Solving	•	•		•				•
16-386 Intro to Computer Vision*	•	•		•			•	
Decision Making & Robotics Elective**	•	•		•	•		•	
Machine Learning Elective**	•	•		•	•		•	
Perception and Language Elective**	•	•		•	•		•	
Human-AI Interaction Elective**	•	•			•	•	•	•
2 SCS Electives**	•	•	•	•	•	•	•	
Ethics Elective						•	•	•
21-122 Integration/Approximation				•				
21-259 Calculus in 3D				•				
21-241/242 Matrix Algebra/Theory				•				
36-218 Probability Theory for CS				•				
36-401 Modern Regression				•				
First Year Writing						•		
Cognition, Choice & Behavior						•		•
Economic, Political & Social Inst.						•		•
Cultural Analysis						•		•
3 Humanities/Arts Electives						•	•	•
3 Science/Engineering Electives						•	•	
1 Laboratory Elective						•	•	
Computing @ Carnegie Mellon								•

Color Key - General Education Requirements: HUMANITIES/ARTS   SCIENCE/ENGINEERING   CMU
*Students must take either 11-411 or 16-385.
**Program outcome coverage depends on selection of courses.