Proposed FY15-17 Educational Skill Requirements
Computer Science and System Design (CS)
Subspecialty 6203
Curriculum# 368

1. Curriculum Number: 368

2. Curriculum taught at NPS.

3. Students are Fully Funded.

4. Curriculum Length in Months: 21 with or without JPME

5. APC Required: 323

6. The Computer Science and System Design subspecialty code (6203) is intended to serve the Navy by providing commands with officers who possess expertise related to the specification, development, installation, maintenance, evaluation, security, and mission assurance of hardware and software computer systems and networks. The officer must have the theoretical knowledge and practical expertise to perform technical and operational oversight responsibilities related to computer systems. This knowledge and expertise supports operating the network as a warfighting platform, conducting tailored signals intelligence, delivering warfighting effects through cyberspace, and creating shared cyber situational analysis. Particular skills and competencies that constitute this subspecialty are detailed below:

a. Fundamental Computer Science. Architectures, virtualization, operating systems, computer networks, high- and low-level languages and their translation, software systems, human-computer interaction, and supporting mathematical foundations of Computer Science.

b. Software Development. Planning and development of large software projects to include specification of requirements, design, technical documentation, implementation, risk analysis, testing, quality assurance, maintenance, process metrics, and measures of effectiveness through the use of modern software engineering techniques and tools.

c. Analysis. Application of scientific methods to determine reliability, efficiency and performance of computer systems; modeling, simulation, and analysis of algorithms, processes, and systems in support of Military operations.

d. Data Systems and Management. Devices, interfaces and interconnects; storage architectures and data organizations, addressing and indexing; continuity, backup and recovery; resilience; models, analytics, and visualization; large data sets, and data mining.

e. Autonomous Systems. Design, construction, and operation of autonomous systems including unmanned vehicles; analysis tools for security, forensics and intelligence. Basic skills include artificial intelligence, knowledge management and representation, machine learning, heuristic search, and data mining.

f. Cyber-Security and Cyber Operations. Development, implementation and management of security provisions, information assurance and situational awareness for computer systems, networks and control systems, and their integration with Defensive Cyber Operations, Offensive Cyber Operations, and DoD Information Network (DODIN) Operations.

g. Networking & Distributed Computing. Modeling, design and implementation of network infrastructures for distributed and mobile systems. Application of distributed multi-core and multi-processor systems in High Performance Computing (HPC) and cloud computing configurations to support analysis, forensics, engineering, management, and other "big data" applications, such as operations, intelligence and meteorological/oceanographic.

h. Specialization. In addition to the breadth obtained from the collection of previous items, the officer will complete a series of advanced courses that integrate computer science in DOD systems, software, and operations. This in-depth study conveys essential real-world complexities and details that are required to make informed decisions during every stage of computer systems' lifecycles. Knowledge is deepened through a thesis or capstone (practicum) project in a framework that exercises the practices of innovation, problem solving, systems-thinking, and real-world application.

i. Joint Professional Military Education (JPME). Per community requirements, the officer will have an understanding of warfighting within the context of operational art to include: strategy and war, theater security decision making, and joint maritime operations. Completing the Naval War College four-course series leading to Intermediate Level Professional Military Education and JPME phase I certification fulfills this requirement.

APPROVED:	FCC/C10F (Curriculum Sponsor)	18 JUN 15 Date
APPROVED:	OPNAV N2/N6 (MAS)	13 JUL 2015 Date
APPROVED:	President, NPS	JAN 15 2016 Date
APPROVED:	OPNAV N12 (TFMPERD)	22 FEB 2016 Date