# Guidelines for Course Selection for M.S. Students in the Computer Engineering (CompE) Degree Program

<table>
<thead>
<tr>
<th>Area of Specialization</th>
<th>Core Course(s)</th>
<th>Suggested Depth Area Courses</th>
<th>Preferred Undergrad Preparatory Course(s)</th>
</tr>
</thead>
</table>
| Computer Networks                    | COMPE 560: Computer Networks or EE 602: Stochastic Systems or EE 603: Engineering Optimization | COMPE 561: Database and Web Programming  
COMPE 565: Multimedia Comm  
COMPE 596: Machine Learning for Engineering  
EE 660: High Speed Nets  
EE 662: Wireless Sensor Nets  
EE 665: Multimedia Networks | EE 410: Signals and Systems                                                   |
| Embedded Systems                     | COMPE 571: Embedded Operating Systems                                          | COMPE 561: Database & Web Programming  
COMPE 570: VLSI System Design  
COMPE 596: Machine Learning for Engineering  
COMPE 596: Cyber Physical Systems  
EE 522: Digital Control Sys  
EE 662: Wireless Sensor Nets | COMPE 475: Microprocessor  
EE 410: Signals and Systems                                                   |
| Machine Learning and Scientific Computing | COMPE 596: Machine Learning for Engineering                                    | COMPE 560: Computer Networks  
COMPE 596: Accelerated Computing  
COMPE 596: Cyber-physical Systems  
EE 596: Neuromorphic Computing  
EE 602: Stochastic Systems | COMPE 260: Data Structures  
Math 254: Discrete Math                                                        |
| VLSI Systems                         | COMPE 572: VLSI Circuit Design                                                | COMPE 570: VLSI System Design  
EE 530: Analog Integrated Circuit Design  
EE 634: RF Circuit Design  
EE 670: ASIC Design  
EE 671: VLSI Testing  
EE 674: Sig.and Power Integrity | COMPE 470: Digital Circuits                                                   |
### Guidelines for Course Selection for M.S. Students in the Electrical Engineering (EE) Degree Program

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<th>Core Course(s)</th>
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| **Communications**              | EE 602: Stochastic Systems          | EE 558: Digital Communication  
                                         EE 641: RF Wireless Systems  
                                         EE 650: Modern Comm Theory  
                                         EE 652: Prin & Apps of Info Theory  
                                         EE 653: Coding Theory          | EE 458: Analog Communication       |
| **Electromagnetic Systems**      | EE 602: Stochastic Systems or  
                                         EE 603: Engineering Optimization         | EE 540: Microwave Design  
                                         EE 631: RF Electronic Circuits  
                                         EE 634: RF Circuit Design  
                                         EE 641: RF Wireless Systems  
                                         EE 645: Antennas & Propagation  
                                         EE 674: Sig. and Power Integrity | EE 440: Electromagnetic Waves     |
| **Energy Systems and Control**   | EE 584: Power Electronics or  
                                         EE 601: Linear System Theory or  
                                         EE 603: Engineering Optimization     | EE 522: Digital Control Systems  
                                         EE 581: Power Systems Dynamics  
                                         EE 584: Power Electronics  
                                         EE 586: Distr. Energy Resources & Smart Grid Technologies  
                                         EE 603: Engineering Optimization  
                                         EE 684: Advanced Power Electronics | EE 480: Power Systems  
                                                                                            EE 420: Feedback Control Systems |
| **Signal Processing**            | EE 602: Stochastic Systems          | COMPE 565: Multimedia Comm  
                                         EE 601: Linear System Theory  
                                         EE 603: Engineering Optimization  
                                         EE 654: Adaptive Algorithms  
                                         EE 657: Digital Image Processing  
                                         EE 658: Advanced DSP             | EE 410: Signals and Systems       |
Instructions

These guidelines provide a roadmap for students in either Plan A or Plan B. Before meeting with the Graduate Advisor, a student should prepare a Program of Study (POS) using the guidelines given below in selecting the courses to be declared for the degree program:

**General Comments**

- You are encouraged to take the core course in the first semester of the program.
- Four 500-level courses are accepted for the graduate program. Talk to the Graduate Advisor if you are having issues finding relevant 600-level courses.
- Plan A students will mutually select a faculty member to serve as the Thesis Advisor. Students must take 6 units of 799 and 3 units of 799A under the supervision of their Thesis Advisor. Rules, guidelines and required paperwork are described on our website ([https://electrical.sdsu.edu/graduate/thesis-project-proc](https://electrical.sdsu.edu/graduate/thesis-project-proc)). Please read it thoroughly. Also, check with the College of Graduate Studies ([https://grad.sdsu.edu/](https://grad.sdsu.edu/)) for deadlines to submit your master’s thesis. Please make sure that your POS is on file.
- Plan B students must take 798 (Project) under the supervision of a faculty member who will serve as the Project Advisor. Rules, guidelines and required paperwork are described on our website ([https://electrical.sdsu.edu/graduate/thesis-project-proc](https://electrical.sdsu.edu/graduate/thesis-project-proc)). Please read it thoroughly. Also, check with the College of Graduate Studies ([https://grad.sdsu.edu/](https://grad.sdsu.edu/)) for deadlines to submit your Project report. Please make sure that your POS is on file.
- Students are allowed to take two courses from outside the ECE Department, with the approval of their Thesis or Project Advisor, and the Graduate Advisor. If students change their Thesis or Project Advisor, these non-ECE courses may not be used as part of their Program of Study (POS).
- Plan A students are encouraged to enroll in the thesis (797) after completing 9 units (as early as the second semester). Please engage with professors during your first semester to identify your Thesis Advisor.
- Plan B students are encouraged to enroll in the project (798) after completing 21 units (as early as the third semester) but no later than after completing 27 units.
- If a student switches from Plan A to Plan B, he/she needs to remove 797 and 799A & B from their POS and take 6 units of regular courses and 3 units of 798, with the approval of the Project Advisor and the Graduate Advisor.
- Please refer to our website ([https://electrical.sdsu.edu/graduate/thesis-project-proc](https://electrical.sdsu.edu/graduate/thesis-project-proc)) for detailed instructions on graduation requirements for both Plan A and Plan B. Pay special attention to the section that describes how to enroll in and obtain the class number for 799A.
- International students may exercise their CPT after completing 18 units. Students need to maintain a GPA of 3.0 or better to qualify for the CPT. They cannot work for more than 20 hours per week in a semester in which they have classes. For more details on CPT, go to our website [https://electrical.sdsu.edu/graduate/cpt](https://electrical.sdsu.edu/graduate/cpt).
Plan A Students: Total of 30 units

- Declare a depth area.
- Take four (4) courses in the depth area including the core course. (12 units).
- Take two breadth courses. (6 units).
- Take one course either from the depth area or as a breadth course. (3 units).
- Register for 6 units of 797 (research) and 3 units of 799A (thesis). (9 units).
- Credit is not given for 798 for Plan A students.
- The student must be Advanced to Candidacy before submitting the POS to the department, signed by the Thesis Advisor, and before you defend your thesis.
- The department allows flexibility in choosing your breadth/depth courses – please talk to your Thesis Advisor and/or Graduate Advisor if in doubt.

Plan B Students: Total of 30 units

- Declare a depth area.
- Take six (6) courses in the depth area including the core course. (18 units).
- Take three breadth courses. (9 units).
- Take 798 (Project) advised by the Project Advisor. (3 units).
- The student must be Advanced to Candidacy before submitting the POS to the department, signed by the Project Advisor, and before you defend your project.
- The department allows flexibility in choosing your breadth/depth courses – please talk to your Project Advisor and/or Graduate Advisor if in doubt.

All courses and depth areas listed are subject to the State of California and university funding and therefore may not always be available. Please check the Class Schedule for courses offered per semester. For the Class Schedule go to the link below.
(https://cmsweb.cms.sdsu.edu/psc/CSDPRD/EMPLOYEE/SA/c/SSR_STUDENT_FL.SSR_CLSRCH_MAIN_FL.GBL?&

List of the Professors in Each Area of Specialization

**Communication Systems:** Dr. Santosh Nagaraj, Dr. Duy Nguyen, Dr. Tharm Ratnarajah

**Computer Networks:** Dr. Sunil Kumar, Dr. Yusuf Ozturk, Dr. Christopher Paolini, Dr. Mahasweta Sarkar, Dr. Junfei Xie

**Electromagnetic Systems:** Dr. Abu Naim Ahmed, Dr. Ege Engin, Dr. Satish Sharma

**Embedded Systems:** Dr. Baris Aksanli, Dr. Yusuf Ozturk, Dr. Hakan Toreyin, Dr. Junfei Xie

**Energy Systems and Control:** Dr. Tong Huang, Dr. Saeed Manshadi, Dr. Chris Mi, Dr. Reza Sabzehgar, Dr. Sridhar Seshagiri

**Machine Learning and Scientific Computing:** Dr. Baris Aksanli, Dr. Christopher Paolini, Dr. Junfei Xie

**Signal Processing:** Dr. Ashkan Ashrafi, Dr. Sunil Kumar

**VLSI Systems:** Dr. Amir Alimohammad, Dr. Ege Engin, Dr. Ke Huang, Dr. Ying-Khai Teh
Graduate Courses *Tentatively* Offered in Fall and Spring Semesters

**IMPORTANT NOTE:** This is just a tentative schedule and is intended to help students plan their Program of Study ahead of time. The courses and the semesters are subject to change without prior notice.

<table>
<thead>
<tr>
<th>Fall Semesters</th>
<th>Spring Semesters</th>
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<tbody>
<tr>
<td>COMPE560 Computer and Data Networks</td>
<td>COMPE565 Multimedia Communication Systems</td>
</tr>
<tr>
<td>COMPE561 Database and Web Programming</td>
<td>COMPE572 VLSI Circuit Design</td>
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<tr>
<td>COMPE565 Multimedia Communication Systems</td>
<td>COMPE596 Cyber Physical Systems</td>
</tr>
<tr>
<td>COMPE570 VLSI System Design</td>
<td>EE502 Digital Devices for Rehabilitation</td>
</tr>
<tr>
<td>COMPE571 Embedded Operating System</td>
<td>EE522 Digital Control Systems</td>
</tr>
<tr>
<td>COMPE572 VLSI Circuit Design</td>
<td>EE530 Analog Integrated Circuit Design</td>
</tr>
<tr>
<td>COMPE596 Machine Learning for Engineering</td>
<td>EE540 Microwave Devices and Systems</td>
</tr>
<tr>
<td>EE503 Biomedical Instrumentation</td>
<td>EE558 Digital Communications</td>
</tr>
<tr>
<td>EE540 Microwave Devices and Systems</td>
<td>EE581 Power System Dynamics</td>
</tr>
<tr>
<td>EE558 Digital Communications</td>
<td>EE586 Distr. Energy Resources &amp; Smart Grid Tech</td>
</tr>
<tr>
<td>EE584 Power Electronics</td>
<td>EE596 Neuromorphic Computing</td>
</tr>
<tr>
<td>EE586 Distr. Energy Resources &amp; Smart Grid Tech</td>
<td>EE603 Engineering Optimization</td>
</tr>
<tr>
<td>EE601 Linear Sys Theory &amp; Design</td>
<td>EE634 RF Circuit Design</td>
</tr>
<tr>
<td>EE602 Stochastic Signals &amp; Systems</td>
<td>EE650 Modern Communication Theory</td>
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<tr>
<td>EE645 Antennas and Propagation</td>
<td>EE652 Principles &amp; App of Information Theory</td>
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<tr>
<td>EE650 Modern Communication Theory</td>
<td>EE653 Coding Theory</td>
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<tr>
<td>EE654 Adaptive Filter Design</td>
<td>EE658 Advanced Digital Signal Processing</td>
</tr>
<tr>
<td>EE655 Modem Design</td>
<td>EE660 High Speed Netwrks: Des. Princ &amp; Rec Advances</td>
</tr>
<tr>
<td>EE662 Wireless Sensor Networks</td>
<td>EE665 Multimedia Wireless Networks</td>
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<tr>
<td>EE671 VLSI Testing</td>
<td>EE670 Digital ASIC Design</td>
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<tr>
<td>EE674 Signal and Power Integrity</td>
<td>EE740 Advanced topics in physical electronics</td>
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