Master of Science in Computer Engineering
Degree Plan

Name: ________________________________  Student number: _________________________

An ECE graduate student interested in a Master's Degree in Computer Engineering must submit this
degree plan by the midterm of their first semester to the ECE office. Five-year students must submit the
degree plan with their 5-year program application. Your academic advisor or the default track advisor
must approve and sign this form prior to submission. The default advisors are shown on the back.
Changes to your degree plan can be made by submitting an updated form, approved by your academic
advisor or the track advisor.

Please refer to the course requirements on the back of this form and list below: the track, elective, and
thesis courses in the order in which you plan to take them, making note of prerequisites.

ECE office fax: 610-519-4436. ECE office phone: 610-519-4970.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Year</th>
<th>Course</th>
<th>Name</th>
<th>Prerequisite</th>
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<th>E</th>
<th>IT</th>
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</table>

Total number of courses: __ __ __

☐ Thesis option must be at least __ __ __

☐ Nonthesis option must be at least 5 2 3

Advisor signature: __________________________  Date: ________________

Abbreviations:
F  Fall semester  T  Track course requirement
S  Spring semester  E  Electives
M  Summer semester  IT  Independent study and Theses
Master of Science in Computer Engineering
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Jan. 2017

A minimum of 30 semester credit hours must be successfully completed for the Master of Science in Computer Engineering (MSCpE) Degree. MS CpE students choose between the thesis and non-thesis options and select one of the two tracks below. The course requirements are summarized as follows.

<table>
<thead>
<tr>
<th></th>
<th>Thesis Option</th>
<th>Non-Thesis Option</th>
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</thead>
<tbody>
<tr>
<td>CpE Track Courses</td>
<td>15 Credits</td>
<td>15 Credits</td>
</tr>
<tr>
<td>Electives</td>
<td>6 Credits</td>
<td>15 Credits</td>
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<tr>
<td>Independent Study</td>
<td>3 Credits</td>
<td>NA*</td>
</tr>
<tr>
<td>Thesis</td>
<td>6 Credits</td>
<td>NA</td>
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<tr>
<td>Total Credit Hours</td>
<td>30 Credits</td>
<td>30 Credits</td>
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</table>

* Graduate Students electing the non-thesis option may substitute three credits of independent study for one elective course.

**Track A: Computing Hardware & Software**
(take at least 5 courses)

Default Advisor: X. Maggie Wang
<xwang@villanova.edu>

- ECE 8405 – Computer Organization & Design
- ECE 8410 – Trusted Computing
- ECE 8425 – Microprocessors & Microcomputers
- ECE 8440 – Hardware System Design & Modeling
- ECE 8448 – Embedded Systems Architecture
- ECE 8455 – Advanced Digital Design Using FPGAs
- ECE 8460 – VLSI Design
- ECE 8473 – UNIX and C Programming
- ECE 8490 – Theory and Practice of Computing Applications

**Track B: Computer Networks/Security**
(take at least 5 courses)

Default Advisor: Rick Perry
<richard.perry@villanova.edu>

- ECE 7428 – Computer Communication Networks
- ECE 8408 – Mobile Computing & Wireless Network
- ECE 8473 – UNIX and C Programming
- ECE 8476 – Cryptography & Network Security
- ECE 8480 – Cloud Computing
- ECE 8482 – Semantic Web
- ECE 8484 – Cybersecurity Threats and Defense
- ECE 8486 – Ethical Hacking
- ECE 8488 – Security Risk Assessment and Management

**Electives for both tracks (or with advisor’s approval)**

Any course from MS CpE Track B may be used as an elective for MS CpE Track A, and vice versa. Any course not listed here needs advisor’s written approval. The CSC and MAT courses are offered by the Department of Computing Sciences and Department of Mathematics & Statistics respectively.

- ECE 7710 – Real-Time Digital Signal Processing
- ECE 8007 – Matrix Theory
- ECE 8231 – Digital Signal Processing
- ECE 8234 – Image Processing
- ECE 8247 – Multimedia Systems
- ECE 8445 – Advanced Computer Architecture
- CSC 8301 – Design and Analysis of Algorithms
- CSC 8410 – Operating Systems Concepts
- CSC 8470 – Computer Graphics
- CSC 8490 – Database Systems
- CSC 8505 – Compiler Construction
- CSC 8530 – Distributed Systems
- CSC 8540 – Software Engineering
- CSC 8570 – User/System Interface
- MAT 7770 – Number Theory
- MAT 8435 – Mathematical Modeling
- MAT 8650 – Abstract Algebra