

NAVAL POSTGRADUATE SCHOOL
Department of Electrical and Computer Engineering

Checklist for Ph.D. Minor in ECE

Officer name: _____

Month/year enrolled: _____

Required courses in one option (circle the courses taken in your option):

Communications Systems

EC 3500	Analysis of Random Signals	(4-0)
EC 3510	Communications Engineering	(3-1)
EC 4550	Digital Communications	(4-0)

At least one of:

EC 3550	Fiber Optic Systems	(3-1)
EC 4500	Advanced Topics in Communications	(3-0)
EC 4570	Decision and Estimation Theory	(4-0)

At least one of:

EC 4560	Communications ECCM	(3-2)
EC 4580	Coding and Information Theory	(4-0)

Computer Systems

Any three of:

EC 3800	Microprocessor-based System Design	(3-2)
EC 3820	Computer Systems	(3-1)
EC 3830	Digital Design Methodology	(3-2)
EC 3840	Introduction to Computer Architectures	(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 Architectures	(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)

Effective date: April 1996
Minor revisions: 15 May 1997

Electromagnetic Systems

EC 3600 Electromagnetic Radiation, Scattering, and 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 4610/4620 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

EC 3310 Optimal Estimation (3-2)

EC 3320 Optimal Control Systems (3-2)

EC 4350 Nonlinear Systems (3-2)

At least two of:

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

EC 4320 Design of Robust Control Systems (3-2)

EC 4330/4340 Navigation, Missile, and Avionics Systems (3-2)

EC 4360 Adaptive Control Systems (3-2)

Power Systems

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)

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Joint Services Electronic Warfare

EC 3700 Introduction to Joint Services Electronic Warfare (3-2)

At least four of:

EC 3310 Optimal Estimation (3-2)
EC 4210 Electro-Optic Systems Engineering (3-0)
EC 4330/4340 Navigation, Missile, and Avionics Systems (3-2)
EC 4560 Communications ECCM (3-2)
EC 4610/4620 Radar Systems (3-2)
EC 4630 Radar Cross Section Prediction and Reduction (3-0)
EC 4680/4690 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

EC 3400 Digital Signal Processing (3-1)
EC 3410 Discrete-Time Random Signals (4-0)
EC 3420 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 4470 Adaptive Signal Processing (3-1)
EC 4480 Image Processing and Recognition (3-2)
EC 4490 Ocean Acoustic Tomography (3-0)

Signals Intelligence

EC 3850 Computer Communications Methods (3-1)
EC 3750 SIGINT Systems I (3-2)

Three required courses in ONE of the following sub-options:

Communications Engineering:

EC 3500 Analysis of Random Signals (4-0)
EC 3510 Communications Engineering (3-1)
EC 4550 Digital Communications (4-0)

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or

Signal Processing Systems:

EC 3400	Digital Signal Processing	(3-1)
EC 3410	Discrete-Time Random Signals	(4-0)
EC 4570	Decision and Estimation Theory	(4-0)

or

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	(3-2)
EC 3420	Statistical Digital Signal Processing	(3-1)
EC 3550	Fiber Optic Systems Fundamentals	(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 Architectures	(3-2)
EC 4420	Modern Spectral Analysis	(3-1)
EC 4560	Communications ECCM	(3-2)
EC 4580	Information Theory	(4-0)
EC 4590	Communications Satellite Systems Engineering	(3-1)
EC 4700	Advanced Topics in Information Warfare	(3-0)
EC 4750	SIGINT Systems II	(3-2)

One of the following graduate courses in Mathematics:

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

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

Officer-student

Date

Approval Signatures:

ECE Ph.D. Committee member

Date

ECE Department Chairman

Date

Requirements set: May 1994
Effective date: October 1994
Minor revisions: 18 May 1994