

## ***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?) \_\_\_\_\_

**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 4520	Wireless Propagation & Smart Ant.	(3-0)
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	Communications ECCM	(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 4850	High Speed Networking	(3-2)
EC 4870	VLSI Systems Design	(3-2)

**Electromagnetic Systems Option:**

**Required Course:**

EC 3600	Electromagnetic Radiation, Scattering, & Propagation	(3-2)
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**At least one of:**

EC 3210	Introduction to Electro-Optical Engineering	(3-1)
EC 3610	Microwave Engineering	(3-2)
EC 3630	Radiowave Propagation	(3-0)
EC 3650	Computational Electromagnetic Modeling Techniques	(4-1)

**At least two of:**

EC 4210	Electro-Optic Systems Engineering	(3-0)
EC 4600	Advanced Topics in Electromagnetics	(3-0)
EC 4610	Radar Systems	(3-2)
EC 4630	Radar Cross Section Prediction and Reduction	(3-0)
EC 4650	Advanced Electromagnetics	(3-0)
EC 4660	Electromagnetic Environmental Effects on Communication System Performance	(3-2)
EC 4680 /4690	Radar Electronic Warfare Techniques and Systems	(3-3)

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

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

### **Solid State Microelectronics and Power Systems Option:**

**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)

### **Joint Services Electronic Warfare Option:**

**Required Course:**

EC 3700	Introduction to Joint Services Electronic Warfare	(3-2)
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**At least four of:**

EC 3310	Optimal Estimation: Sensor and Data Association	(3-1)
EC 4210	Electro-Optic Systems Engineering	(3-0)
EC4330/4340	Navigation, Missile, and Avionics Systems	(2-2)
EC 4560	Communications ECCM	(3-2)
EC 4610	Radar Systems	(3-2)
EC 4630	Radar Cross Section Prediction and Reduction	(3-0)
EC 4640	Airborne Radar Systems	(3-0)
EC4680/4690	Radar Electronic Warfare Techniques and Systems	(3-3)
EC 4700	Advanced Topics in Electronic Warfare	(3-0)
SS 3001	Military Applications of Space	(3-2)

### **Signal Processing Systems Option:**

**Required Courses:**

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

**At least two of:**

EC 4400	Advanced Topics in Signal Processing	(3-0)
EC 4410	Speech Signal Processing	(3-1)
EC 4420	Modern Spectral Analysis	(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 Option:**

**Required Courses:**

EC 3850	Computer Communications Methods	(3-1)
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	(3-1)
EC 4570	Signal Detection and Estimation	(4-0)

**3. Joint Services Electronic Warfare:**

EC 3600	Electromagnetic Radiation, Scattering, and Propagation	(3-2)
EC 4610	Radar Systems	(3-2)
EC 4680	Radar Electronic Warfare Techniques and Systems	(3-3)

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

EC 3210	Introduction to Electro-Optical Engineering	(3-1)
EC 3310	Optimal Estimation: Sensor and Data Association	(3-1)
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	(3-1)
EC 4560	Communications ECCM	(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)

