

# *Department of Electrical and Computer Engineering*

## *Checklist for MSEE Degree*

The program leading to the Master of Science in Electrical Engineering at NPS is accredited at the advanced level through the Accreditation Board of Engineering and Technology This accreditation is based on degree requirements set forth by the Electrical and Computer Engineering Department at NPS and approved by the NPS Academic Council. This checklist is provided to document the completion of these degree requirements.

**Student name:** \_\_\_\_\_; **email:** \_\_\_\_\_

**Month/year enrolled:** \_\_\_\_\_; **Graduation date:** \_\_\_\_\_

**I certify that 1) the information contained on this form is correct; and 2) courses included in this checklist are not included in the requirements towards another Master degree.**

**Student :** \_\_\_\_\_; **Date:** \_\_\_\_\_

**We certify that this student has met the minimum requirements for the MSEE degree.**

**Signatures:**

\_\_\_\_\_  
**Academic Associate, Date**  
**ECE Department**

\_\_\_\_\_  
**ECE Assoc. Chair for Students, Date**

\_\_\_\_\_  
**Program Officer, Date**

\_\_\_\_\_  
**ECE Department Chair, Date**

**1. BSEE Degree/Equivalence** requirement satisfied by (fill in one):

- BSEE degree from: \_\_\_\_\_ Month/year: \_\_\_\_\_
- BSEE equivalence from NPS. Date: \_\_\_\_\_

**2. Thesis:**

- Number of thesis credits (16 minimum): \_\_\_\_\_
- Advisor: \_\_\_\_\_
- Presentation date: \_\_\_\_\_ Where? (ECE Seminar?) \_\_\_\_\_
- Completed EC3000 during (specify quarter ) \_\_\_\_\_

**The remaining requirements must be met exclusive of thesis requirements.**

**3. Program of Study:** (Select one option only, and check all courses taken in that given option only):

Option Selected: \_\_\_\_\_

**Communications Systems:**

**Required Courses:**

EC 3500	Analysis of Random Signals	(4-0)
EC 3510	Communications Engineering	(3-1)
EC 4550	Digital Communications	(4-0)
EC 4580	Coding and Information Theory	(4-0)

**At least one of:**

EC 4500	Advanced Topics in Communications	(3-0)
EC 4530	Soft Radios	(3-2)
EC 4570	Signal Detection and Estimation	(4-0)
EC 4590	Communications Satellite Systems Engineering	(3-0)

**At least one of:**

EC 4510	Cellular Communications	(3-0)
EC 4560	Spread Spectrum Communications	(3-2)

**Computer Systems:**

**At least three of:**

EC 3800	Microprocessor Based System Design	(3-2)
EC 3820	Computer Systems	(3-1)
EC 3830	Digital Computer Design Methodology	(3-2)
EC 3840	Introduction to Computer Architecture	(3-2)

**At least two of:**

EC 4800	Advanced Topics in Computer Engineering	(3-0)
EC 4810	Fault Tolerant Computing	(3-2)
EC 4820	Advanced Computer Architecture	(3-1)
EC 4830	Digital Computer Design	(3-1)
EC 4840	Advanced Microprocessors	(3-1)
EC 4710	High Speed Networking	(3-2)
EC 4870	VLSI Systems Design	(3-2)

**Guidance, Control, and Navigation Systems:**

**Required Courses:**

EC 3310	Optimal Estimation: Sensor and Data Association	(3-2)
EC 3320	Optimal Control Systems	(3-2)
EC 4350	Nonlinear Control Systems	(3-2)

**At least two of:**

EC 4300 or EC 4310	Adv. Topics in Modern Control Syst. Fundamentals of Robotics	(3-1) (3-2)
EC 4320	Design of Robust Control Systems	(3-2)
EC 4330 /4340	Navigation, Missile, and Avionics Systems	(3-2)
EC 4360	Adaptive Control Systems	(3-1)

**Network Engineering:**

**Required Courses:**

EC 3710	Computer Communications Methods	(3-2)
EC 3500 or EC3410	Analysis of Random Signals Discrete-Time Random Signals	(4-0) (3-2)
EC 4710	High-Speed Networking	(3-2)
EC 4745	Mobile Ad Hoc Wireless Networking	(3-2)

**At least two of:**

EC 4785	Internet Engineering	(3-1)
EC 4430	Multimedia Information and Communications	(3-1)
EC 4700 or EC 4725	Advanced Topics in Network Eng Advanced Telecommunication Systems Eng	(3-2) (3-2)
EC 3760	Information Operations Systems	(3-2)
EC 3550	Fiber Optic Systems	(3-1)

**Solid State Microelectronics & Power Systems:**

**At least three of:**

EC 3130	Electrical Machinery Theory	(4-2)
EC 3150	Solid State Power Conversion	(3-2)

EC 3200	Advanced Electronics Engineering	(3-2)
EC 3220	Semiconductor Device Technology	(3-2)

**At least two of:**

EC 4130	Advanced Electrical Machinery Systems	(4-2)
EC 4150	Advanced Solid State Power Conversion	(4-1)
EC 4220	Introduction to Analog VLSI	(3-1)
EC 4230	Reliability Issues for Military Electronics	(3-1)

**Signal Processing Systems:**

**Required Courses:**

EC 3400	Digital Signal Processing	(3-1)
EC 3410	Discrete-Time Random Signals	(3-2)
EC 4440	Statistical Digital Signal Processing	(3-2)

**At least two of:**

EC 4400 or EC 4910	Advanced Topics in Signal Proc. DSP for Wireless Communications	(3-0) (3-2)
EC 4410	Speech Signal Processing	(3-1)
EC 4430	Multimedia Info & Communications	(3-1)
EC 4450	Sonar Systems Engineering	(4-1)
EC 4460	Artificial Neural Networks	(3-1)
EC 4480	Image Processing and Recognition	(3-2)

**Signals Intelligence:**

**Required Courses:**

EC 3710	Computer Communications Methods	(3-2)
EC 3750	SIGINT Systems I	(3-2)

**Three required courses in ONE of the following sub-options:**

**1. Communications Engineering:**

EC 3500	Analysis of Random Signals	(4-0)
EC 3510	Communications Engineering	(3-1)
EC 4550	Digital Communications	(4-0)

**2. Signal Processing Systems:**

EC 3400	Digital Signal Processing	(3-1)
EC 3410	Discrete-Time Random Signals	(3-2)
EC 4570	Signal Detection and Estimation	(4-0)

**3. Joint Services Electronic Warfare:**

EC 3600	Antennas & Propagation	(3-2)
EC 4610	Radar Systems	(3-2)
EC4680/ 90	Joint Network-enabled Electronic Warfare II	(3-2)

**Three courses from either of the sub-options not picked or from the following list:**

EC 3210	Introduction to Electro-Optical Engineering	(4-1)
EC 3310	Optimal Estimation: Sensor and Data Association	(3-2)
EC 3550	Fiber Optic Systems	(3-1)

EC 3610	Microwave Engineering	(3-2)
EC 3630	Radiowave Propagation	(3-0)
EC 3800	Microprocessor Based System Design	(3-2)
EC 3840	Introduction to Computer Architecture	(3-2)
EC 4420	Modern Spectral Analysis	(3-1)
EC 4440	Statistical Digital Signal Processing	(3-2)
EC 4560	Spread Spectrum Communications	(3-2)
EC 4580	Coding Information Theory	(4-0)
EC 4590	Communications Satellite Systems Engineering	(3-0)
EC 4700	Advanced Topics in Information Warfare	(3-0)
EC 4750	SIGINT Systems II	(3-4)

**One of the following graduate courses in Mathematics:**

MA3046	Matrix Analysis	(4-1)
MA4362	Astrodynamics	(3-0)
MA4570	Cryptography	(4-0)

**Sensor Systems Engineering:**

**At least two of:**

EC3210	Introduction to Electro-Optical Engineering	(4-1)
EC 3600	Antennas & Propagation	(3-2)
EC 3610	Microwave Engineering	(3-2)
EC 3630	Radiowave Propagation	(3-2)

**Complete at least three additional courses:**

**(1) Complete either of the first two sub-options AND also complete one additional course from any listed here (including those in the first block),**

**OR**

**(2) Complete the Underwater Sensors sub-option.**

**Radio Frequency Sensors (choose 2 of 4)**

EC 4610	Radar Systems	(3-2)
EC 4630	RCS Prediction & Reduction	(3-2)
EC 4640	Airborne Radar Systems	(3-2)
EC 4600	Advanced Topics in Sensor Systems	(3-0)

**Sensor Attack and Protection (choose 2 of 4)**

EC 3700	Joint Network-enabled Electronic Warfare I	(3-2)
EC 4690/80(US)	Joint Network-enabled Electronic Warfare II	(3-2)
EC 4900	Digital Receivers and Sensor Technology	(3-2)
EC 4600	Advanced Topics in Sensor Systems	(3-0)

**Underwater Sensors (first three courses are required)**

EC 3500 or EC 3410	Analysis of Random Signals Discrete Time Random Signals	(4-0) (3-2)
EC 3450	Fundamentals of Ocean Acoustics	(4-0)
EC 4450	Sonar Systems Engineering	(4-1)
EC 4600	Advanced Topics in Sensor Systems	(3-0)

