

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 | (3-1) |
| 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 | Solid State Power Conversion | (3-2) |
| EC 4130 | Advanced Electrical Machinery Systems | (4-2) |
| EC 4150 | Advanced Solid State Power Conversion | (4-1) |

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 | (3-1) |
| 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) |
|---------|-------------------|-------|

Sensor Systems

| | | |
|---------|------------------------------------|-------|
| EC 4210 | Electro-Optics Systems Engineering | (3-0) |
|---------|------------------------------------|-------|

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 4755 | Network Traffic, Activity Detection, & Tracking | (3-2) |
| EC 4715 | Cyber System Vulnerabilities & Risk Assessment | (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) |

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"/> [285] | Fault Tolerant Computing | <input type="checkbox"/> EC3800 | | <input type="checkbox"/> Y <input type="checkbox"/> N | <input type="checkbox"/> Y <input type="checkbox"/> N |
| | | <input type="checkbox"/> EC4810 | | _____ | _____ |
| | | <input type="checkbox"/> CS4920 <small>(restricted to offerings focusing on fault tolerant computing topics only, requires approval from AA)</small> | | AA: _____ | AA: _____ |
| | | | | | |
| <input type="checkbox"/> [286] | Reconfigurable Computing | <input type="checkbox"/> EC3840 | | <input type="checkbox"/> Y <input type="checkbox"/> N | <input type="checkbox"/> Y <input type="checkbox"/> N |
| | | <input type="checkbox"/> EC3820 | | _____ | _____ |
| | | <input type="checkbox"/> EC4820 | | 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 | | | |
| | | | | | |

Last modified 05/12/17

Please read privacy Advisory at www.nps.edu/Footer/PrivacyPolicy.html

| | | | | | |
|-----------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------|--------------------------------------------------------------------|
| | | | | 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.