Naval Postgraduate School

Cyber Academic Group

Graduation Checklist for MSCSO/MSCS/MSES/MSEE Degrees (326)

6208P Subspecialty Code

**(Revised: WINTER AY18)**

Name/Rank/Service:

Month/Year Enrolled:

Projected Graduation Date:

CSO Track: Operational Computational Electrical Engineering Engineering Science

**1. Thesis/Capstone: *proposal must be approved by end the 3rd or 4th academic quarter (not counting Qtr-0), prior to taking any 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 Track selection, and also populate their course matrix in Python.***

Completed Planned Qtr

\_\_\_CS3600 Introduction to Computer Security (4-2) (Fall/Win/Spr/Sum) \_\_\_\_\_\_\_\_

\_\_\_CS3040 Low-Level Programming I (4-2) (Fall/Spr) \_\_\_\_\_\_\_\_

\_\_\_EC3730 Cyber Network & Physical Infrastructures (3-2) (Fall/Spr) \_\_\_\_\_\_\_\_

\_\_\_CY3000 Intro to Cyber Systems & Operations (3-0) (Fall/Spr) \_\_\_\_\_\_\_\_

\_\_\_EC3760 Information Operations Systems (3-2) (Win/Sum) \_\_\_\_\_\_\_\_

\_\_\_CS3690 Network Security (4-1) (Fall/Spr) \_\_\_\_\_\_\_\_

\_\_\_CS3250 Intro to Cyber Physical Systems (3-2) (Win/Sum) \_\_\_\_\_\_\_\_

\_\_\_CY3800 Topics in Signal Operations (3-0) (Win/Sum) \_\_\_\_\_\_\_\_

\_\_\_EC3740 Reverse Engineering (3-2) (Win/Sum) \_\_\_\_\_\_\_\_

\_\_\_CS4900 Technology & Transformation (2-0) (Win/Sum) (OPS/CS only) \_\_\_\_\_\_\_\_

\_\_\_CS4901 CSO Research Methods (1-0) (Fall/Spr) \_\_\_\_\_\_\_\_

\_\_\_CY4400 Cyber Mission Planning w/Capstone (3-2) \_\_\_\_\_\_\_\_

**3. Track: *All CSO students will select one of the following Tracks. Circle choice above, 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.***

# COMPUTATIONAL TRACK (CSO-CS): (PO: LT Tye Wylkynsone AA: Karen Burke)

Students must take the following CS Degree Requirements:

\_\_\_CS3101 Theory of Formal Languages and Automata (4-2) (Fall/Spr)

\_\_\_CS3310 Artificial Intelligence (4-1) (Fall/Spr)

\_\_\_CS3502 Computer Communications & Networks (4-2) (Win/Sum)

\_\_\_CS3600 (part of the CSO/326 Core)

***Three track courses are required:***

\_\_\_OS3307 Modeling Practices for Computing (4-1) (Fall/Spr)

\_\_\_CS3070 Operating Systems (3-2) (Win/Sum)

\_\_\_CS4315 Learning Systems and Data Mining (3-1) (Fall/Spr)

***Finally, one concentration area of four courses will be taken:***

**Network Operations:**

\_\_\_CS4552 Network Design & Programming (3-3)

\_\_\_CS4554 Network Modeling & Analysis (4-0)

\_\_\_CS4558 Network Traffic Analysis (3-2)

\_\_\_CS3140 / CS4648 / CS4678 (*pre-req: CS3140*)

 (Elect one from Offensive Cyber Operations concentration)

**Defensive Cyber Operations:**

\_\_\_CS4558 Network Traffic Analysis (3-2)

\_\_\_CS4677 Computer Forensics (3-2)

\_\_\_CS4684 Cyber Security Incident Response & Recovery (3-2)

\_\_\_CS3140 / CS4648 / CS4678 (*pre-req: CS3140*)

 (Elect one from Offensive Cyber Operations concentration)

**Offensive Cyber Operations:**

\_\_\_CS3140 Low-Level Programming II (3-2)

\_\_\_CS4678 Advanced Cyber Vulnerability Assessment (4-2)

\_\_\_CS4648 Advanced Cyber Munitions (3-2)

 1 Cyber Operations or Computation Elective as approved by Academic Team

To wit:\_\_\_\_\_\_\_\_\_\_\_\_

# OPERATIONS TRACK (CSO-OPS): (PO: LCDR Brian Judy AA: Duane Davis)

Students must take the following CSO Degree Requirements:

\_\_\_CY4410 Cyber Policy and Strategy (3-0)

\_\_\_CY4700 Applied Defensive Cyber Operations (3-3)

\_\_\_CY4710 Adversarial Cyber Operations (3-3)

***In addition, the following courses are required plus one (1) elective:***

\_\_\_OS3307 Modeling Practices for Computing (4-1) (Fall/Spr)

\_\_\_CS3070 Operating Systems (3-2) (Win/Sum)

\_\_\_CS3502 Computer Communications & Networks (4-2) (Win/Sum)

\_\_\_CY3650 Cyber Data Management and Analytics (4-0)

\_\_\_CS4558 Network Traffic Analysis (3-2)

\_\_\_EC4765 Cyber Warfare (3-2)

 1 additional Operations Track Elective as approved by Academic Team

To wit:\_\_\_\_\_\_\_\_\_\_\_\_

# ELECTRICAL ENGINEERING TRACK(MSEE):

#  (PO: LCDR(sel) Bryan Martin AA: Preetha Thulasiraman)

Students may make the following EE Core change:

\_\_\_EC3700 Joint Network-Enabled Warfare (3-2) in lieu of CY3800, provided:

1) possess an undergraduate ECE degree that is ABET accredited

2) take EC2650 as a refresher

***In addition, the following courses are required plus four (4) electives:***

\_\_\_EC3710 Computer Communications Methods (3-2)

\_\_\_EC4730 Covert Communications (3-2)

\_\_\_EC4745 Mobile Ad Hoc Wireless Networks (3-2)

\_\_\_EC4765 Cyber Warfare (3-2)

\_\_\_EC4770 Wireless Communications Network Security (3-2)

\_\_\_EC3000 Introduction to Graduate Research Seminar [P/F] (1-0)

 (in lieu of CS4900)

* Four (4) Engineering track electives approved by the Academic team

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# ENGINEERING SCIENCES TRACK(MSES):

#  (PO: LCDR(sel) Bryan Martin AA: Preetha Thulasiraman)

***The following courses are required for the track plus six (6) electives:***

\_\_\_CY3800 Topics in Signals Operations (3-0; Part of CSO/326 Core)

\_\_\_EC4730 Covert Communications (3-2)

\_\_\_EC4765 Cyber Warfare (3-2)

\_\_\_EC4770 Wireless Communications Network Security (3-2)

\_\_\_EC3000 Introduction to Graduate Research Seminar [P/F] (1-0)

 (in lieu of CS4900)

Six (6) Engineering track electives approved by the Academic team

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**4. Additional Military Requirements:**

# All U.S. Navy & Marine Corps students

\_\_\_NW3230 Strategy & War (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 Theater 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 4 (OPS/CS) or 5 (EE/ES) 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 Academic Advisor).

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**7. Academic Advisor approval:** Specialization courses above are approved.

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8. Program Officer final review:** Checklist complete.

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_