

**COMPUTER ENGINEERING MASTER OF SCIENCE DEGREE PROGRAM CHECKLIST  
COLUMBIA UNIVERSITY**

**Student:** \_\_\_\_\_  
(please print)  
**UNI:** \_\_\_\_\_

**Courses**                      **Pts.**

**CHECKLIST**

(Core courses)

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1. \_\_\_\_\_ 30 points of credit
2. \_\_\_\_\_ 15 points core Computer Engineering (see back)
3. \_\_\_\_\_ 15 points 6000 level EE or CS courses (including joint courses)
4. \_\_\_\_\_ At least 6 points from each department (CSEE, EECS, & ECBM courses can count toward either department minimum).
5. \_\_\_\_\_ no credit for 3000 or lower level courses
6. \_\_\_\_\_ 2.7 GPA minimum

(Other courses, approved by an advisor)

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7. \_\_\_\_\_ no more than 9 points research (e.g. ELEN E4998, ELEN E6001, COMS W4901)
8. \_\_\_\_\_ no more than 3 points of APPROVED nontechnical courses (including courses in SEAS with significant nontechnical content)
9. \_\_\_\_\_ completion within 5 years
10. \_\_\_\_\_ no grade of P or R
11. \_\_\_\_\_ no credit for courses with material typically found in undergraduate engineering programs such as STAT W4105 Probability

**Total points:**

**Approved:**

\_\_\_\_\_ for the Department

\_\_\_\_\_ for the Dean

\_\_\_\_\_ Date:

\_\_\_\_\_ Date:

Note: If some courses listed were taken during the BS, a copy of an approved BS excess sheet must be attached.

Students must take at least 30 points of courses at Columbia University at or above the 4000 level. These must include at least 15 points from the courses listed below that are deemed core to computer engineering. At least 6 points of the 30 must be from each department. *CSEE, EECS, and ECBM* courses can count toward either department minimum. Other courses may be chosen with the prior approval of a faculty adviser in the Computer Engineering Program.

The overall program must include at least 15 points of 6000-level *ELEN, EECS, CSEE, or COMS* courses (exclusive of seminars). No more than 9 points of research may be taken for credit. No more than 3 points of (approved) nontechnical electives (at or above the 4000 level) may be included. A minimum GPA of at least 2.7 must be maintained, and all degree requirements must be completed within five years of the beginning of the first course credited toward the degree.

| Core Computer Engineering Courses |              |   |  |             |              |   |
|-----------------------------------|--------------|---|--|-------------|--------------|---|
| <b>COMS</b>                       | <b>W4113</b> | Fundamentals of large-scale distributed systems                   |  | <b>EECS</b> | <b>E6321</b> | Advanced digital electronic circuits                    |
| <b>COMS</b>                       | <b>W4115</b> | Programming languages and translators                             |  | <b>ELEN</b> | <b>E6350</b> | VLSI design laboratory                                  |
| <b>COMS</b>                       | <b>W4118</b> | Operating systems, I  |  | <b>ELEN</b> | <b>E6488</b> | Optical interconnects and interconnection networks      |
| <b>CSEE</b>                       | <b>W4119</b> | Computer networks   |  | <b>ELEN</b> | <b>E6761</b> | Computer communication networks, I                      |
| <b>COMS</b>                       | <b>W4130</b> | Principles and practice of parallel programming                   |  | <b>ELEN</b> | <b>E6762</b> | Computer communication networks, II*                    |
| <b>CSEE</b>                       | <b>W4140</b> | Networking laboratory   |  | <b>EECS</b> | <b>E6765</b> | Internet of things                                      |
| <b>COMS</b>                       | <b>W4180</b> | Network security  |  | <b>ELEN</b> | <b>E6770</b> | Topic: Next generation networks                         |
| <b>EECS</b>                       | <b>E4321</b> | Digital VLSI circuits   |  | <b>CSEE</b> | <b>E6824</b> | Parallel computer architecture                          |
| <b>EECS</b>                       | <b>E4340</b> | Computer hardware design  |  | <b>CSEE</b> | <b>E6831</b> | Sequential logic circuits*                              |
| <b>ELEN</b>                       | <b>E4350</b> | VLSI design laboratory*   |  | <b>CSEE</b> | <b>E6832</b> | Topics in logic design theory*                          |
| <b>ELEN</b>                       | <b>E4702</b> | Digital communications  |  | <b>CSEE</b> | <b>E6847</b> | Distributed embedded systems                            |
| <b>ELEN</b>                       | <b>E4750</b> | Signal processing & communications on mobile multicore processors |  | <b>ELEN</b> | <b>E6850</b> | Visual information systems                              |
| <b>ELEN</b>                       | <b>E4810</b> | Digital signal processing   |  | <b>ELEN</b> | <b>E6860</b> | Advanced digital signal processing                      |
| <b>CSEE</b>                       | <b>W4823</b> | Advanced logic design   |  | <b>CSEE</b> | <b>E6861</b> | Computer-aided design of digital systems                |
| <b>CSEE</b>                       | <b>W4824</b> | Computer architecture   |  | <b>CSEE</b> | <b>E6868</b> | System-on-chip platforms                                |
| <b>ELEN</b>                       | <b>E4830</b> | Digital image processing  |  | <b>ELEN</b> | <b>E6950</b> | Wireless and mobile networking, I                       |
| <b>CSEE</b>                       | <b>W4840</b> | Embedded systems  |  | <b>ELEN</b> | <b>E6951</b> | Wireless and mobile networking, II                      |
| <b>ELEN</b>                       | <b>E4896</b> | Music signal processing   |  | <b>COMS</b> | <b>E6998</b> | Topic: Formal verification of hardware/software systems |
| <b>COMS</b>                       | <b>E6118</b> | Operating systems, II*  |  | <b>COMS</b> | <b>E6998</b> | Topic: Embedded scalable platforms                      |
| <b>CSEE</b>                       | <b>E6180</b> | Modeling and performance evaluation                               |  | <b>COMS</b> | <b>E6998</b> | Topic: Advanced distributed systems                     |
| <b>COMS</b>                       | <b>E6181</b> | Advanced Internet services  |  | <b>COMS</b> | <b>E6998</b> | Topic: Resilient hardware systems                       |

\* Occasionally Offered