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.

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<tr>
<th>Student name: __________________________</th>
<th>email: __________________________</th>
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<td>Month/year enrolled: __________________</td>
<td>Graduation date: __________________</td>
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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: __________________________ |

**-- 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 degree.

Signatures:

<table>
<thead>
<tr>
<th>Academic Associate, Date</th>
<th>ECE Assoc. Chair for Students, Date</th>
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<tbody>
<tr>
<td>ECE Department</td>
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<tr>
<th>Program Officer, Date</th>
<th>ECE Department Chair, Date</th>
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Effective date: 04/28/22; last update 03/18/24
Please read Privacy Advisory at [www.nps.edu/Footer/PrivacyPolicy.html](http://www.nps.edu/Footer/PrivacyPolicy.html)
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):

<table>
<thead>
<tr>
<th>Focus Areas →</th>
<th>Communications &amp; Information Engineering</th>
<th>Cyber Engineering (For USN students selecting this focus area: “Cyber” is required as one of the two specialties)</th>
<th>Nano-electronics &amp; Energy Engineering</th>
<th>Sensor &amp; Control Engineering</th>
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<tbody>
<tr>
<td>Specialties</td>
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<td>Signal Processing</td>
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</table>

   **Focus Area selected:** __________________________
   **Specialties selected:** (1) ________________________ & (2) ________________________

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

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For administrative use only – Subspecialty Code Assignment for US NAVY only

<table>
<thead>
<tr>
<th>Program Officer → Check Selected Code</th>
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<tbody>
<tr>
<td>☐ 5302 – Communication Systems</td>
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<tr>
<td>☐ 5304 – Guidance, Control &amp; Navigation Systems</td>
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<tr>
<td>☐ 5305 – Power Systems</td>
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<td>☐ 5306 – Digital Signal Processing</td>
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<td>☐ 5307 – Electronics</td>
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**List of Specialties (each specialty has 4 required courses)**

Recall: you must request enrollment in a certificate if you wish to get nominated for it (see EC0000 SOP for details)

### Communications Systems:
- **Required Courses: (satisfies certificate 287)**
  - 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: (satisfies certificate 286)**
  - EC 3800 Microprocessor Based System Design (3-2)
  - EC 3840 Introduction to Computer Architecture (3-2)
  - EC 4820 Advanced Computer Architecture (3-2)
  - EC 4830 Digital Computer Design (3-2)

### Cyber Systems:
- **Required Courses: (may satisfy certificate 288 or 296)**
  - EC 3730 Cyber Network & Physical Infrastructures (3-2)
  - EC 3740 Reverse Engineering in Electronic Systems (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 (3-2)
  - EC 4230 Reliability Issues for Military Electronics (3-2)

### Network Engineering:
- **Required Courses: (satisfies certificate 295)**
  - EC 3710 Computer Communications Methods (3-2)
  - Or CS3502 Computer Communications and Networks (4-2)
  - EC 3795 Mobile Telecommunications Fundamentals (3-2)
  - EC 4725 Adv. Telecommunication Systems Eng. (3-2)
  - EC 4745 Mobile Ad Hoc Wireless Networking (3-2)

### Power Systems:
- **Required Courses: (satisfies certificate 291)**
  - EC 3130 Electrical Machinery Theory (3-3)
  - EC 3150 Power Electronics (3-2)
  - EC 4130 Advanced Electrical Machinery Systems (3-3)
  - EC 4150 Applied Power Electronics (3-2)

### Signal Processing Systems:
- **Required Courses: (satisfies certificate 290)**
  - EC 3400 Digital Signal Processing (3-2)
  - EC 3410 Discrete-Time Random Signals (3-2)
  - EC 4440 Statistical Digital Signal Processing (3-2)
  - EC 4450 Array Signal Processing
    - Or EC 4480 Image Processing and Recognition (3-2)

### Sensor, Radar and EW Engineering:
- **Required Courses: (satisfies certificate 292)**
  - EC 3600 Antennas & Propagation (3-2)
  - EC 3615 Radar Fundamentals (3-2)

### Guidance, Control & Navigation Systems:
- **Required Courses: (satisfies certificate 284)**
  - EC 3310 Optimal Estimation: Sensor & Data Association (3-2)
  - EC 3320 Optimal Control Systems (3-2)
  - EC 4310 Fundamentals of Robotics (3-2)
  - EC 4350 Nonlinear Control Systems (3-2)

### Cyber Systems:
- **Required Courses: (may satisfy certificate 288 or 296)**
  - EC 3730 Cyber Network & Physical Infrastructures (3-2)
  - EC 3740 Reverse Engineering in Electronic Systems (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)
## 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
- **EC 4300** Adv. Topics in Modern Control Systems (3-1)
- **EC 4320** Design of Robust Control Systems (3-2)
- **EC 4330** Navigation, Missile, & Avionics Systems (3-2)

## Machine Power Systems
- **EC 3110** Electrical Energy (3-2)

## Sensor Systems
- **EC 3210** Intro to Electro-Optics Systems Eng. (4-1)
- **EC 3610** Microwave Engineering (3-2)
- **EC 3630** Radiowave Propagation (3-2)
- **EC 3700** Joint Network-Enabled Electronic Warfare I (3-2)
- **EC 4210** Electro-Optics Systems Engineering (3-0)
- **EC 4600** Advanced topics (v-v)
- **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 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
3. **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) Only one instance of EC4900 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.

**Note:** course credit numbers are periodically re-evaluated and may have changed since you took a course. *Only the credits shown on your student transcripts will be counted to satisfy minimum requirements.*

<table>
<thead>
<tr>
<th>3000-level courses</th>
<th>Credits (X-X)</th>
<th>4000-level courses</th>
<th>Credits (X-X)</th>
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**Graduate courses counted towards the BSEE equivalence**

( Maximum of 4 allowed after approval by AA):

1) 2) 3) 4)

(a) Total graduate credits in approved engineering, mathematics, physical science, and/or computer science: 
(36 minimum at 3xxx and 4xxx-level):

(b) Total credits from (a) in ECE\(^1\) 3xxx and 4xxx courses: 
(30 graded credits minimum)

(c) Total credits from (a) at 4000 level: 
(12 credits minimum and 4 courses minimum, which must be graded)

**Note:** 1. Up to 6 credits from graded, graduate-level courses in other engineering and physical science departments can be substituted for ECE courses with the **advanced approval** of the ECE Academic Associate and Chairperson.