Department of Electrical and Computer Engineering
Checklist for PH.D. Minor in ECE

Student name: ___________________________; email: ___________________________

Month/year enrolled: ____________________; Graduation date: ____________________

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: __________________________

We certify that this student has met the minimum requirements for a Ph.D. Minor in ECE.

Signatures:

________________________
ECE Ph.D. Committee Chair, Date

________________________
ECE Department Chair, Date
### Program of Study: (Select a specialty, each specialty has 4 required courses)

#### List of Specialties

**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)

**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:**
- 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)

**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 Technology (3-2)
- EC 4220 Introduction to Analog VLSI (3-1)
- EC 4230 Reliability Issues for Military Electronics (3-1)

**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)

**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)

**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)

**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)