

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

(4 units)¹. Furthermore, these students can also earn a minor in Math by taking one extra Math course². 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 project³.
- 2- The Louis Stokes Alliance for Minority Participation (LSAMP): Provides reimbursement for required STEM textbooks⁴.

Graduation Requirements:

All students receiving a MSCES Master's degree from SSU must fulfil 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.

¹ For more information see 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/>.

⁴ For more information about LSAMP please refer to <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.

Year- 1&2	Year-3	Year-4
<ul style="list-style-type: none">Complete one additional GE course beyond shown in 4-year BSEE roadmap	<ul style="list-style-type: none">Submit XPtoMSCES statement of interest to the DepartmentComplete two electives (EE or from Approved Non-EE Electives – see Appendix A)	<ul style="list-style-type: none">Apply to M.S. in CES program through Cal State ApplyComplete two additional EE courses – See Appendix A

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.

Topics	MSCES Plan A - Thesis	MSCES Plan B - Project	MSCES Plan C – Non-Thesis	XPtoMSCES – Thesis Option
Total Units	32	32	32	26
Total Cost (\$500/Unit)	\$19,200	\$19,200	\$19,200	\$15,600

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)**

- CES 595: Research & Thesis (3 Units)
- CES 591 - Internship (1 Unit)

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

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

Table A.2		
Approved EE Courses as PGC	Units	Pre-Requisites
E 465 & EE 465L	3	E 442
E 442	3	EE 400

Table 1

Appendix A – MSCES Typical Roadmap

The following tables show typical roadmap for regular students seeking MSCES degree plan.

PLAN A - Accelerated Option - 6-Unit Thesis Option		
Fall 1		
CES xxx	3	Elective
CES 400	3	Linear Systems/Communications
CES 543	3	Optical Communications
CES 440	3	Networking
Spring 1		
CES 544	3	Introductin to RF/Wireless
CES 580	3	Business Entrepreneurship
CES 597	1	Graduate Seminar
CES 522	3	VLSI / Image Processing / AI /
Summer		
CES 591	1	Internship
CES 599	3	Thesis
Fall 2		
CES 599	3	Thesis
CES 520	3	Embedded System /Advances Software Eng.

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.