

Naval Postgraduate School
Department of Computer Science
Graduation Checklist for MSCS Degree
6203P Subspecialty Code
(Revised: FALL AY17)

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

1. Thesis/Capstone: *proposal must be approved by end the 3rd 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 3rd academic quarter a plan for completing all core courses not yet taken as part of their Specialization selection, and also populate their course matrix in Python.*

<u>Completed</u>		<u>Planned Qtr</u>
___	CS3023 Intermediate Programming (3-4) (Fall/Spr)	_____
___	CS3024 Data Structures (3-2) (Fall/Spr)	_____
___	OS3307 Modeling Practices for Computing (4-1) (Fall/Spr)	_____
___	CS3070 Operating Systems (3-2) (Win/Sum)	_____
___	CS3200 Computer Architecture (3-2) (Win/Sum)	_____
___	CS3502 Computer Communications & Networks (4-2) (Win/Sum)	_____
___	CS3600 Introduction to Computer Security (4-2) (Fall/Win/Spr/Sum)	_____
___	CS4900 Technology & Transformation (2-0) (Win/Sum)	_____
___	CS3004 Human Computer Sys. Interaction (3-2) (Fall/Spr)	_____
___	CS3101 Theory of Formal Languages and Automata (4-2) (Fall/Spr)	_____
___	CS3310 Artificial Intelligence (4-1) (Fall/Spr)	_____
___	SW3460 Software Methodology (4-2) (Fall/Spr)	_____
___	CS3060 Big Data/Database Systems (3-1) (Win/Sum)	_____
___	CS3150 Design and Analysis of Algorithms (4-0) (Win/Sum)	_____
___	CS4901 Research Methods (1-0) (Win/Sum) – <i>only if offered</i>	_____

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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. See the NPS catalog for prerequisites and offering quarters for all courses listed below.

- **AUTONOMOUS SYSTEMS AND DATA SCIENCE (ASDS):** (Manager: Dr. Rowe)

Students must take the following ASDS Core Sequence:

- CY3650 Cyber Data Management and Analytics (4-0)
- CS4315 Learning Systems and Data Mining (3-1)
- CS4330 Intro to Computer Vision (3-2)
- MV4025 Cognitive and Behavioral Models for Simulations (3-2)

In addition, students must choose three (3) of the following ASDS electives (or other course in ASDS by approval of Advisor or ASDS Manager):

- 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)
- MV4655/OA4655 Introduction to Joint Combat Modeling (4-0)
- OA3304 Decision Theory (4-0)
- OA4106 Advanced Data Analysis (3-1)
- OA4108 Data Mining (2-2) (Pre. OA3103)
- OA4118 Statistical and Machine Learning (3-0)

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

Students must take the following CSD Core Sequence:

- CS3690 Network Security (4-1)
- CS3670 Secure Management of Systems (3-2)
- CS4600 Secure Computer Systems (3-2)
- CS4650 Fundamentals of Information System Security Engineering (3-1)
- CS4684 Cyber Security Incident Response & Recovery (3-2)
- CY4700 Applied Defensive Cyber Operations (3-3)

In addition, students must choose one (1) of the following CSD electives:

- CS3695 Network Vulnerability Assessment & Risk Mitigation (3-2)
- CS3699 Biometrics (3-0)
- CS4558 Network Traffic Analysis (3-2)
- CS4615 Formal Analysis of Cryptographic Protocols (3-1)
- CS4677 Computer Forensics (3-2)
- CS4680 Introduction to Certification and Accreditation (3-2)
- CY3650 Cyber Data Management and Analytics (4-0)
- CY4710 Adversarial Cyber Operations (3-3)
- MA4560 Cryptography (4-0)
- MN3331 Principles of Acquisition and Program Management (5-1)
- OA3103 Data Analysis (4-1)

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

Students must take the following CO Core Sequence:

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

...and must choose one of the following CO Sub-sequences:

- Adversarial:

- CS3140 Low-Level Programming II (3-2)
- CS4678 Advanced Cyber Vulnerability Assessment (4-2)
- CS4648 Advanced Cyber Munitions (3-2)

- Defensive:

- CS4558 Network Traffic Analysis (3-2)
- CS4679 Advances in Cyber Security Operations (4-1)
- CS4677 Computer Forensics (3-2)

In addition, students must choose one (1) of the following CO electives:

- CS3670 Secure Management of Systems (3-2)
- CS4558 Network Traffic Analysis (3-2)
- CS4600 Secure Computer Systems (3-2)
- CS4650 Fundamentals of Information System Security Engineering (3-1)
- CS4648 Advanced Cyber Munitions (3-2)
- CS4678 Advanced Cyber Vulnerability Assessment (4-2)
- CS4679 Advances in Cyber Security Operations (4-1)
- CS4677 Computer Forensics (3-2)
- CS4684 Cyber Security Incident Response & Recovery (3-2)
- CY3650 Cyber Data Management and Analytics (4-0)

- **MOVES Option:** (Manager: Dr. C. Darken)

Students interested in a CS degree with a focus on modeling, virtual environments and simulation may choose the MOVES Option as their Specialization.

Students will work with their Advisor(s) to create a seven (7) course sequence applicable to this specialization area. Their course plan must be listed below, and approved by their Thesis Advisor or MOVES Specialization Manager (para 7 below).

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

Students must take the following N&M Core Sequence:

- ___ 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)
- ___ CS4533 Wireless Mobile Computing (3-2)
- ___ CS4535 Mobile Devices (3-2)
- ___ CS4537 Wireless Data Services (3-2)

In addition, students must choose one (1) additional N&M elective, as approved by their Advisor.

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

Students must take the following SwE Core Sequence:

- ___ SW4520 Advanced Software Engineering (3-0)
- ___ SW4530 Software Engineering R&D in DoD (3-1)

In addition, students must choose five (5) of the following SwE electives:

- ___ SW4510 Computer-Aided Prototyping (3-0)
- ___ CS4313 Advanced Robotic Systems (3-2)
- ___ CS4330 Introduction to Computer Vision (3-2)
- ___ CS4678 Advanced Cyber Vulnerability Assessment (4-2)
- ___ CC4101 System Engineering for Joint C4I Systems (4-2)
- ___ CY3650 Cyber Data Management and Analytics (4-0)
- ___ SS3613 Military Satellite Communications (3-0)
- ___ AE4860 Military Space Maneuvers (2-2)
- ___ MV4025 Cognitive and Behavioral Modeling for Simulations (3-2)
- ___ OS4118 Statistical and Machine Learning (3-0)
- ___ CS4xxx Automatic Programming I (4-2)*
- ___ CS4xxx Automatic Programming II (4-2)*

* Projected in 2018.

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4. Additional Military Requirements:

All U.S. Navy & Marine Corps students

___ NW3230 Strategy & Policy (4-2)

All U.S. Navy Line Officer students (except Engineering Duty Officers)

___ 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 & Army students

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

Recommended for all Marine Corps students; may be dropped only with concurrence of the Senior Marine Office.

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)

5. Credit Hour Requirements:

___ 40 graduate credit hours at 3000-4000 level, with at least 12 of those hours at 4000 level.

___ 28 of the 40 graduate credit hours must be in CS, MOVES, SW courses.

***** No more than 3 total sections of CS0810 may be taken, and no more than 2 sections may be taken during a given quarter.***

6. Student Certification: I certify that the information on this form is correct, and that I have completed all requirements for the MSCS degree, with any course deviations from my Specialization sequence listed below (must be approved by Advisor or Specialization Manager). In addition, I have listed my one (1) required **Breadth Elective**.

Signature: _____ Date: _____

7. Advisor or Specialization Manager approval: Specialization courses above are approved.

Signature: _____ Date: _____

8. Program Officer final review: Checklist complete.

Signature: _____ Date: _____