Accelerated Path to
The Master of Science (M.S.) in Computer and Engineering Science
at Sonoma State University

Objective:
The **Accelerated Path to MS-CES (MSCES)** allows EE students to transfer and count two undergraduate EE courses towards completing MSCES program degree requirements. As a result, interested students can potentially complete the MSCES program requirements in one year beyond receiving their B.S degree in EE.

Motivation:
The **Accelerated Path to MS-CES (XPtoMSCES)** is not a new program. Rather, it is a pathway to have a jumpstart on graduate studies. Through the XPtoMSCES students apply 6 units of undergraduate credit towards the MSCES and are required to complete additional 26 CES units, beyond the B.S. EE degree. The main motivations for proposing the accelerated pathway are the following:

1. Providing a fast track pathway to graduate school for qualified undergraduate students;
2. Creating equity for undergraduate EE students interested in graduate studies and encouraging them to pursue graduate studies;
3. Improving the enrollment in the MSCES program without any need for additional resources.

Benefits for Students:
The accelerated pathway to MSCES provides highly motivated current Electrical Engineering undergraduates an opportunity to earn a Master of Science (M.S.) in Computer and Engineering Science (CES) degree in one additional year beyond their B.S. degree. To do so, the qualified applicants can take 6-units of additional undergraduate 300/400--level EE courses (shown in Table A.2). As such, students need to graduate with 126 units of undergraduate units (as opposed to the typical 120 units). The additional two courses, must be approved as Provisional Graduate Coursework (PGC) by the Engineering Department.

All students pursuing the MSCES degree through the accelerated pathway are required to formally apply to the program and meet the admission criteria by the EE Department and the University. As such, there is no guarantee that all interested students will be admitted to the MSCES program, even if they have already taken two additional courses as an undergraduate.

Students who initially planned to apply for the MSCES program and took two additional courses but later changed their plan and decided not to apply for MSCES program can use the additional undergraduate units (beyond 120 units) towards other undergraduate programs following the approval of the program. For example, an EE major can apply for a minor in Computer Science (CS) by taking two CS courses from approved non-EE Electives plus CS 210 (1 unit) and CS 215...
Furthermore, these students can also earn a minor in Math by taking one extra Math course. A course may not be double counted towards both B.S. and M.S. degrees.

Scholarship Opportunities:
All Junior standing students interested in applying for MSCES through the accelerated pathway are highly encouraged to also apply for the following opportunities:
1- McNair Scholars Program: should a student get accepted to the McNair Scholars Program, the student can be eligible to receive a stipend of up to $2,800 upon completion of the research project.
2- The Louis Stokes Alliance for Minority Participation (LSAMP): Provides reimbursement for required STEM textbooks.

Graduation Requirements:
All students receiving a MSCES Master’s degree from SSU must fulfill the following requirements:
- Minimum of 23 units in residence at SSU;
- Minimum of 32 total units (including transferred courses and provisional Graduate credit taken as an undergraduate);
- Minimum of 15 units at 500 level graduate work;
- Maximum of 9 units of Transfer, Correspondence, Extension, etc.;
- Minimum average of 3.00 GPA on the Completion of Requirements Form - no course with a grade lower than a B- will count for graduate work.

All SSU students completing their Thesis must receive clearance of the Thesis from the Graduate Studies office. In addition, all CES courses listed on the Completion of Requirements form must be met within 7 year limit. Furthermore, no more than one-third of the units can be in non-traditional grading mode.

Admission:
The accelerated pathway to MSCES program is available only to current SSU EE undergraduates. In order to be admitted to the MSCES program students must have a minimum of 2.75 EE Major GPA. Interested students should submit the following during their first semester of Junior year:
1- A statement of interest indicating why the student is interested in pursuing the MSCES.
2- The internal application (Appendix C) specifying the two EE courses that will be counted as Provisional Graduate Coursework (PGC).

All applications must be submitted to the Engineering Department.

Fees:
There is no fee for applying for accelerated pathway to MSCES program (add email address here). Additional EE courses at the undergraduate level can be taken and paid for like any other regular stateside EE courses.

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1 For more information see [http://web.sonoma.edu/engineering/bsee/cs_math_minor.html](http://web.sonoma.edu/engineering/bsee/cs_math_minor.html)
2 See note 2, above.
3 For more information on McNair Scholars Program please see [http://web.sonoma.edu/mcnair/](http://web.sonoma.edu/mcnair/).
4 For more information about LSAMP please refer to [https://web.sonoma.edu/math/lsamp/](https://web.sonoma.edu/math/lsamp/)
Grade Requirements:
All applicants must complete PGC courses with a grade of B- or higher.

Application Process Timeline:
The table below shows the application timeline for applying to the accelerated pathway to the MSCES program. Any EE student interested in pursuing XPtoMSCES must indicate his/her intention no later than the Junior year.

<table>
<thead>
<tr>
<th>Year- 1&amp;2</th>
<th>Year-3</th>
<th>Year-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complete one additional GE course beyond shown in 4-year BSEE roadmap</td>
<td>• Submit XPtoMSCES statement of interest to the Department • Complete two electives (EE or from Approved Non-EE Electives – see Appendix A)</td>
<td>• Apply to M.S. in CES program through Cal State Apply • Complete two additional EE courses – See Appendix A</td>
</tr>
</tbody>
</table>

Total Units & Cost:
Table 1 compares the coursework required for the X-MSCES program and the traditional (existing) MSCES tracks, as well as their associated total cost.

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Total Units</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>26</td>
</tr>
<tr>
<td>Total Cost ($500/Unit)</td>
<td>$19,200</td>
<td>$19,200</td>
<td>$19,200</td>
<td>$15,600</td>
</tr>
</tbody>
</table>

Suggested Roadmap for Students interested to apply for MSCES through the Accelerated Pathway:
Through the accelerated pathway students admitted to the MSCES program require completion of 26 units. This is in addition to the 6 units of undergraduate courses that the students transferred from their undergraduate year (marked as PGC – shown in Table A.2). The following is a sample roadmap to complete the MSCES requirements, assuming the student starts the program in Fall:

- First Semester (total of 12 units; $7200)
  - CES 594 – Directed reading (3 Units)
  - CES 400 (Linear Systems)
  - CES 514 (Data Mining)
  - CES xxx (choose from Table A.1 or A.2 in Appendix A)
- Second Semester (total of 10 units; $6000)
  - CES 597 - Graduate Seminar (1 Unit)
  - CES 595: Research & Thesis (3 Units)
  - CES xxx (3 Units) - (choose from Table A.3 in Appendix A)
  - Technical Elective (3 Units) - (choose from Table A.2 in Appendix A)
- Summer Semester (total of 4 units; $2400)
Potential Barriers for Students:
Students who plan to take two additional undergraduate courses to be transferred and counted towards the MSCES program must plan ahead and consider taking some GE courses over summer. This can be challenging for students, as they have to pay more for summer courses. However, overall, summer unit courses at SSU cost about $340, whereas a regular MSCES unit costs $600.

Important Links:
For more information about the MSCES program please see http://web.sonoma.edu/engineering/msces/.
Appendix A – Coursework

The table below shows the non-EE electives that undergraduate EE students can take in order to complete their EE requirements. Note that this only applies to students who have submitted their letter of interested to take advantage of accelerated pathway to MSCES program.

<table>
<thead>
<tr>
<th>Table A.1</th>
<th>Units</th>
<th>Pre-Requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved Non-EE Electives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS 351: Computer Architecture</td>
<td>4</td>
<td>CS 115 &amp; CS 210</td>
</tr>
<tr>
<td>CS 355: Database Management System</td>
<td>4</td>
<td>CS 115 &amp; CS 215</td>
</tr>
<tr>
<td>CS 370: Software Design &amp; Dev</td>
<td>4</td>
<td>CS 115 &amp; CS 215</td>
</tr>
<tr>
<td>Math 431: Partial Differential</td>
<td>3</td>
<td>MATH 241</td>
</tr>
<tr>
<td>Math 441: Operations Research</td>
<td>3</td>
<td>EE 345 &amp; MATH 241</td>
</tr>
<tr>
<td>Math 470: Mathematical Models</td>
<td>3</td>
<td>MATH 211</td>
</tr>
<tr>
<td>Phys 314: Introduction to Physics III</td>
<td>4</td>
<td>PHYS 214 &amp; MATH 261</td>
</tr>
<tr>
<td>EE 498: Engineering Practicum $</td>
<td>3</td>
<td>Junior Standing</td>
</tr>
</tbody>
</table>

Courses approved as PGA. These EE courses can be transferred and counted towards MSCES degree requirements:

<table>
<thead>
<tr>
<th>Table A.2</th>
<th>Units</th>
<th>Pre-Requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved EE Courses as PGC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 465 &amp; EE 465L</td>
<td>3</td>
<td>E 442</td>
</tr>
<tr>
<td>E 442</td>
<td>3</td>
<td>EE 400</td>
</tr>
</tbody>
</table>
Appendix A – MSCES Typical Roadmap
The following tables show typical roadmap for regular students seeking MSCES degree plan.

<table>
<thead>
<tr>
<th>PLAN A - Accelerated Option - 6-Unit Thesis Option</th>
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</thead>
<tbody>
<tr>
<td><strong>Fall 1</strong></td>
</tr>
<tr>
<td>CES xxx</td>
</tr>
<tr>
<td>CES 400</td>
</tr>
<tr>
<td>CES 543</td>
</tr>
<tr>
<td>CES 440</td>
</tr>
<tr>
<td><strong>Spring 1</strong></td>
</tr>
<tr>
<td>CES 544</td>
</tr>
<tr>
<td>CES 580</td>
</tr>
<tr>
<td>CES 597</td>
</tr>
<tr>
<td>CES 522</td>
</tr>
<tr>
<td><strong>Summer</strong></td>
</tr>
<tr>
<td>CES 591</td>
</tr>
<tr>
<td>CES 599</td>
</tr>
<tr>
<td><strong>Fall 2</strong></td>
</tr>
<tr>
<td>CES 599</td>
</tr>
<tr>
<td>CES 520</td>
</tr>
</tbody>
</table>

Below, is a typical course plan designed for admitted students to the MSCES program through the accelerated pathway:

- First Semester **(total of 12 units; $7200)**
  - CES 594 – Directed reading (3 Units)
  - CES 400 (Linear Systems)
  - CES 514 (Data Mining)
  - CS 351: Computer Architecture (3 Units)
- Second Semester **(total of 10 units; $6000)**
  - CES 597 - Graduate Seminar (1 Unit)
  - CES 595: Research & Thesis (3 Units)
  - BUS 592: Business Entrepreneurship (3 Units)
  - CES 542: Digital Signal Processing (3 Units)
- Summer Semester **(total of 4 units; $2400)**
  - CES 595: Research & Thesis (3 Units)
  - CES 591 - Internship (1 Unit)
Appendix C –

Internal Application for Accelerated Pathway to MSCES

Department of Engineering Science
Sonoma State University

Fill this form and submit at the Department front office

Date: __________

Name (First, Middle Initial, Last): ________________________________

SSU ID: ______________

SSU Email Address: ______________

Current Standing (Sophomore/Junior/Senior): _______________________

SSU GPA: ______________

EE Major GPA: ____________ (Use the worksheet on the back of this application)

Expected Graduation Date (Month and Year): ______________

Students Signature: ________________________________

For Official Use Only

Application Received (Date): ______________

Committee Review (Date): ______________

Committee Decision (Approved/Not Approved & any comments): ______________

____________________________________

____________________________________

____________________________________

Committee Signatures: ________________________________

Department Chair Signature: ________________________________

Date Student Notified: ______________

NOTE: APPLYING TO THE ACCELERATED PATHWAY TO THE MSCES PROGRAM DOES NOT GUARANTEE ADMISSION TO THE MSCES PROGRAM.