Department of Electrical and Computer Engineering
Checklist for MSEE Degree

Student name: _____ ; **email:** _____

Month/year enrolled: _____ ; **Graduation date:** _____

I certify that the information contained on this form is correct.

Student : _____ ; **Date:** _____

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

Signatures:

_____
Academic Associate, Date
ECE Department

_____
ECE Assoc. Chair for Students, Date

_____
Curriculum 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):

- Option selected: <Select one>
_____

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 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)

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	(3-1)
	EC 3320	Optimal Control Systems	(3-2)
	EC 4350	Nonlinear Control Systems	(3-2)

At least two of:

	EC 4300	Advanced Topics in Modern Control Systems	(3-0)
	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)

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:
(This satisfies the requirement for two out-of-option courses)

	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:

	MA 3046	Matrix Analysis	(4-1)
	MA 4362	Astrodynamics	(3-0)
	MA 4570	Cryptography	(4-0)

_____

4. **At least two graded EC courses outside of the selected option** (not required for the Signals Intelligence option, courses already used for the BSEE equivalence cannot be selected):

_____   _____

5. **Course credit requirements**

List all graduate courses taken in approved engineering, mathematics, physical science, and/or computer science. Do not include EC3910. Lab credits count as half credits. Do not include any graduate courses already counted for the BSEE equivalence in the Table below:

3000-level courses	Credits (X-X)		4000-level courses	Credits (X-X)	
List 3000 level classes:	Lecture	Lab	List 3000 level classes:	Lecture	Lab
non-ECE classes:			non-ECE classes:		

Graduate courses counted towards the BSEE equivalence:			
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): _____0.0_____

(b) Total credits from (a) in ECE 3xxx and 4xxx courses: _____0.0_____
(24 graded credits minimum)

(c) Total credits from (a) at 4000 level : _____0.0_____
(12 minimum, 4 courses minimum, which must be graded)

6. At least 3 graded credits in a graduate course in mathematics:

MA_____   Number of credits: _____

_____

Elective Courses (courses not appearing in any option)

EC 3230	Space Power and Radiation Effects	(3-1)
EC 3450	Fundamentals of Ocean Acoustics	(4-0)
EC 3850	Computer Communications Methods	(3-1)
EC 4010	Principles of Systems Engineering	(3-2)

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

MA 3030	Introduction to Combinatorics and its Applications	(4-1)
MA 3046	Matrix Analysis	(4-1)
MA 3132	Partial Differential Equations and Integral Transforms	(4-0)
MA 3232	Numerical Analysis	(4-1)
MA 3400	Mathematical Modeling Processes	(4-0)
MA 3675/ 3676	Theory of Functions of a Complex Variable I & II	(3-0)

NPS MSEE Degree Program
Assessment of Outcomes
Graduating Student Exit Survey

The ABET accredited MSEE Degree Program you have just completed is designed to achieve the program outcomes listed below. Accreditation criteria require that we continually assess our success in achieving the outcomes and feed back the results of our assessment to improve the program outcomes. Please provide your assessment of the level of success for each program outcome.

5 = STRONGLY AGREE
4 = AGREE
3 = NO STRONG OPINION
2 = DISAGREE
1 = STRONGLY DISAGREE
0 = NO COMMENT

Program Outcomes

1. **Depth:** Students will have an in-depth knowledge in one or more of the following areas: electronics and power systems, control systems, signal processing systems, communication systems, electromagnetic systems, signals intelligence systems, electronic warfare systems or computer systems.

                                                                                              5 4 3 2 1 0
   (1) I developed the ability to solve real problems in my core area(s)……………………………O O O O O O
   (2) I am prepared to technically evaluate other's work in my core area(s) of study…………………..O O O O O O
   (3) I feel confident communicating subject matter pertaining to my core area(s) …………………O O O O O O
   (4) The main topics in my core area(s) were covered in sufficient depth……………………………..O O O O O O
   (5) My ability to perform original research was enhanced by taking courses in my core area(s)……..O O O O O O
   (6) I learned a significant amount of factual material in my core area(s)……………………………...O O O O O O
   (7) The technical rigor of my core area(s) was presented at a satisfactory level of difficulty…………O O O O O O

2. **Breadth:** Students will have a graduate level foundation in one or more of the following areas in addition to the area of in-depth study: electronics and power systems, control systems, signal processing systems, communication systems, electromagnetics and computers.

                                                                                              5 4 3 2 1 0
   (8) I developed meaningful problem-solving skills in multiple (more than one) MSEE program tracks………... O O O O O O
   (9) In the MSEE program, I have been exposed to a wide body of electrical engineering subject matter………. O O O O O O
   (10) My NPS engineering experience has instilled in me the desire to pursue further education………..………. O O O O O O
   (11) I developed a broad electrical engineering skill set……………………………………………………… O O O O O O
   (12) I feel confident communicating subject matter pertaining to multiple MSEE program tracks………………...O O O O O O
   (13) My NPS education has prepared me to participate in the design, development, maintenance, and operation
        of complex military systems……………………………………………………………………………………O O O O O O

3. **Independent Investigation:** Students will demonstrate the ability to conduct and report the results of a technically challenging, defense relevant independent investigation.

                                                                                              5 4 3 2 1 0
   (14) My thesis project was a worthwhile academic effort…………………………………………………………O O O O O O
   (15) My thesis research was technically challenging…………………………………………………………O O O O O O
   (16) I developed the ability to locate and assess material related to a challenging technical problem……………. O O O O O O
   (17) My technical writing skills were improved in the thesis process………………………………..……… O O O O O O
   (18) I feel that my thesis research will be of benefit to the military……………………………………………... O O O O O O
   (19) My thesis project has prepared me to carry out further original research in my field………………………... O O O O O O
   (20) The thesis mentoring process and my NPS coursework prepared me to give a clear and effective
        thesis presentation…………………………………………………………………………………….. O O O O O O

Suggestions for Improvement:

1. What programmatic improvements, if any, are needed to more effectively impart a depth of knowledge in your core area?

2. What programmatic improvements, if any, are needed to guarantee an adequate breadth of knowledge in two or more of the MSEE Program tracks?

3. What programmatic changes, if any, are needed to improve the thesis process?

Comments: