MS CMPE Student Handbook

(July 1, 2016)

1. Department Highlights

- Founding member of the national Cybersecurity Research Center (TRUST) and of the NISA Center
- World finalist team in the Microsoft Embedded Systems Challenge
- Supported by Intel, Cadence, Xilinx, Cisco, Oracle, Sun, BEA, IBM, Microsoft, and more

2. MS CMPE Program Learning Outcomes

(a) Be able to demonstrate an understanding of advanced knowledge of the practice of computer engineering, from vision to analysis, design, validation and deployment.
(b) Be able to tackle complex engineering problems and tasks, using contemporary engineering principles, methodologies and tools.
(c) Be able to demonstrate leadership and the ability to participate in teamwork in an environment with different disciplines of engineering, science and business.
(d) Be aware of ethical, economic and environmental implications of their work, as appropriate.
(e) Be able to advance successfully in the engineering profession, and sustain a process of life-long learning in engineering or other professional areas.
(f) Be able to communicate effectively, in both oral and written forms.

3. University Learning Goals

San José State University graduates will have developed:

- **Specialized Knowledge**
  - Depth of knowledge required for a degree, as identified by its program learning outcomes.
- **Broad Integrative Knowledge**
  - Mastery in each step of an investigative, creative or practical project (e.g. brainstorming, planning, formulating hypotheses or complex questions, designing, creating, completing, and communicating).
  - An understanding of the implications of results or findings from a particular work in a societal context (e.g. social or economic implications of a scientific finding).
  - Students graduating with a baccalaureate degree will have demonstrated an understanding of critical components of broad academic areas, including the arts, humanities, social sciences, and sciences, and their integration.
- **Intellectual Skills**
  - Fluency in the use of specific theories, tools, technology and graphical representation.
  - Skills and abilities necessary for life-long learning: critical and creative thinking, effective communication, conscientious information gathering and processing, mastery of quantitative methodologies, and the ability to engage effectively in collaborative activities.
- **Applied Knowledge**
  - The ability to integrate theory, practice, and problem-solving to address practical issues.

- o The ability to apply their knowledge and skills to new settings or in addressing complex problems.
  - o The ability to work productively as individuals and in groups
- **Social and Global Responsibilities**
  - o The ability to act intentionally and ethically to address a global or local problem in an informed manner with a multicultural and historical perspective and a clear understanding of societal and civic responsibilities.
  - o Diverse and global perspectives through engagement with the multidimensional SJSU community.

4. Program Scope

The MS CMPE program currently has four areas of specialization:

1) System Design and Verification
2) Network Systems
3) Embedded Systems
4) Secure Systems

A student must declare a specialization during the first week of the semester that his/her master project (CMPE295A) or thesis (CMPE299A) or comprehensive exam (CMPE298) is registered.

5. Application and Admission

5.1) Application Requirements

a) Academic Background
An applicant must have degree(s) equivalent to a four-year U.S. undergraduate baccalaureate degree with a GPA of 3.0 (B) or higher, in computer-related fields such as computer engineering, electrical engineering, and computer science. Under special circumstances, applicants with other academic backgrounds will be considered.

b) Standard Test Scores
An applicant who does not have a baccalaureate degree from an accredited university in the United States must meet SJSU's minimum requirements on the English-Language Proficiency Exam (TOEFL or equivalent; please visit the website at http://www.sjsu.edu/gape/prospective_students/test_requirements/index.html for more information). GRE scores are used by the MS CMPE program as an evaluation factor, on a competitive basis.

5.2) Application Procedure and Material Submission

All applications are online via SJSU's Graduate Admission and Program Evaluation (GAPE) Office. Please visit the GAPE website at http://www.sjsu.edu/gape/ for general information and application instructions. When completing the online application pages, the applicant should (1) select Computer Engineering (MS) as the Major/Program Objective; (2) route his/her TOEFL and GRE scores to San Jose State University, code=4687 (no department code is required). Official transcripts and other application materials (recommendation letters are optional) should be mailed to SJSU's GAPE office, not to the Computer Engineering Department. Note: Since the CMPE Department conducts rolling admissions, late applications may not be reviewed when the program reaches its capacity.

5.3) Admission Conditions
Except those who obtained their BS CMPE degrees at SJSU, all admitted MS CMPE applicants are *conditionally* accepted. To become a *classified* MS CMPE student, a conditionally admitted student must either pass three tests, or take and pass their corresponding condition courses. Each test can be taken only once. Condition courses are graded on a pass (CR) or fail (NC) basis. A condition course can be taken repeatedly until a passing grade is received. The names of the three tests and their corresponding condition courses are listed below. For test schedules, scope and preparation, please visit the website at https://cmpe.sjsu.edu/content/test-new-ms-students.

Tests	Condition Courses
1. Digital and Microprocessor Test	CMPE 180-90 (can be substituted by passing CMPE124 + CMPE127 with B or better grades)
2. Object-oriented Programming and Data Structure Test	CMPE 180-92 (can be substituted by passing CMPE50 + CMPE126 with B or better grades)

3. Operating Systems Test	CMPE 180-94
	(can be substituted by passing CMPE142 with B or better grades)

5.4) Transfer Students

To transfer to the MS CMPE program, students currently enrolled in a different graduate program at SJSU must submit a *Change of Major Request Form* to the GAPE office (by contacting GAPE, original application materials may not need to be resubmitted); graduate students currently at other US universities must apply via the GAPE office, as described in *Section 5.2*: *Application Procedure and Material Submission*. Please note:

a) All transfer students will be evaluated based on the same requirements for new applicants. In addition, a 3.0 or higher GPA in their current graduate programs is required.

b) For applicants newly admitted by a different graduate program at SJSU, the change of major request can be submitted during the first semester in their home program. Otherwise, they have to forfeit their current admission and re-apply to SJSU for the MS CMPE program.

5.5) Transfer Credits

After being accepted by the MS CMPE program, a student may submit a *Transfer Course Credit Request Form* to transfer courses taken when the student was not enrolled in the MS CMPE program at SJSU. The request will be evaluated by the MS CMPE program. Up to two courses (6 units) can be transferred to the MS CMPE program if the following conditions are met:

a) The courses must be at graduate level.

b) The courses must be comparable (in level and contents) to MS CMPE graduate courses.

c) The courses must have been taken within the last 7 years.

d) The courses must not be used to meet the requirements of another degree the applicant has obtained.

e) The courses must be taken from U.S. accredited universities (including SJSU Open University) or from non-MSCMPE programs at SJSU, together with their prerequisite courses specified in the course descriptions.

6. Degree Requirements

To obtain the MS CMPE degree from SJSU, a student must meet the following requirements:

6.1) Classification Requirement

The student must be a *classified* MS CMPE student, as described in *Section 5.3: Admission Conditions*.

6.2) Course Requirement

The student must complete course work in three categories:

a) Program Core Courses (courses that all MS CMPE students are required to take):

CMPE200, CMPE220, CMPE240 (3 units each, total of 9 units)

b) Specialization Core Courses (total of 9 units within the student's declared specialization):

Specialization	Specialization Core Courses	Units Per Course
System Design and Verification	CMPE264, CMPE212 and Special topic courses (CMPE297's) in this area	3
Network Systems	CMPE206, CMPE207, CMPE208, CMPE209	3
Embedded Systems	CMPE242, CMPE243, CMPE244, CMPE245, CMPE261, CMPE262, CMPE265	3
Secure Systems	CMPE209, CMPE279, CMPE287	3

c) Technical Elective Courses (total of 6 units):

An elective course can be any graduate-level CMPE courses (3 units each) **except the following:** CMPE270, CMPE271, CMPE298, CMPE298I, CMPE295A, CMPE295B, CMPE299A, and CMPE299B. With the MS CMPE graduate advisor's approval, a student can take up to two elective courses from other departments. Note, before registering a non-CMPE course, the student must submit the *Take non-CMPE Department or Program Course Request Form* to the CMPE Department. Without the graduate advisor's approval, non-CMPE courses will not be credited toward the student's degree program.

6.3) Project or Thesis or Additional Course Requirement

The student must satisfactorily complete one of the following:

Options	Courses	Total Units	Comments
Project	CMPE295A and CMPE295B	6	CMPE295A & CMPE295B must be completed in two consecutive semesters.
Thesis	CMPE299A and CMPE299B	6	CMPE299A & CMPE299B must be completed in two consecutive semesters.
Course Only (taking 2 additional courses and a comprehensive exam)	1) Two more CMPE electives (6 units), and 2) CMPE298 (1-unit comprehensive exam covering CMPE program core and specialization core fundamentals)	7 (minimum)	1) CMPE298 is graded on pass (CR) or fail (NC) basis. 2) The comprehensive exam will be given twice a year (one in fall, one in spring), a week before the last day of instruction)

6.4) Writing Requirement

The student must meet SJSU's Graduate Writing Assessment Requirement (GWAR) by satisfactorily completing CMPE294. Students who have satisfactorily completed technical writing courses 100W or 200W at SJSU have already met the GWAR requirement. Students with substantial publication records (e.g., dissertation and refereed journal papers), or have taken CMPE294-comparable technical writing courses at another university may submit the *Waive Technical Writing Requirement* request for a GWAR waiver. Decisions on such requests will be made by SJSU's GAPE office, not by the CMPE Department.

6.5) Document Requirement

Before graduation, the student must complete and submit the following document:

1. The Departmental Request for Candidacy and Graduate Degree Form (a.k.a. the *Candidacy Form*),
2. The Application for Award of Master's Degree Form (a.k.a. the *Degree Form*),
3. Thesis or project report (not for students who choose the course-only option).

For project-option students, all document submission is via the CMPE295A and CMPE295B class Canvas sites. For course-only option students, the two forms should be submitted via the CMPE298 class Canvas site. For thesis-option students, the two forms should be submitted via the CMPE299A class Canvas site, while the thesis should be physically submitted to SJSU's Office of Graduate and Undergraduate Programs (GUP). Please visit the GUP website at http://www.sjsu.edu/gup/index.html for instructions on thesis preparation and submission.

6.6) GPA Requirement

The student must maintain a 3.0 or higher GPA for all graduate courses taken at SJSU (a.k.a. *Overall SJSU GPA*) as well as the courses listed on his/her Candidacy Form (a.k.a. *Candidacy Form GPA*).

7. Taking Courses

7.1) Computer Engineering Course Information

The website at http://info.sjsu.edu/web-dbgen/catalog/departments/CMPE-courses.html contains the complete list of CMPE courses, including course numbers and names, as well as their descriptions and prerequisite requirements.

7.2) Course-taking Sequence

The appropriate course-taking sequence is shown below:
a) condition courses - CMPE180-90, CMPE180-92, CMPE180-94 (complete within the first two semesters)
b) program core courses - CMPE200, CMPE220, CMPE240
c) specialization core courses (refer to *Section 6.2b: Specialization Core Courses*)
d) graduate writing requirements (CMPE294)
e) technical electives (refer to *Section 6.2c: Technical Elective Courses*)
f) master projects (CMPE295A, CMPE295B), or thesis (CMPE 299A, CMPE299B), or comprehensive exam (CMPE298) and more technical electives

7.3) Prerequisites and Constraints

Under certain circumstances (course scheduling, classroom capacity, duration of study, etc.) and with course instructors' consent, the course-taking sequence shown above might be deviated from. However, there are hard prerequisite constraints that all students must comply with, as listed below:

a) Prerequisites for Program Core Courses

Program Core Courses	Prerequisites
CMPE200	CMPE180-90
CMPE240	CMPE180-90
CMPE220	CMPE180-92 and CMPE180-94

b) Requirements for Taking CMPE295A, 299A, or 298 (comprehensive exam)

Requirement	Description
1	Be a classified MS CMPE student, i.e., completed all admission conditions
2	Both Overall SJSU GPA and Candidacy Form GPA are 3.0 or higher
3	Completed at least two program core courses
4	Completed at least two specialization core courses
5	Completed GWAR requirement or taking CMPE294 concurrently
6	Submit Candidacy Form and obtain approval during early stage of the semester when these courses are taken
7	All program core courses, specialization core courses, and GWAR must be completed before or together with CMPE295A/CMPE299A/CMPE298. Failure to meet the GWAR requirement will lead to a failing grade for CMPE295A/CMPE299A/CMPE298.

c) Requirements for Taking CMPE295B or CMPE299B

Requirement	Description
1	Both Overall SJSU GPA and Candidacy Form GPA are 3.0 or higher
2	Completed CMPE295A or CMPE299A
3	Completed all three program core courses
4	Completed all three specialization core courses
5	Met the GWAR requirement

7.4) Number of Courses Per Semester

Students should take no more than four courses (12 units) per semester, including CMPE294, CMPE298I, and MS project or thesis courses. Students on an F-1 visa must take no fewer than three courses (9 units) per semester.

7.5) Course Registration

All course registrations are online. Please visit the website at http://my.sjsu.edu/ for course registration information and instructions. If a course is unable to be registered online, the student needs to request a permission code by contacting the course instructor, usually during the first class meeting after school starts.   Fee information can be found at the Bursar's Office website (http://www.sjsu.edu/bursar/fees_due_dates/). For other problems encountered, please contact SJSU's Office of the Registrar (registrar@sjsu.edu).

8. Practical Training (Internship, CPT and OPT) for International Students

International students on an F-1 visa are eligible to start internships via Curricular Practical Training (CPT) if the following conditions are met:

Condition	Description
1	Be a classified MS CMPE student (i.e., completed all admission conditions)
2	Overall SJSU GPA is 3.0 or higher
3	Completed four CMPE graduate courses including two program core courses
4	Enroll in CMPE298I

The CPT can take place in the Spring, Summer, or Fall semester. A student can take CPT up to three times.

For information regarding Optional Practical Training (OPT), please visit SJSU's International Student and Scholar Services (ISSS) website at http://www.sjsu.edu/isa/employment/optional_practical_training/index.html.

A student planning to start practical training must file a CPT or OPT request form and submit it to the CMPE Department for approval (refer to *Section 10: Advising*).

9. Probation, Disqualification and Leave of Absence

9.1) Probation

A graduate student will be placed on probation if his/her Overall SJSU GPA falls below 3.0. Students on probation must make an appointment with the MS CMPE graduate advisor.

9.2) Disqualification

A graduate student on probation will be disqualified if he/she fails to achieve a 3.0 or higher semester GPA.   For the time being, the Computer Engineering Department does not process reinstatement requests via Program of Study.

9.3) Leave of Absence

A student will lose his/her active status if the student does not take any course for two consecutive semesters. Students must file a *Leave of Absence Form* prior to the first semester of leave to avoid losing active status while on leave. Otherwise, the student must reapply to the university to regain active status. Policy about leaves of absence can be found at the *Attendance and Policy FAQs* section on the university registrar website at http://www.sjsu.edu/registrar/faqs/Attendance_and_Policy_FAQs/index.html and on the GAPE website at http://www.sjsu.edu/gape/faq/.

10. Advising

10.1) MS CMPE Advising Procedure

    a) Based on advising topics, go to the Computer Engineering Department front desk and pick up the appropriate request forms, as listed below:

Form Number	Purpose of Advising
1.1	CPT
1.2	OPT
1.3	Reduce course load
1.4	Letter for change of status to F-1
2.1	Transfer from other program
2.2	Reinstatement after disqualification (not in use)
3.1	Establish and update Program of Study
3.2	Take non-CMPE department/program courses
3.3	Transfer course credit
3.4	Waive a core course
4.1	Take CMPE290R to extend CMPE295B or CMPE299B
4.2	Waive technical writing requirement
5.2	Overlapping course registration
7.1	File Candidacy form (complete via CMPE295A/299A/ 298 class Canvas)
7.2	Course substitution (to substitute a course listed on the Candidacy form)
7.3	Apply for graduation (complete via CMPE295A/299A/ 298 class Canvas)
8.1	Leave of absence
8.2	Withdraw from SJSU

    b) Complete the form as well as its required attachments stated in the form

    c) Submit the form and its attachments to the Computer Engineering Department front desk

Normally, the requesting student will be notified about the decision (approval, denial, or making appointment with the MS CMPE graduate advisor) in one week.

10.2) Contact Email Addresses

When necessary, students can contact the MS CMPE graduate advisor or the Computer Engineering Department front desk via email, as listed below:

- MS CMPE Graduate Advisor: advisor-mscmpe-group@sjsu.edu

- CMPE Department Front Desk: frontdesk-computer-engineering@sjsu.edu

Note: emails sent to addresses other than the above will not be replied to.

10.3) Websites for non-MSCMPE Advising Topics

- Office of the Registrar:
  http://www.sjsu.edu/registrar/

- Bursar's Office:
  http://www.sjsu.edu/bursar/fees_due_dates/

- International Student and Scholar Services (ISSS):
  http://www.sjsu.edu/isa/

- Office of Graduate Admissions and Program Evaluations (GAPE)
  http://www.sjsu.edu/gape/

- Office of Graduate and Undergraduate Programs (GUP):
  http://www.sjsu.edu/gup/index.html, or
  http://www.sjsu.edu/gradstudies/student_portal/index.html

11. Frequently Asked Questions (FAQs)

What are the application deadlines?

Please visit http://www.sjsu.edu/gape/.

What is the application procedure?

Online application information may be obtained from the following link:
http://www.sjsu.edu/gape/

Where do I submit my application?

Applications are submitted using the graduate admissions selection at *CSUmentor.org*. The following are some hints for filling in the application pages. (1) Page 1: Applicants should select Engineering-Computer Engineering (MS) as the Major/Program Objective. (2) Test Scores: GRE and TOEFL test scores should be routed to San Jose State University, code=4687. No department code is required.

Does CMPE Department offer graduate assistantships to incoming or current students?

Graduate assistantships are competitive, and are awarded based on the student's qualifications and fit to particular tasks. We do not award assistantships at the time of admission.

I was admitted this semester, is it possible for me to start my study next semester?

A new graduate student has to take at least one course during his/her first semester at SJSU. Otherwise, the student forfeits the admission for the current semester and has to re-apply to SJSU. By notifying SJSU Graduate Studies and Research office, you might not have to resubmit all required documents.

Upon being admitted to the program, am I required to make an appointment with the Program Coordinator/Advisor immediately?

It is not required. However, attending the MSCMPE new student orientation session is required. The MS CMPE Advisor will email you information regarding the new student orientation session.

Can one of my admission conditions be waived if I have taken a course of the same subject in another institution before?

No admission conditions can be waived. You must pass the subject test or its corresponding condition course in order to satisfy each admission condition.

I have to satisfy one or more admission condition courses. How do they affect my GPA?

All letter-grade courses count towards your GPA, even if they do not count towards the minimal requirements for the MS degree (i.e., courses listed on Candidacy Form). However, CMPE180s are passing (CR) or fail (NC) courses, and therefore the grades of CMPE180s do not count towards your overall GPA.

After completing all my admission conditions, do I have to change my status from "Conditional" to "Classified" immediately?

No. your status will be changed when you file a *Departmental Request for Candidacy and Graduate Degree Program Form* when you take CMPE295A or CMPE299A or CMPE298 (for comprehensive exam). At that time you have to submit your transcripts through the course Canvas site of CMPE295A or CMPE299A or CMPE298 (for comprehensive exam) that you are enrolled.

How can I register for classes?

Go to http://my.sjsu.edu/students/ to register, but pay attention to fee payment deadlines. Since graduate students cannot enroll in some undergraduate courses directly, you might have to request a permission number from the department office or the course instructor.

Who do I contact with registration problems?

If you cannot access the system, please contact cmshelp@sjsu.edu. If you have problems seeing the correct screen or problems with incorrect IDs, please contact erecords@sjsu.edu.

Do I need advising before enrolling in a class?

For new students or a student whose overall GPA is 3.0 or better, a pre-registration advising is not necessary; the student can just follow the guideline described in Section 7. A student with an overall GPA below 3.0 must seek advice from the MS CMPE graduate advisor before enrolling in any class.

I am the first one on the wait list for a full class. Will this provide me with priority to be added to the class by the instructor?

After the semester begins, a class might have some available seats to add more students. The instructor will consider several factors to decide the priority of adding students. The instructor will decide whether "wait list sequence" is one of the factors.

I tried to enroll a class but the enrollment system required Department Consent. How can I receive the Department Consent?

You can contact the Department Office. However, the Department office will most likely ask you to check MySJSU frequently for the class status updates or contact the instructor directly to issue you a permission number.

Since the add period is over, how can I get the permission number (a.k.a. add code) to a class?

Go to the first class meeting and ask your instructor for the permission number.

The time overlap of two courses prevents me to enroll into either one. What shall I do?

You can only enroll into one of them. The Graduate Advisor is not assigned to schedule the classes of the department. The department will post additional sections, if any, on the schedule

section of mySJSU. If the overlap time is less than 15 minutes, you might be able to enroll into both classes by filing a course overlap form and submit to the department office.

How late can I add or drop a class without penalty?

Courses may be added or dropped without penalty during the first fourteen days of classes. See the Calendar section of www.sjsu.edu/registrar for exact dates and deadlines. Courses dropped during this initial period will not appear on the student's transcript.

If I drop a class now, can I enroll in it next semester?

Yes, if you meet the course prerequisites and the class is not full.

During this semester, I enrolled into both CMPE180-90 and CMPE200/240. Now I failed the Digital Design and Microprocessor test, so I can take CMPE180-90, but not CMPE200/240. Will I be penalized if I drop CMPE200/240 after the semester begins?

Courses may be added or dropped without penalty during a specific time period. For Refund and Pro-Rata Charges, please refer to http://www.sjsu.edu/bursar/payment_refunds/. A student with admission conditions can enroll into graduate classes and also CMPE180-90, 92, 94 to start with. However, you should drop a condition course immediately after you receive the passing result of the pertinent test.

When should I establish or update my Program of Study (POS)?

It is not required to file a POS. A POS must be prepared for special events such as CPT, on-probation, etc., or seeking in-person advising from the graduate advisor.

Can I transfer my undergraduate units received at SJSU?

You can transfer a graduate course taken when you were a SJSU undergraduate student. This course must not be listed in your undergraduate major form.

Can I transfer graduate credits from extension or Open University courses of other universities?

No.

Will a transfer course be counted as a core, specialization, or elective course?

It depends on which of the CMPE or SJSU courses it is equivalent to.

When can I apply to transfer courses?

After a semester begins, you can submit a *Transfer non-SJSU or Open University Course Request Form* for each course you'd like to transfer. You must submit the request form with all supporting documents to the department office. The MS CMPE graduate advisor will consult with the professors possessing the subject knowledge to decide whether to approve the request or not.

Can I take off-campus courses as part of my degree course?

Off-campus courses cannot be used for the on-campus MS in CMPE degree program.

I am working in Silicon Valley, is it feasible for me to attend classes?

Almost all single-section CMPE graduate courses are offered after 6:00 p.m.

What are the differences between a master project and master thesis?

A thesis has more rigid requirements of contents and reporting style. A project-track student must enroll in CMPE295A and CMPE295B in two consecutive semesters; a thesis-track student must enroll in CMPE299A and CMPE299B in two consecutive semesters. Summer enrollments are optional.

How can I find a project advisor and decide my project/thesis topic?

Your project/thesis topic must be closely related to your specialization. Your advisor must be an SJSU instructor with expertise in the area of your specialization.

Will the classes I take to satisfy my admission conditions be counted as part of the required 9 units for students on F-1 visa?

Yes.

Will CMPE 298I for CPT be counted as part of the required 9 units for students on F-1 visa?

Yes.

Are there any requirements for taking CMPE294?

The only requirement for taking CMPE294 is to be a registered CMPE graduate student.

I am taking CMPE294 and CMPE295A concurrently, what is the consequence if I fail CMPE294?

The completion of GWAR (e.g., receiving a passing grade of CMPE294 or ENGR200W) is required to obtain a passing grade of CMPE295A or CMPE299A. At the end of the semester, a student who has not completed GWAR will receive a failing CMPE295A or CMPE299A grade and must enroll in CMPE295A or CMPE299A again and restart the project or thesis.

Due to an unforeseen situation I cannot complete CMPE295B or CMPE299B this semester, what should I do?

A student who is unable to complete CMPE295B or CMPE299B due to unforeseen circumstances will be given a grade of "I" (Incomplete) and will need to register CMPE290R for a one-semester extension.

What are the timing, scope, and grading of the comprehensive exam?

The exam will be given twice a year, once in fall semester and once in spring semester. The exam will be held at least one week before the last day of instruction. The time and place will be announced one week after the last day to add courses. The exam is 2 hours long; no books or other assistive devices are allowed. The exam's scope covers fundamentals of MS CMPE

program core courses and specialization core courses in the exam taker's declared area. The exam will be graded on a pass (CR) or fail (NC) basis, and can be taken multiple times.