

# Memorandum

Date: August 13, 2012  
To: Potential EE/CompE double majors  
From: Michael Hoffman, Undergraduate Advisor, Electrical Engineering  
Re: Computer Engineering (CompE) and Electrical Engineering (EE) Dual Major

This document is a revision of an earlier version by Prof. A. John Boye that attempts to incorporate curricular changes (ACE GenEd, EE and CompE changes, etc.) that have occurred since Prof. Boye first drafted the document. Following are the requirements for a major in Electrical Engineering (ELEC), assuming that all the requirements for a major in Computer Engineering (CompE), as specified in the 2012-2013 CompE Advising Brochure™, have been met.

The following are common to both degrees and therefore the requirements have been met for the ELEC major by meeting the requirements for the CompE major.

| <b>Courses</b>                              | <b>Hours</b> |  |
|---|--------------|--|
| MATH 106, 107, 208, 221                     | 17           |  |
| CHEM 109 or PHYS 213                        | 4            |  |
| JGEN 200 plus either JGEN 300 or COMM 286   | 6            |  |
| PHYS 211, 212                               | 8            |  |
| ACE outcomes 5, 6, 7, and 9                 | 12           |  |
| ELEC 215, 235, 216, 236, 304, 305, 316, 370 | 20           | CSCE 335 and ELEC 370 are cross-listed |
| <b>SUBTOTAL</b>                             | <b>67</b>    |  |

The following are required for a CSCE major and will also count for the ELEC major:

|                         |           |                                |
|-------------------------|-----------|--------------------------------|
| CSCE 155E               | 3         | Computer Programming Electives |
| MATH 314                | 3         | Additional Technical Electives |
| CSCE 310, 340, 351, 361 | 12        | Additional Technical Electives |
| <b>SUBTOTAL</b>         | <b>18</b> |                                |

The following are required for the CompE major and will be substituted for the following required ELEC major courses:

|   |           |  |
|---|-----------|--|
| CSCE 235, 156 substitute for ELEC 121, 122                  | 6         |  |
| CSCE 236 subst. ELEC 222 (or vice versa)                    | 3         | (this would hold for double majors only) |
| CSCE 488/489 substitute for ELEC 494/495<br>(or vice versa) | 5         |  |
| <b>SUBTOTAL</b>   | <b>14</b> |  |

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|              |           |  |
|--------------|-----------|--|
| <b>TOTAL</b> | <b>99</b> |  |
|--------------|-----------|--|

This leaves 27 hours remaining for an ELEC major. By careful selection of the 9 hours of non-CSCE (with the VLSI Focus – without the Focus only 6 of these 9 will count) technical electives and the free elective for the CompE major, this can be decreased as follows:

|                                |           |  |
|--------------------------------|-----------|--|
| ELEC xxx – CompE free elective | 3         | Elect. Engr. offered Tech. Elec.                             |
| ELEC xxx - CSCE tech electives | 9         | Elect. Engr. offered Tech. Elec.<br>(must satisfy EE reqt's) |
| <b>SUBTOTAL</b>                | <b>12</b> |  |

By carefully selecting the electives for the CompE major as given above, this leaves 15 additional hours that need to be taken for the ELEC major as follows:

|                                       |           |                                 |
|---------------------------------------|-----------|---------------------------------|
| PHYS 222                              | 1         |                                 |
| PHYS 213 or CHEM 109 or BIOS 101/101L | 4         | Additional ELEC Science req't   |
| ELEC 306                              | 3         | Required course for ELEC majors |
| ELEC 307 and 317                      | 4         | Junior Level ELEC labs          |
| ACE outcome 8*                        | 3         | (note: this can be avoided)     |
| <b>SUBTOTAL HOURS LEFT over CompE</b> | <b>15</b> |                                 |

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**Total Hours for ELEC program**                      **126**

\* If EE/CompE Dual majors take CSCE 488, then CSCE 230 counts with CSCE 488 as ACE outcome 8.

### The “Flip Side”

CompE requirements that do not count towards ELEC major given above substitutions:

|                                   |                     |                                     |
|-----------------------------------|---------------------|-------------------------------------|
| CSCE 156                          | 1                   | fourth of four credits              |
| CSCE 251                          | 1                   | Unix Programming                    |
| CSCE 230 and 230L                 | 4                   | (can be reduced to 1 – see * above) |
| CSCE 462                          | 3                   | Required course for CompE majors    |
| CSCE xxx                          | 3, 6 or 9**         | req'd CSCE offered Tech. Elective   |
| <b>EXTRA HOURS CSCE over ELEC</b> | <b>12, 15 or 18</b> |                                     |

\*\* if the VLSI Focus is taken as few as 3 or 6 additional credits, without Focus this is 9 credit hours

So, I would assert the following answer to the question:

Q: “How much longer would it take me to get dual degrees in ELEC and CompE?”

A: “About 15 additional credits – it can be reduced to 12, with CSCE 230 as ACE 8, along with taking the CompE senior design sequence. If any substitution courses have been taken as the original ELEC or CompE versions, this will add to the total additional credits. So if you start at the beginning of your career, it can be one additional semester, if you start later, it's usually a year.”

The above analysis yields the fewest additional credits if the CompE VLSI Focus is chosen. This can be easily accommodated with the choice of PHYS 213/223 with either CHEM 109 or BIOS 101&101L.