Alternative Roadmap
For Transfer Students:
Napa Valley College

Approved on: 3/10/2019

EE Program @ Sonoma State University
Why Electrical Engineering @ Sonoma State University?

**EE Department @ SSU:**
- The Engineering Department is distinguished by its state-of-the-art laboratories and strong ties to the local high-tech industries. The Department highly focuses on hands-on and project-based learning and it offers exciting paid research and training opportunities to all engineering students. We offer two degrees: undergraduate EE and Master of Science degree in Computer and Engineering Science (MS-CES).

**EE Degree:**
- Our undergraduate electrical engineering (EE) program is best known by its small-classes, project-oriented courses, friendly and caring faculty, and its commitment to prepare its diverse students population for immediate employment after graduation.

**MSCES Degree:**
- The Master of Science degree in Computer and Engineering Science (MS-CES) is unique in interconnecting electrical engineering hardware and computer software. The 32-unit curriculum blends relevant academic coursework with practical engineering experience and is designed for professionals holding bachelor degrees in diverse areas of engineering and sciences who desire to further their career paths. The program is recognized as a professional Science Masters (PSM) program by the Council of Graduate Schools.

**Careers:**
- Graduates from our EE and MS-CES programs find high-paying career opportunities in various industries and become involved in designing wind and solar energy systems, manufacturing electronics devices, developing communications devices, designing computer circuits, building wearable electronics, developing electric cars, and much more. Many of our alums work for big names, including Keysight, Parker Hannifin, Xilinx, Broadcom, Disney, Fitbit, PG&E, Google, Tesla, and Apple.
SSU has the highest 2 yr Transfer Grad Rates compared to other CSU Campuses (as a percentage, sorted by 2016 cohort rate)

<table>
<thead>
<tr>
<th>Campus</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonoma</td>
<td>51.7</td>
<td>55.3</td>
<td>60.4</td>
<td>62.6</td>
</tr>
<tr>
<td>San Diego</td>
<td>39.3</td>
<td>43.3</td>
<td>47.8</td>
<td>51.3</td>
</tr>
<tr>
<td>Monterey Bay</td>
<td>34.2</td>
<td>36.6</td>
<td>41.9</td>
<td>46.6</td>
</tr>
<tr>
<td>Channel Islands</td>
<td>42.3</td>
<td>37.6</td>
<td>41.1</td>
<td>44.7</td>
</tr>
<tr>
<td>San Francisco</td>
<td>36.5</td>
<td>37.2</td>
<td>41.1</td>
<td>44.7</td>
</tr>
<tr>
<td>East Bay</td>
<td>37</td>
<td>35.2</td>
<td>38.7</td>
<td>43.9</td>
</tr>
<tr>
<td>Bakersfield</td>
<td>36.5</td>
<td>42.4</td>
<td>36.7</td>
<td>41.5</td>
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<tr>
<td>Long Beach</td>
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<td>37.6</td>
<td>38.5</td>
<td>41.1</td>
</tr>
<tr>
<td>San Bernardino</td>
<td>33</td>
<td>35.2</td>
<td>36.8</td>
<td>39.9</td>
</tr>
<tr>
<td>Chico</td>
<td>30.8</td>
<td>32.8</td>
<td>32.4</td>
<td>39</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>32.5</td>
<td>35.1</td>
<td>36</td>
<td>38.7</td>
</tr>
<tr>
<td>*CSU System</td>
<td>30.6</td>
<td>32.6</td>
<td>35.1</td>
<td>38</td>
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<tr>
<td>Humboldt</td>
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<td>28.1</td>
<td>31.2</td>
<td>37.9</td>
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<tr>
<td>Sacramento</td>
<td>25.6</td>
<td>27.1</td>
<td>34.6</td>
<td>37.4</td>
</tr>
<tr>
<td>Dominguez Hills</td>
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<td>29.9</td>
<td>32.5</td>
<td>36.2</td>
</tr>
<tr>
<td>Fullerton</td>
<td>31.8</td>
<td>36.1</td>
<td>37.5</td>
<td>36.2</td>
</tr>
<tr>
<td>Northridge</td>
<td>30.7</td>
<td>31.2</td>
<td>33.6</td>
<td>35.4</td>
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<tr>
<td>San Luis Obispo</td>
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<td>36.2</td>
<td>34</td>
<td>35.3</td>
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<td>Pomona</td>
<td>16.8</td>
<td>18.1</td>
<td>23.9</td>
<td>32.3</td>
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<tr>
<td>San Jose</td>
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<td>23.3</td>
<td>26.7</td>
<td>31.9</td>
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<tr>
<td>Fresno</td>
<td>22.2</td>
<td>25.2</td>
<td>27.6</td>
<td>29.9</td>
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<tr>
<td>Los Angeles</td>
<td>24.5</td>
<td>33.8</td>
<td>25.7</td>
<td>29.9</td>
</tr>
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</table>
Electrical Engineering Roadmap at SSU

See the roadmap: [http://www.sonoma.edu/engineering/bsee/bsee_roadmap.pdf](http://www.sonoma.edu/engineering/bsee/bsee_roadmap.pdf)

Should NOT take more than 12 units when taking Senior Design.
EE Majors Can Minor in CS or MATH

- **Minor in CS**: [CS 210 Introduction to Unix](#) (1) + [CS 215 Programming II](#) (4) + TAKE TWO upper-division CS courses: (Total of 11-13 units)

<table>
<thead>
<tr>
<th>CS Course- UD*</th>
<th>Units</th>
<th>Pre-Req.</th>
<th>Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 355</td>
<td>4</td>
<td>CS115 &amp; CS 215</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>CS 370</td>
<td>4</td>
<td>CS115 &amp; CS 215</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>CS 351</td>
<td>4</td>
<td>CS115 &amp; EE 210</td>
<td>Fall/Spring</td>
</tr>
</tbody>
</table>

- **Minor in Math**: Take one more upper-division Math course – See course listing ([https://www.sonoma.edu/academics/catalog](https://www.sonoma.edu/academics/catalog))

- **Major in Math**: Take TWO more upper-division Math courses – See course listing ([https://www.sonoma.edu/academics/catalog](https://www.sonoma.edu/academics/catalog))

- [https://www.cs.sonoma.edu/curriculum/programs.htm](https://www.cs.sonoma.edu/curriculum/programs.htm)
Other Majors Can Minor in EE

- **CS Majors Minoring in EE (Total of 9 units):**

<table>
<thead>
<tr>
<th>EE Course</th>
<th>Units</th>
<th>Pre-Req.</th>
<th>Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 110</td>
<td>1</td>
<td>None</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>EE 220/EE 221</td>
<td>4</td>
<td>EE 110/Math 211</td>
<td>Fall</td>
</tr>
<tr>
<td>EE 230/EE 231 or EE 310</td>
<td>4</td>
<td>EE 220/221 &amp; PHYS 214 CS 252</td>
<td>Spring</td>
</tr>
</tbody>
</table>

- **MATH Majors Minoring in EE (Total of 14 units):**

<table>
<thead>
<tr>
<th>EE Course</th>
<th>Units</th>
<th>Pre-Req.</th>
<th>Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 110</td>
<td>1</td>
<td>None</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>EE 112</td>
<td>1</td>
<td>None</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>EE 220/EE 221</td>
<td>4</td>
<td>EE 110/Math 211</td>
<td>Fall</td>
</tr>
<tr>
<td>EE 230/EE 231 or EE 310</td>
<td>4</td>
<td>EE 220/221 &amp; PHYS 214 EE 210</td>
<td>Spring</td>
</tr>
<tr>
<td>EE 210</td>
<td>4</td>
<td>EE 220/221 &amp; PHYS 214</td>
<td>Spring</td>
</tr>
</tbody>
</table>

Note: All EE courses require C or better to pass.

**NOTE:** CS and Math student Minoring in EE have direct path to the MSCES program and can received Master of Science degree in Computer and Engineering Science (MS-CES) at Sonoma State University degree in 3 semesters. Learn more: [http://web.sonoma.edu/engineering/msces/](http://web.sonoma.edu/engineering/msces/)
Take Advantage of Our 4+1 & Earn Your Master’s Degree in ONE YEAR!

4+1 BS-EE Plus MS-CES
(Bachelor of Science in Electrical Engineering Plus Master of Science in Computer and Engineering Science)

1st Year
Fall (16)
- EE 110 (1) intro to Engineering Lab
- CS 115 (4) Program I
- PHYS 114 (4) Intro. to Physics I
- ENGL 101 (4)

Spring (16)
- EE 112 (1) Fund of Logic Design Lab
- MATH 211 (4) Calculus II
- PHYS 214 (4) Intro. to Physics II
- GE (6)

2nd Year
Fall (16)
- EE 210 (4) Intro. to Logic Design Lab
- MATH 241 (4) Calculus III
- PHYS 261 (4) Calculus IV
- GE (4)

Spring (16)
- EE 220 and 221 (4) Elect. Circuits w/ lab
- MATH 242 (4) Linear Systems Theory
- PHYS 116 (1) Physics I Lab
- GE (4)

3rd Year
Fall (16)
- EE 130 (2) Electronics II
- EE 330 (3) Electromag Theory & Applic

Spring (16)
- EE 410 (3) Adv. Program, Modeling & Simulation
- MATH 261 (4) Calculus IV
- ENGL 102 (4)
- GE (4)

4th Year
Fall (14)
- EE 340, (3) Analog & Digital Commun, w/ lab
- EE 421 (3) Senior Design Project
- EE 492 (1) Thesis: Proposal

Spring (14)
- EE 430 (3) Intro. Optic. Fiber Commun.
- EE 493 (3) Intro. Networking w/ lab
- EE 492 (1) Engg. Science Colloquium

5th Year
Fall (13)
- EE 443 (3) Senior Design Project
- BUS 392 (3) Entrepreneurship & New Venture Creation

Spring (10)
- EE 465 and 465L (3) Intro. Networking w/ lab
- MSCES Elective (3)
- CES 599 (1) Gradate Seminar

Summer (2)
- GE (3)

Summer (1)
- GE (3)

Summer (1)
- GE (3)

Summer (1)
- GE (3)

Summer (1)
- GE (3)

* See list of approved EE electives.
** Can be taken in either of Summers after the 4th year.

MS-CES
## Course Mapping Between NVC & SSU

See [www.assist.org](http://www.assist.org) for more information

<table>
<thead>
<tr>
<th>GE Area</th>
<th>Class at Napa Valley</th>
<th>Units</th>
<th>Transfers to SSU</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COMS 215 – Intro. to Computer Programming</td>
<td>3</td>
<td>CS 115 – Programming I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Engri 110 – Intro to Engineering</td>
<td>3</td>
<td>ES 110 – Intro to Engineering</td>
<td>1</td>
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<tr>
<td></td>
<td>--N/A--</td>
<td></td>
<td>EE 112 – Fundamentals of Digital Logic Design</td>
<td>1</td>
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<tr>
<td>B4</td>
<td>Math 120 – Calculus, First Course</td>
<td>5</td>
<td>Math 161 – Differential &amp; Integral Calc I</td>
<td>4</td>
</tr>
<tr>
<td>B4</td>
<td>Math 121 – Calculus, Second Course</td>
<td>5</td>
<td>Math 211 – Differential &amp; Integral Calc II</td>
<td>4</td>
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<tr>
<td></td>
<td>Math 221 – Multivariable Calculus</td>
<td>5</td>
<td>Math 261 – Multivariable Calculus</td>
<td>4</td>
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<tr>
<td></td>
<td>Math 222 – Diff. Eq.</td>
<td>3</td>
<td>Math 241 – Linear Algebra with app. in diff. eq.</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Math 220 – Intro. to Linear Algebra</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>Phys 140 – Physics for Scientists and Engineers 1</td>
<td>4</td>
<td>Phys 114 – Introduction to Physics I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Phys 116 – Introductory Laboratory Experience</td>
<td>1</td>
</tr>
<tr>
<td>B1</td>
<td>Phys 240 – Physics for Scientists and Engineers 2</td>
<td>4</td>
<td>Phys 214 – Introduction to Physics II</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Phys 216 – Introductory Laboratory</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES 221 – Electric Circuits Lab</td>
<td>1</td>
</tr>
</tbody>
</table>
Plan Ahead.....

This is the sequence recommended for students planning to transfer from Napa Valley to Sonoma State University to pursue a B.S. in Electrical Engineering. Napa Valley and SSU have formed a partnership to facilitate this pathway. Napa Valley students cross-enroll in SSU classes prior to transfer and continue to pay at the JC rates (including BOG fee waivers).

Math 120 Calculus 1 (5 Units)
Math 121 Calculus 2 (5 Units)
Math 221 Multi. Calc (5 Units)
Math 222 Diff Equ (3 Units)
Math 220 Linear Algebra (3 Units)
Phys 140 Physics 1 & lab (5 Units)
Phys 240 Elec & Mag (4 Units)
Math 220 Linear Algebra (3 Units)
ENGI 110 Intro to Engr (3 Units)
COMS 215 Programming (3 Units)
ENGI 160 Programming with Matlab (3 Units)
GE A1 (3 Units)
GE A2 (4 Units)
SSU EE 112 Fun Digital (1 Unit) Take at SSU

Important Notes:
• GE is lower priority than the core courses shown here. Students will need 60 transferable semester units, 30 must be GE and must include A1, A2, A3 and B4.
• Information on cross-enrollment is available at: https://web.sonoma.edu/registration/records/pdf/crossenroll.pdf
• If also interested in other universities & majors, be aware they will have different course requirements. Refer to www.assist.org.
FALL TRANSFER
We highly recommend all transfer students complete the following courses marked by X prior to transferring to EE@SSU.

Interested students can co-enroll in ES 210 at SSU during their last semester at NVC.

SEE NEXT SLIDE ABOUT CONCURRENT ENROLLMENT
Transfer Students who DID co-enroll in ES 210 must follow the following roadmap at SSU –

Expected Gradation in 5 Semesters

Transfer Students who DID NOT co-enroll in ES 210 must follow the following roadmap at SSU –

Expected Gradation in 5 Semester

Final Thoughts…

• If you are searching for an EE Program,
• If you like small classes and hands-on activities,
• If you like to use real design tools and instruments,
• If you like to build cool & meaningful projects,
• If you like to graduate timely,
• If you like to challenge yourself and let your imagination go wild......

“Electrical Engineering Program @ Sonoma”
Learn Engineering by Doing it!
Listen to What Other Students Say About EE @ SSU

Watch the VIDEO:
https://www.youtube.com/watch?v=pXzgVs2QhZU
Join Us!

Any Questions?

Please Join Us for a Guided Lab Tour Around the Engineering Complex!

Contact:
farid.farahmand@sonoma.edu
For more details about Engineering at Sonoma, visit: www.sonoma.edu/engineering