

# ***Department of Electrical and Computer Engineering Checklist for the MEng(EE) Degree***

This checklist is provided to document the completion of the degree requirements for the program leading to the Master of Engineering (with Major in Electrical Engineering) at NPS.

**Student name (please PRINT CLEARLY):** \_\_\_\_\_;

**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 MEng(EE) degree.**

**Signatures:**

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

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

\_\_\_\_\_  
**Program Officer/Manager, Date**

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

## List of available ECE courses

### Communications Systems

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

EC 4500	Advanced Topics in Communications	(3-0)
EC 4510	Cellular Communications	(3-0)
EC 4530	Soft Radios	(3-2)
EC 4550	Digital Communications	(4-0)
EC 4560	Spread Spectrum Communications	(3-2)
EC 4570	Signal Detection and Estimation	(4-0)
EC 4580	Error Correction Coding	(4-0)
EC 4590	Communications Satellite Systems Engineering	(3-0)
EC 4580	Coding and Information Theory	(4-0)
EC 4590	Communications Satellite Systems Engineering	(3-0)

### Computer Systems

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)

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 4870	VLSI Systems Design	(3-2)

### Cyber Systems

EC 3730	Cyber Network & Physical Infrastructures	(3-2)
EC 3740	Reverse Engineering in Electronic Syst.	(3-2)
EC 3750	SIGINT Systems I <sup>(C)</sup>	(3-2)
EC 3760	Information Operations Systems <sup>(C)</sup>	(3-2)
EC 3795	Mobile Telecommunication Fundamentals	(3-2)

EC 4715	Cyber System Vulnerabilities & Risk Assessment	(3-2)
EC 4730	Covert Communications	(3-2)
EC 4735	Telecommunications Systems Security	(3-2)
EC 4747	Data Mining in Cyber Applications	(3-2)
EC 4755	Network Traffic, Activity Detection, & Tracking	(3-2)
EC 4765	Cyber Warfare <sup>(C)</sup>	(3-2)
EC 4770	Wireless Communications Network Security	(3-2)
EC 4790	Cyber Architectures & Eng.	(3-2)
EC 4795	Wireless Device Security	(3-2)

<sup>(C)</sup>: Classified Course

Effective date: 09/17/13; last update 04/28/22.  
Please read [Privacy Advisory](#).

### Guidance, Control, & Navigation Systems

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

EC 4310	Robotics Systems	(3-1)
EC 4320	Design of Robust Control Systems	(3-2)
EC 4330	Navigation, Missile, and Avionics Systems	(3-2)
EC 4350	Nonlinear Control Systems	(3-2)
EC 4330	Navigation, Missile, and Avionics Systems	(3-2)
EC 4350	Nonlinear Control Systems	(3-2)

### Machine Power Systems

EC 3110	Electrical Energy	(3-2)
EC 3130	Electrical Machinery Theory	(4-2)
EC 3150	Solid State Power Conversion	(3-2)

EC 4130	Advanced Electrical Machinery Systems	(4-2)
EC 4150	Advanced Solid State Power Conversion	(4-1)

### Network Engineering

EC 3710 or CS3502	Computer Communications Methods or Computer Communication Networks	(3-2) (4-2)
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EC 4700	Advanced Topics in Network Eng.	(3-2)
EC 4710	High-Speed Networking	(3-2)
EC 4725	Advanced Telecom. Systems Eng.	(3-2)
EC 4745	Mobile Ad Hoc Wireless Networking	(3-2)
EC 4785	Internet Engineering	(3-1)
EC 4745	Mobile Ad Hoc Wireless Networking	(3-2)
EC 4785	Internet Engineering	(3-1)

### Sensor Systems Engineering

EC 3210	Introduction to Electro-Optical Eng.	(4-1)
EC 3600	Antennas & Propagation	(3-2)
EC 3610	Microwave Engineering	(3-2)
EC 3615	Radar Fundamentals	(3-2)
EC 3630	Radiowave Propagation	(3-2)
EC 3700	Joint Network-enabled El. Warfare I	(3-2)

EC 4600	Advanced Topics in Sensor Systems	(v-v)
EC 4610	Radar Systems	(3-2)
EC 4615	Advanced Radar	(3-2)
EC 4630	RCS Prediction	(3-2)

EC 4640	Airborne Radar Mode Processing	(3-2)
EC4685	Principles of Electronic Warfare	(3-2)

EC 4450	Sonar Systems Engineering	(4-1)
EC 4480	Image Processing and Recognition	(3-2)
EC 4910	DSP for Wireless Communications	(3-2)

**Underwater Sensors**

EC 3450	Fundamentals of Ocean Acoustics	(4-0)
EC 4450	Sonar Systems Engineering	(4-1)

**Signal Processing Systems**

EC 3400	Digital Signal Processing	(3-2)
EC 3410	Discrete-Time Random Signals	(3-2)
EC 3460	Machine Learning for Signal Analytics	(3-2)

EC 4400	Advanced Topics in Signal Proc.	(3-0)
EC 4430	Multimedia Info & Communications	(3-1)
EC 4440	Statistical Digital Signal Processing	(3-2)

**Solid State Microelectronics**

EC 3200	Advanced Electronics Engineering	(3-2)
EC 3220	Semiconductor Device Technologies	(3-2)
EC 3230	Space Power and Radiation Effects	(3-1)
EC 3240	Renewable Energy at Military Bases	(3-2)

EC 4220	Introduction to Analog VLSI	(3-2)
EC 4230	Reliability Issues for Military Electronics	(3-2)

**Non-NPS based transferred courses**

List **non-NPS** based transferred course(s) - include school name, credits (sem/quarter), Academic Council dates of approval for transfer. A maximum of 25% (8 quarter credits) are transferrable, per AC policy 6.6.3.

Course No.	Credit Information (School Name, credits, AC approval date)

**Course credit requirements**

List all graduate courses taken in approved engineering disciplines (including transferred courses). Lab credits count as half credits. **Note:** course credit numbers are periodically re-evaluated and may have changed since you took a course. *Only the credits shown on student transcripts will be counted to satisfy minimum requirements.*

3000-level courses	Credits (X-X)	4000-level courses	Credits (X-X)

(a) Total graduate credits in approved<sup>1</sup> engineering, mathematics, physical science, and/or computer science (32 minimum at 3xxx and 4xxx-level, which must be graded, & include a minimum of 5 graduate-level graded ECE courses): \_\_\_\_\_

(b) Total credits from (a) at 4000 level: \_\_\_\_\_  
(10 minimum, 3 ECE courses minimum, which must be graded)

<sup>1</sup>Note: Courses taken in other engineering disciplines require the **advanced approval** of the ECE Academic Associate & Chair.

***ECE Dept Graduate Academic Certificate List***

Academic Certificate (check all that apply)		Specific courses required:	Quarter planned or taken	For administrative use only	
				Enrollment Approval & Date	Completion - Completion Date
<input type="checkbox"/> [284]	Guidance, Navigation & Control Systems	<input type="checkbox"/> EC3310		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3320		_____	_____
		<input type="checkbox"/> EC4350		AA: _____	AA: _____
		<input type="checkbox"/> EC4310 or EC4330			
<input type="checkbox"/> [286]	High Performance Computer Architecture	<input type="checkbox"/> EC3800		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3840		_____	_____
		<input type="checkbox"/> EC4820 or EC4830		AA: _____	AA: _____
<input type="checkbox"/> [287]	Digital Communications	<input type="checkbox"/> EC3500		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3510		_____	_____
		<input type="checkbox"/> EC4550		AA: _____	AA: _____
		<input type="checkbox"/> EC4580			
<input type="checkbox"/> [288]	Cyber Warfare	<input type="checkbox"/> EC3760		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC4765		_____	_____
		Select One out of AND satisfy 12 credit hours (check): <input type="checkbox"/> DA3105		AA: _____	AA: _____
		<input type="checkbox"/> EC3730; <input type="checkbox"/> EC3750			
		<input type="checkbox"/> EC4730; <input type="checkbox"/> EC4755			
	<input type="checkbox"/> CS4558; <input type="checkbox"/> EC3970				
<input type="checkbox"/> [290]	Signal Processing	<input type="checkbox"/> EC3400		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3410		_____	_____
		<input type="checkbox"/> EC4440		AA: _____	AA: _____
		Select One out of (check):			
		<input type="checkbox"/> EC3460; <input type="checkbox"/> EC4430			
		<input type="checkbox"/> EC3940; <input type="checkbox"/> EC4450			
	<input type="checkbox"/> EC4400; <input type="checkbox"/> EC4480				
	<input type="checkbox"/> EC4910				
<input type="checkbox"/> [291]	Electric Ship Power Systems	<input type="checkbox"/> EC3130		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3150		_____	_____
		<input type="checkbox"/> EC4130		AA: _____	AA: _____
		<input type="checkbox"/> EC4150			
<input type="checkbox"/> [292]	Electronic Warfare (EW) Engineer	<input type="checkbox"/> EC3600		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3615 or EC3630		_____	_____
		<input type="checkbox"/> EC3700 or EC4685		AA: _____	AA: _____
<input type="checkbox"/> [294]	Senior EW Engineer	<input type="checkbox"/> EC3615 or EC3630		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3700 or EC4685		_____	_____
		<input type="checkbox"/> EC4615 or EC4630		AA: _____	AA: _____
<input type="checkbox"/> [293]	Journeyman EW Engineer	<input type="checkbox"/> EC3210		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3610		_____	_____
		<input type="checkbox"/> EC4600 or EC4615 or EC4630		AA: _____	AA: _____

<input type="checkbox"/> [295]	<b>Network Engineering</b>	<input type="checkbox"/> EC3710 or CS3502	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC4745	_____	_____
		Select at least One out of AND satisfy 12 credit hours (check): <input type="checkbox"/> EC4430; <input type="checkbox"/> EC4710 <input type="checkbox"/> EC4725; <input type="checkbox"/> EC4785 <input type="checkbox"/> EC3795	AA: _____	AA: _____
<input type="checkbox"/> [296]	<b>Cyber Systems</b>	<input type="checkbox"/> EC3730	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC3740	_____	_____
		Select at least One out of (check): <input type="checkbox"/> EC4715; <input type="checkbox"/> EC4730 <input type="checkbox"/> EC4755; <input type="checkbox"/> EC4770 <input type="checkbox"/> EC4790	AA: _____	AA: _____
<input type="checkbox"/> [297]	<b>Wireless Network Security</b>	<input type="checkbox"/> EC4745	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> EC4770	_____	_____
		Select at least One out of (check): <input type="checkbox"/> EC3860; <input type="checkbox"/> EC4735 <input type="checkbox"/> EC4755; <input type="checkbox"/> EC4795	AA: _____	AA: _____

#### Application Process:

- a) **For NPS Resident Students only:** [Further information](#). All ECE certificate applications may be made during your last 2 quarters only, PROVIDED courses are already in your approved matrix. Certificate applications sent outside that window or including courses not included in your Python matrix will be rejected.

Certificate applications must be made online via power flow automate by going to [Forms - Office of the Registrar - Naval Postgraduate School \(nps.edu\)](#)

- b) **For DL Students only:** Individuals must apply to NPS online at [www.nps.edu](http://www.nps.edu).

**Certificate Award Entrance Requirements for NPS Students:** students must be already enrolled in one of the degree programs already offered by the ECE Department or be accepted by the ECE Department if not currently enrolled in any of the degree programs currently offered by the ECE Department.

**Certificate Award Requirements:** The academic certificate program must be completed within 3 years of taking the first certificate course. Minimum CQPR is 3.0.

**Double Counting Courses:** Courses taken as part of an academic certificate may be applied to a degree at NPS; there is no bar on 'double counting' certificate courses for degree purposes. Courses may not be double counted for multiple certificates. Only NPS courses will be counted towards meeting certificate requirements. Transferred courses are NOT eligible to meet certificate requirements.