

Naval Postgraduate School
 Department of Computer Science
 Graduation Checklist for MSCS Degree (368)
 6203P Subspecialty Code
(Revised: WINTER AY19, v2)

Name/Rank/Service: _____
 Month/Year Enrolled: _____
 Projected Graduation Date: _____
 CS Specialization: _____

General Notes:

- Students are responsible for meeting the requirements and timelines of this checklist.
- Consult the NPS Python Course Catalog for course prerequisites and offerings.

1. Thesis/Capstone: Proposal must be approved by **end of the 4th academic quarter** (not counting Qtr-0). Proposal must be approved in order to take CS0810 thesis research blocks.

Title: _____

 Advisor(s): _____
 Co-Advisor / Second Reader (circle one): _____
 Joint Thesis Members, if applicable: _____

2. Core Courses: All of the courses below must be completed or validated to graduate. Students must submit by the end of their 4th academic quarter a plan for completing all core courses to the Program Officer and Educational Technician.

<u>Completed</u>	<u>Planned Qtr</u>
___ CS2011 Computing System Principles (4-0)	_____
___ CS3040 Low-Level Programming I (4-2)	_____
___ CS3001 Formal Foundation of Computer Science (4-2)	_____
___ OS3307 Modeling Practices for Computing (4-1)	_____
___ CS3200 Computer Architecture (3-2)	_____
___ CS3021 Intermediate Programming & Data Structures (4-2)	_____
___ CS3502 Computer Communications & Networks (4-2)	_____
___ CS3070 Operating Systems (3-2)	_____
___ CS3600 Introduction to Computer Security (4-2)	_____
___ CS3140 Low-Level Programming II (3-2)	_____
___ CS3101 Theory of Formal Languages and Automata (4-2)	_____
___ CS3310 Artificial Intelligence (4-1)	_____
___ CS4900 Technology & Transformation I (2-0)	_____
___ CS3250 Intro to Cyber Physical Systems (3-2)	_____
___ CS3150 Design and Analysis of Algorithms (4-0)	_____
___ CS3060 Database Systems (3-1)	_____
___ SW3460 Software Methodology (4-2)	_____
___ CS3315 Introduction to Machine Learning and Big Data (3-1)	_____
___ CS3004 Human-Computer Interaction (3-2)	_____
___ CS4903 Research Methods in CS (2-0)	_____

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3. Specialization: *All CS students must complete one of the following Specialization areas. Circle choice, and initial each completed course or annotate when it will be taken. Variations or combinations of any area are permissible, subject to Coordinator and/or Thesis Advisor approval.*

- **ARTIFICIAL INTELLIGENCE (AI):** (Coordinator: Dr. Rowe)

Students must take the following AI Core Sequence:

- CS4330 Intro to Computer Vision (3-2)
- MV4025 Cognitive and Behavioral Models for Simulations (3-2)
- CY3650 Cyber Data Management and Analytics (4-0)

In addition, students must choose three of the following AI electives:

- CS4313 Advanced Robotic Systems (3-2)
- CS4317 Language Systems (3-2)
- CS4558 Network Traffic Analysis (3-2)
- CS4677 Computer Forensics (3-2)
- CS492x Seminar on Advanced Autonomous Systems Topics (4-1)
- IS4205 Big Data Management, Architecture, and Applications (3-2)
- MV4655/OA4655 Introduction to Joint Combat Modeling (4-0)
- OA3304 Decision Theory (4-0)
- OS4106 Advanced Data Analysis (3-0)
- OA4108 Data Mining (2-2)

- **CYBER OPERATIONS (CO):** (Coordinator: Dr. Irvine)

Students must take the following CO Core Sequence:

- CS3690 Network Security (4-1)
- CS4679 Advances in Cyber Security Operations (4-1)
- CY4700 Applied Defensive Cyber Operations (3-3)
- CY4710 Adversarial Cyber Operations (3-3)

In addition, students must choose two of the following CO electives:

- CS4558 Network Traffic Analysis (3-2)
- CS4600 Secure Computer Systems (3-2)
- CS4648 Advanced Cyber Munitions (3-2)
- CS4678 Advanced Cyber Vulnerability Assessment (4-2)
- CS4684 Cyber Security Incident Response & Recovery (3-2)

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- **CYBER SECURITY & DEFENSE (CSD):** (Coordinator: Dr. Irvine)

Students must take the following CSD Core Sequence:

- ___ CS3670 Secure Management of Systems (3-2)
- ___ CS3690 Network Security (4-1)
- ___ CS4600 Secure Computer Systems (3-2)
- ___ CY4700 Applied Defensive Cyber Operations (3-3)

In addition, students must choose two of the following CSD electives:

- ___ CS4558 Network Traffic Analysis (3-2)
- ___ CS4615 Formal Analysis of Cryptographic Protocols (3-1)
- ___ CS4650 Fundamentals of Information System Security Engineering (3-1)
- ___ CS4680 Introduction to Certification and Accreditation (3-2)
- ___ CS4684 Cyber Security Incident Response & Recovery (3-2)
- ___ CS4690 Security for Cyber Physical Systems (3-1)

- **MOVES:** (Coordinator: Dr. C. Darken)

Students interested in a CS degree with a focus on Modeling, Virtual Environments and Simulation (MOVES) may choose the MOVES Option as their Specialization. ***Students will work with their Advisor(s) to create a six course sequence applicable to this specialization area. Their course plan must be listed below, and approved by the MOVES Specialization Coordinator.***

- **NETWORK & MOBILITY (N&M):** (Coordinator: Dr. Xie)

Students must take the following N&M Core Sequence:

- ___ CS4533 Wireless Mobile Computing (3-2)
- ___ CS4535 Mobile Devices (3-2)
- ___ CS4537 Wireless Data Services (3-2)
- ___ CS4552 Network Design & Programming (3-3)
- ___ CS4554 Network Modeling & Analysis (4-0)
- ___ CS4538 Mobile Device and Wireless Security (3-2)
or CS4558 Network Traffic Analysis (3-2)

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- **SOFTWARE ENGINEERING (SwE):** (Coordinator: Dr. Luqi)

Students must take SW3460, CS3315, and CS3004 in the core.

In addition, students must choose six of the following SwE electives:

- SW4520 Advanced Software Engineering (3-0)
- SW4530 Software Engineering R&D in DoD (3-1)
- CS4313 Advanced Robotic Systems (3-2)
- CS4315 Introduction to Machine Learning and Data Mining (3-1)
- CS4678 Advanced Cyber Vulnerability Assessment (4-2)
- CS4670 Quantum Computing (4-0)
- CS3910 Science of Programming
- MV4025 Cognitive and Behavioral Modeling for Simulations (3-2)
- MV4655 Introduction to Joint Combat Modeling (4-0)
- OS4118 Statistical and Machine Learning (3-0)
- CC4101 System Engineering for Joint C4I Systems (4-2)
- CY3650 Cyber Data Management and Analytics (4-0)

4. Additional Military Requirements:

All U.S. Navy Line Officer students (*except Engineering Duty Officers*) must complete JPME Phase 1:

- NW3230 Strategy & Policy (4-2)
- NW3275 Joint Maritime Operations Part 1 (4-0)
- NW3276 Joint Maritime Operations Part 2 (2-2)
- NW3285 National Security Decision Making (4-0)

All U.S. Marine Corps students (*may be dropped with concurrence of the Senior Marine Office; optional for U.S. Army students*):

- MN3331 Principles of System Acquisition & Program Management (5-1)

International Military students (*as required by the International Office*):

- IT1500 Informational Program Seminar for International Officers (4-0)
- IT1600 Communication Skills for International Officers (3-0)
- IT1700 Academic Writing for International Officers (2-0)

