**Mathematics and Science Requirement (Delete courses and units not taken)**

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<th>Dept</th>
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**Mathematics (26 units minimum)**

- MATH 19 Calculus (see note 1)
- MATH 20
- MATH 21
- CS 103 Mathematical Foundations of Computing
- CS 109 Introduction to Probability for Computer Scientists

*Plus two electives (see note 2)*

**Mathematics Unit Total (26 units minimum)**

---

**Science (11 units minimum)**

- PHYS 41 Mechanics (or PHYS 21 or PHYS 61)
- PHYS 43 Electricity and Magnetism (or PHYS 23 or PHYS 63)

*Elective (see note 3)*

**Science Unit Total (11 units minimum)**

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**Technology in Society Requirement** *(1 course req'd; must be on Approved TiS list at ughb.stanford.edu the year taken; see note 7)*

**Engineering Fundamentals (10 units minimum)**

- CS 106B Programming Abstractions
- ENGR 40M An Intro to Making: What is EE?

**Engineering Fundamentals Total (10 units minimum)**

---

**NOTES**

* All courses listed on this form can be included under only one category. There is no double-counting.
* All courses listed on this form must be taken for a letter grade except courses taken Spring 2019-20, and Autumn 2020-21 through Summer 2020-21
* Minimum Grade Point Average (GPA) for all courses in Engineering Funds and CS Core, Depth, and Senior Project (combined) is 2.0.
* Students without prior programming experience should first take CS106A. The major otherwise requires at most 95 units, so even with CS106A, the BSCS major respects the university's 100-unit limit.
* Transfer and AP credits in Math, Science, Fundamentals, & TiS must be approved by the SoE Dean's Office. Transfer credits in Computer Science Core, Depth and Senior Project must be approved by the Computer Science undergraduate program office.
* Courses must be taken for the number of units on the Program Sheet. CS103, 106B/X, 107, 109, 110, and 161 must be taken for 5 units.

(1) Up to 10 units AP credit (with placement into MATH 51/CME 100) may be used. AP must be approved by SoE.
(2) Math electives: Math 51, 52, 53, 104, 107, 108, 109, 110, 113; CS 157, 205L; PHIL 151; CME 100, 102, 104; ENGR 108 (or CME 103 or EE 103). Restrictions: CS 157 + Phil 151 may not be used in combination to satisfy the Math electives requirement. Students who have taken both Math 51 and 52 may not not count CME 100 as an elective.
(3) Any course of 3 or more units from the SoE Science List (see Courses page at ughb.stanford.edu), PSYCH 30, or AP Chemistry may be used. All AP credit must be approved by the SoE; see AP page https://ughb.stanford.edu/transfers-ap-exceptions in UGHB for approval process.
CS Graphics Track Program Sheet (continued)

CS Graphics Track Core, Depth, and Senior Project (43 units minimum)

Be advised: no course may be listed twice on this sheet; no double counting.

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Core (15 units minimum)

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CS 107 or 107E  Computer Organization and Systems

CS 110 or 111  Operating Systems Principles

CS 161  Design and Analysis of Algorithms

Depth; Track and Electives (25 units and seven courses minimum)

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CS Visual Computing Core: Any one of CS248A, 248B, and 231N

CS Visual Computing Core: Any one of CS248A, 248B, and 231N

Visual Computing Depth (see note 4)

Visual Computing Depth (see note 4)

Visual Computing Depth (see note 4)

Track Elective (see note 5)

Elective (see note 6)

Optional Elective (see note 6)

Senior Project (1 course required)

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CS At least 3 units of 191, 191W, 194, 194H, 194W, 210B, 294 or 294W (see note 8)

Total depth units (25 minimum)

Computer Science Core, Depth and Senior Project Total (43 units minimum)

Program Approvals

Departmental

Printed Name: ________________________________  Date: ________________________________

Signature: ________________________________

School of Engineering (No action required-office use only)

Printed Name: ________________________________  Date: ________________________________

Signature: ________________________________

NOTES (continued from page 1)


(5) Track Electives: CS 131, 148, 149, 221, 229, 230, 236, 236G, 331B, 448B, 448M, 448Z; EE261, or any class from note 4

*Students may replace their track elective with a course found at: http://www.cs.stanford.edu/humanities*


(7) The WIM requirement may be met by taking CS 181W or 182W as a Technology in Society course or through the Senior Project course (191W, 194W, 210B, or 294W only).