

Department of Electrical and Computer Engineering
Checklist for MSEE Degree
Checklist for combined MSEE & Electrical Engineer's Degrees

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:** _____

Month/Year accepted in the Electrical Engineer's Degree Program: _____
(Attach copy of signed application at the back)

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 in addition to the combined MSEE and Electrical Engineer's Degrees.

Student : _____; **Date:** _____

-- USN Students only (For P-codes issues)--
Final Checklist: Please attach Copy of Thesis Title & Abstract at the back

We certify that this student has met the minimum requirements for the MSEE and EE degrees.

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 **exactly two specialties contained within one focus area**, and check courses taken in those specialties):

Focus Areas Specialties → ↓	Communications & Information Engineering	Cyber Engineering (For USN students selecting this focus area: "Cyber" is required as one of the two specialties)	Nano-electronics & Energy Engineering	Sensor & Control Engineering
Communications	√	√		
Computers	√	√	√	
Cyber		√		√
Electronics	√		√	
Guidance & Control			√	√
Networks	√	√		
Power			√	√
Sensors	√			√
Signal Processing	√	√		√

Focus Area selected: _____

Specialties selected: (1) _____ & (2) _____

USN students only: Final Checklist - Please attach Copy of Thesis Title & Abstract at the back

For administrative use only – Subspecialty Code Assignment for US NAVY only	
Program Officer → Check Selected Code	
<input type="checkbox"/> 5302 – Communication Systems	<input type="checkbox"/> 5308 – Total Ship Systems
<input type="checkbox"/> 5304 – Guidance, Control & Navigation Systems	<input type="checkbox"/> 5309 – Computer Systems
<input type="checkbox"/> 5305 – Power Systems	<input type="checkbox"/> 5310 – Sensor Systems Engineering
<input type="checkbox"/> 5306 – Digital Signal Processing	<input type="checkbox"/> 5311 – EE Energy Focus (curric 593)
<input type="checkbox"/> 5307 – Electronics	<input type="checkbox"/> 5312 – Networks
	<input type="checkbox"/> 5313 - Cyber

List of Specialties (each specialty has 4 required courses)

Communications Systems:

Required Courses:

EC 3500	Analysis of Random Signals	(4-0)
EC 3510	Communications Engineering	(3-2)
EC 4550	Digital Communications	(4-0)
EC 4580	Error Correction Coding	(4-0)

Computer Systems:

Required Courses:

EC 3830	Digital Computer Design Methodology	(3-2)
EC 3840	Introduction to Computer Architecture	(3-2)
EC 4810	Fault Tolerant Computing	(3-2)
EC 4820	Advanced Computer Architecture	(3-2)

Cyber Systems:

Required Courses:

EC3730	Cyber Network & Physical Infrastructures	(3-2)
EC3740	Reverse Engineering in Electronic Syst.	(3-2)

AND select *either* the Classified or Unclassified set:

Classified: (US only, with appropriate security clearance)

EC 3760	Information Operations Systems	(3-2)
EC 4765	Cyber Warfare	(3-2)

OR

Unclassified:

EC 4730	Covert Communications	(3-2)
EC 4770	Wireless Communications Network Security	(3-2)

Guidance, Control & Navigation Systems:

Required Courses:

EC 3310	Optimal Estimation: Sensor & Data Association	(3-2)
EC 3320	Optimal Control Systems	(3-2)
EC 4330	Navigation, Missile, & Avionics Systems	(3-2)
EC 4350	Nonlinear Control Systems	(3-2)

Network Engineering:

Required Courses:

EC 3710	Computer Communications Methods	(3-2)
EC 4725	Adv. Telecommunication Systems Eng.	(3-2)
EC 4745	Mobile Ad Hoc Wireless Networking	(3-2)
EC 4785	Internet Engineering	(3-2)

Power Systems:

Required courses:

EC 3130	Electrical Machinery Theory	(4-2)
EC 3150	Power Electronics	(3-2)
EC 4130	Advanced Electrical Machinery Systems	(4-2)
EC 4150	Advanced Power Electronics	(3-2)

Electronics:

Required courses:

EC 3200	Advanced Electronics Engineering	(3-2)
EC 3220	Semiconductor Device Technologies	(3-2)
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	(3-2)
EC 3410	Discrete-Time Random Signals	(3-2)
EC 4440	Statistical Digital Signal Processing	(3-2)
EC 4480	Image Processing and Recognition	(3-2)

Sensor Systems Engineering:

Required Courses:

EC 3600	Antennas & Propagation	(3-2)
EC 3630	Radiowave Propagation	(3-2)

And select *either* the RADAR or EW set:

RADAR:

EC 4610	Radar Systems	(3-2)
EC 4630	RCS Prediction & Reduction	(3-2)

OR

EW:

EC 3700	Joint Network-Enabled Electronic Warfare I	(3-2)
EC 4680/90	Joint Network-enabled Electronic Warfare II	(3-2)

List of ECE Electives not included above

Communications Systems

EC 4500	Adv. Topics in Communications	(3-0)
EC 4510	Cellular Communications	(3-0)
EC 4530	Soft Radios	(3-2)
EC 4560	Spread Spectrum Communications	(3-2)
EC 4570	Signal Detection and Estimation	(4-0)
EC 4590	Communications Satellite Systems Eng.	(3-0)

Computer Systems

EC 3800	Microprocessor Based System Design	(3-2)
EC 3820	Computer Systems	(3-2)
EC 4800	Adv. Topics in Computer Eng.	(3-1)
EC 4830	Digital Computer Design	(3-2)
EC 4870	VLSI Systems Design	(3-2)

Electronics Systems

EC 3230	Space Power & Radiation Effects	(3-1)
EC 3240	Renewable Energy at Military Bases	(3-2)
EC 3280	Intro to MEMS Design Advanced	(3-3)
EC 4950	Emerging Nanotechnology	(3-1)
EC 4280	MEMS Design II	(2-4)

Guidance & Control Systems

EC4300	Adv. Topics in Modern Control Systems	(3-1)
EC 4310	Fundamentals of Robotics	(3-2)
EC 4320	Design of Robust Control Systems	(3-2)

Machine Power Systems

EC 3110	Electrical Energy	(3-2)
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Sensor Systems

EC 3210	Intro to Electro-Optics Systems Eng.	(4-1)
EC 3610	Microwave Engineering	(3-2)
EC 4210	Electro-Optics Systems Engineering	(3-0)
EC 4640	Airborne Radar Systems	(3-2)

Signal Processing Systems

EC 3460	Machine Learning for Signal Analytics	(3-2)
EC 4400	Adv. Topics in Signal Processing	(3-0)
EC 4450	Sonar Systems Engineering	(4-1)
EC 4910	DSP for Wireless Communications	(3-2)

Network Engineering

EC 4430	Multimedia Info. & Communications	(3-1)
EC 4710	High-Speed Networking	(3-2)

Cyber Systems

EC 3750	SIGINT Systems I ^(C)	(3-2)
EC 4715	Cyber System Vulnerabilities & Risk Assessment	(3-2)
EC 4747	Data Mining in Cyber Applications	(3-2)
EC 4755	Network Traffic, Activity Detection, & Tracking	(3-2)

^(C) : classified course

4. At least 3 graded credit in a graduate course in mathematics:

MA _____ Number of credits: _____

Selected Mathematics Courses (all others require approval of the Academic Associate)

MA 3030	Introduction to Combinatorics and its Applications	(4-1)
MA 3042	Linear Algebra	(4-0)
MA 3046	Matrix Analysis	(4-1)
MA 3132	Partial Differential Equations and Integral Transforms	(4-0)
MA 3232	Numerical Analysis	(4-1)
MA 3677	Theory of Functions of a Complex Variable I	(4-0)

5. Course credit requirements

List all graduate courses taken in approved engineering, mathematics, physical science, and/or computer science.

- 1) EC3000 must be part of the program matrix but **do not** include EC3000 in the list below;
- 2) Lab credits count as half credits;
- 3) No selected specialization courses may be taken Pass/Fail (P/F). Only one instance of independent/special study course (graded P/F) may be counted towards meeting minimum degree requirements;
- 4) Do not include any graduate courses already counted for the BSEE equivalence in the Table below;
- 5) After entry in the program, students must maintain an average GQPR of 3.5 through the last quarter.

Final quarter GQPR: _____

ECE Dept Graduate Academic Certificate Enrollment Form

Name:		Contact Phone:	E-mail:		
A. Curriculum no. <input type="checkbox"/> 590, <input type="checkbox"/> 591, <input type="checkbox"/> 525, <input type="checkbox"/> 533, <input type="checkbox"/> 592 <input type="checkbox"/> (other, specify) _____		B. NPS Degree enrolled:	C. Quarter enrolled: _____ Graduation date: _____		
I wish to enroll in: Academic Certificate (check all that apply, see entrance requirements below)		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"/> 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		_____	_____
		Select One out of (check): <input type="checkbox"/> EC4820; <input type="checkbox"/> 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 <input type="checkbox"/> EC3730; <input type="checkbox"/> EC3750 <input type="checkbox"/> EC4730; <input type="checkbox"/> EC4755 <input type="checkbox"/> CS4558; <input type="checkbox"/> EC3970		AA: _____	AA: _____
<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"/> EC3630		_____	_____
		<input type="checkbox"/> EC3700		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"/> EC4610		AA: _____	AA: _____

<input type="checkbox"/> [294]	Senior EW Engineer	<input type="checkbox"/> EC4630 <input type="checkbox"/> EC4640 <input type="checkbox"/> EC4680	<input type="checkbox"/> Y <input type="checkbox"/> N AA: _____	<input type="checkbox"/> Y <input type="checkbox"/> N AA: _____
<input type="checkbox"/> [295]	Network Engineering	<input type="checkbox"/> EC3710 <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"/> Y <input type="checkbox"/> N AA: _____	<input type="checkbox"/> Y <input type="checkbox"/> N AA: _____
<input type="checkbox"/> [296]	Cyber Systems	<input type="checkbox"/> EC3730 <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	<input type="checkbox"/> Y <input type="checkbox"/> N AA: _____	<input type="checkbox"/> Y <input type="checkbox"/> N AA: _____
<input type="checkbox"/> [297]	Wireless Network Security	<input type="checkbox"/> EC4745 <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	<input type="checkbox"/> Y <input type="checkbox"/> N AA: _____	<input type="checkbox"/> Y <input type="checkbox"/> N AA: _____

Application Process:

For NPS Resident Students only: Students must turn in the completed enrollment form to the ECE Department Education Technician NLT the end of the second week of their graduating quarter. They must include a copy of their Python transcripts showing scheduled certificate courses and associated grades to insure they are awarded the certificate. Further information is available at <http://www.nps.edu/ece/Academics/Certificates.html>.

For DL Students only: Individuals must apply to NPS online at 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.