Advice for 3-2 Combined Plan CS Students

Stephen A. Edwards

Columbia University

Fall 2023
Advising

I am the CS advisor for Combined Plan students
Email me with questions
sedwards@cs.columbia.edu
Adviceing

I am the CS advisor for Combined Plan students
Email me with questions
sedwards@cs.columbia.edu

Your “class dean” at the Center for Student Advising (CSA) can advise on non-CS class questions
I know remarkably little about, e.g., English classes
I am the CS advisor for Combined Plan students
Email me with questions
sedwards@cs.columbia.edu

Your “class dean” at the Center for Student Advising (CSA) can advise on non-CS class questions
I know remarkably little about, e.g., English classes

The CS Advising Team can help with other bureaucracy
ug-advising@cs.columbia.edu
Time is of the Essence

You have exactly two years here

You must take 60 points at Columbia
Time is of the Essence

You have exactly two years here

You must take 60 points at Columbia

Typical class is 3 points

$60 \div 3 \div 4 = 5$ classes per semester

“Fifteen (15) to Finish”

Typical load: 4 CS + 1 elective
Time is of the Essence

You have exactly two years here
You must take 60 points at Columbia
Typical class is 3 points

\[ 60 \div 3 \div 4 = 5 \] classes per semester
“Fifteen (15) to Finish”
Typical load: 4 CS + 1 elective

Flaking out on classes, for whatever reason, is the number one problem of combined plan students
Extending your time here is nearly impossible
career interest by pursuing additional programs in business administration, medicine, or other professional studies.

---

DEGREE PROGRAM QUICK GUIDES

**BS in Computer Science (SEAS)**

- **New BS Curriculum Quick Guide** – Students declaring in Spring 2024 or later must follow this.
- **Old BS Curriculum Quick Guide** – Those who declared prior to Spring 2024, may choose to follow the new curriculum or the old Tracks.

**BS in Computer Engineering (SEAS)**
PREREQUISITES

SEAS Prerequisites and ENGI E1006: Computing for EAS

CS CORE

The following 6 courses must be taken:

- COMS W1004 Intro to CS
- COMS W3134 Data Structures
- COMS W3157 Advanced Programming
- COMS W3203 Discrete Math
- COMS W3261 CS Theory
- CSEE W3827 Fundamentals of Computer Systems

Select 1 Linear Algebra course

- COMS W3251
- APMA E3101
- APMA E2101
- MATH UN2010
- MATH UN2015

Select 1 Probability course (new)

- STAT UN1201
- STAT GU4001
- IEOR 3658
- MATH UN2015

MATH UN2015 can double count for Linear Algebra and Probability requirements. This is the ONLY instance a course can double count.

CS ELECTIVES

4 courses from COMS / CSXX / XXCS that are at least 3-point courses, and at the 3000-level or above

AREA FOUNDATION COURSES (AFC)

Select 4 courses from the following list:

- COMS W4111 Introduction to Databases
- COMS W4113 Distributed Systems Fundamentals
- COMS W4115 Programming Languages and Translators
- COMS W4118 Operating Systems
- CSEE W4119 Computer Networks
- COMS W4152 Engineering Software-as-a-Service
- COMS W4156 Software Engineering
- COMS W4160 Computer Graphics
- COMS W4167 Computer Animation
- COMS W4170 User Interface Design
- COMS W4181 Security
- CSOR W4231 Analysis of Algorithms
- COMS W4236 Introduction to Computational Complexity
- COMS W4701 Artificial Intelligence
- COMS W4705 Natural Language Processing
- COMS W4731 Computer Vision
- COMS W4733 Computational Aspects of Robotics
- CBMF W4761 Computational Genomics
- COMS W4771 Machine Learning
- CSEE W4824 Computer Architecture
- CSEE W4868 System-on-Chip Platforms

Ecology, Evolution and Environmental Biology
- Mathematics
- Physics
- Psychology
- Statistics
- Economics

GENERAL TECHNICAL ELECTIVES (GTE)

4 courses from the following Columbia or Barnard departments that are 3-point courses, and at the 3000 level or above:

- Any SEAS department
- Astronomy
- Biomedical Informatics
- Biological Sciences
- Chemistry
- Earth and Environmental Sciences

CHANGES AT A GLANCE

NO MORE TRACKS

AREA FOUNDATION COURSES

21 pre-approved options, choose 4

PROBABILTY REQUIREMENT

GTE APPROVALS NOT NEEDED

QUESTIONS?

Email CS Advising: ug-advising@cs.columbia.edu

Students who declare a CS major in Spring 2024 and beyond are required to follow the new curriculum. Students who declared a CS major before Spring 2024 can follow the new CS Curriculum or continue with the old CS Curriculum.

No more than one course from each set below may be applied to the major

IEOR E3658, STAT UN1201, STAT GU4001, MATH UN2015
- MATH UN2015, MATH UN2010, APMA E3101, COMS W3251
- COMS W4771, COMS W4721, STAT GU4241

IMPORTANT EXCEPTIONS
CS Degree Requirements

CS Core

24 points

All are required:

1. Intro to CS (COMS 1004)*
2. Data Structures (COMS 3134)*
3. Advanced Programming (COMS 3157)
4. Discrete Math (COMS 3203)*
5. CS Theory (COMS 3261)
6. Fundamentals of Computer Systems (CSEE 3827)
7. Linear Algebra (COMS 3251, . . . , or MATH UN2015)
8. Probability (STAT UN1201, . . . , or MATH UN2015)

*You already took these three to enter the 3-2 program
# CS Degree Requirements

## CS Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSOR W4231 Analysis Algo.</td>
<td></td>
</tr>
<tr>
<td>COMS W4236 Comp. Complexity</td>
<td></td>
</tr>
<tr>
<td>COMS W4701 AI</td>
<td></td>
</tr>
<tr>
<td>COMS W4705 Natural Lang Proc.</td>
<td></td>
</tr>
<tr>
<td>COMS W4731 Computer Vision</td>
<td></td>
</tr>
<tr>
<td>COMS W4733 Robotics</td>
<td></td>
</tr>
<tr>
<td>CBMF W4761 Comp. Genomics</td>
<td></td>
</tr>
<tr>
<td>COMS W4771 Machine Learning</td>
<td></td>
</tr>
<tr>
<td>CSEE W4824 Comp. Architecture</td>
<td></td>
</tr>
<tr>
<td>CSEE W4868 SoC Platforms</td>
<td></td>
</tr>
</tbody>
</table>

## Area Foundation Courses (AFC) 12 points

Select 4 from

- COMS W4111 Intro. Databases
- COMS W4113 Dist. Systems
- COMS W4115 Prog Lang Trans
- COMS W4118 Operating Systems
- CSEE W4119 Computer Networks
- COMS W4152 Engineering SaaS
- COMS W4156 Software Engin.
- COMS W4160 Computer Graphics
- COMS W4167 Comp. Animation
- COMS W4170 UI Design
- COMS W4181 Security 1
- CSOR W4111 Intro. Databases
- CSOR W4231 Analysis Algo.
- COMS W4236 Comp. Complexity
- COMS W4701 AI
- COMS W4705 Natural Lang Proc.
- COMS W4731 Computer Vision
- COMS W4733 Robotics
- CBMF W4761 Comp. Genomics
- COMS W4771 Machine Learning
- CSEE W4824 Comp. Architecture
- CSEE W4868 SoC Platforms

No substitutions
CS Degree Requirements

CS Core 24 points

Area Foundation Courses (AFC) 12 points
Select 4 from

CS Electives 12 points
4 3000+ COMS / CSXX / XXCS courses, 3+ points

COMS 4995 and COMS 6998 are “topics” courses
Each section is a unique topic
You may take multiple 4995s or 6998s with different topics
CS Degree Requirements

**CS Core**
24 points

**Area Foundation Courses (AFC)**
12 points
Select 4 from

**CS Electives**
12 points
4 3000+ COMS / CSXX / XXCS courses, 3+ points

**General Tech. Electives (GTE)**
12 points
4 3000+ courses from these departments (3+ points)

Any SEAS department
Astronomy
Biomedical Informatics
Biological Sciences
Chemistry
Earth and Environ. Sciences

Eco, Evo. and Env. Biology
Mathematics
Physics
Psychology
Statistics
Economics
Course Names

COMS W4115 001 Programming Languages and Translators

COMS: Computer Science
CSEE: Joint Computer Science and Electrical Engineering
EECS: Joint EE and CS
CSOR: Joint CS and Operations Research

W: Can be ignored along with “E”

3xxx: Introductory undergraduate level
4xxx: Advanced undergraduate, MS, and PhD
6xxx: Graduate level; undergraduates need instructor permission

001: Section number
Registering For CS Classes

4000- and 6000-level CS Courses are waitlist-only

Everybody joins the department- or instructor-managed waitlist

Students are enrolled based on need, not order in line

3-2 students often get priority because they are under significant time pressure
Registering For CS Classes

4000- and 6000-level CS Courses are waitlist-only

Everybody joins the department- or instructor-managed waitlist.

Students are enrolled based on need, not order in line.

3-2 students often get priority because they are under significant time pressure.

“Blocked”: you can only join the waitlist.

“Restricted”: you likely won’t ever be allowed to enroll.
Waiving Core Classes

If you took an acceptable equivalent course elsewhere, you can have the requirement waived for:

- Linear Algebra
- Probability
- CS Theory (COMS 3261)
  DFAs, NFAs, CFGs, Turing Machines, O(), P vs NP
- Fundamentals of Computer Systems (CSEE 3827)
  Digital Design and Computer Architecture
  Often separate classes elsewhere
- Advanced Programming COMS 3157
  Systems Programming in C: threads and sockets

Waivers do not affect the 60 point requirement

You already have Intro to CS, Data Structures, and Discrete Math waived
Waiving Core Classes

If you took an acceptable equivalent course elsewhere, you can have the requirement waived for

- Linear Algebra
- Probability
- CS Theory (COMS 3261)
  DFAs, NFAs, CFGs, Turing Machines, O(), P vs NP
- Fundamentals of Computer Systems (CSEE 3827)
  Digital Design and Computer Architecture
  Often separate classes elsewhere
- Advanced Programming COMS 3157
  Systems Programming in C: threads and sockets

Waivers do not affect the 60 point requirement

- Submit import requests through http://mice.cs.columbia.edu (accounts coming)
- For help, email ug-advising@cs.columbia.edu
Double-Majoring and Minoring

In a word: don’t

3-2 students don’t have the time to complete another program’s requirements

Future employers and graduate schools don’t care

Do well in your CS courses; take electives for the rest

Better to do an independent project with a professor whom you can impress
Columbia Student Services Online (SSOL)  
https://ssol.columbia.edu

Among other things, has a Degree Audit Report (DAR)

An unreliable indicator of your progress
Columbia Student Services Online (SSOL)  
https://ssol.columbia.edu

Among other things, has a Degree Audit Report (DAR)

An unreliable indicator of your progress

Your DAR is usually unaware of imports
Graduating Columbia Student Services Online (SSOL) https://ssol.columbia.edu

Among other things, has a Degree Audit Report (DAR)
An unreliable indicator of your progress

Your DAR is usually unaware of imports

Not to worry → CS Advising and I clear you to graduate
We follow your transcript and waived classes
Access the Clearance Form via Google Docs. Make a copy of this form and enter your completed and/or planned courses. Name the file “Your Name UNI – SEAS BS Graduation Clearance Form” Share with Lionmail so your advisors can review it. Email ug-advising@cs.columbia.edu or your Faculty Advisor the link!

You can use this same form to check progress prior to graduation and update it each semester.

- SEAS BS Checklist/Clearance Form – Spring 2024 and beyond
- SEAS BS Checklist/Clearance Form – Tracks (Pre 2024)
- OLD Excel Progress Checklist
# Computer Science

SEAS BS Graduation Clearance Form

February 2024

2021-2022 Bulletin

## Name:

## UNI:

### CS Core Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester and year</th>
<th>Grade</th>
<th>Substitution or Waiver (specify course &amp; faculty who approved)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMS W1004/1007: Intro CS or Honors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMS W3134/3137: Data Structures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMS W3157: Adv Programming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMS W3203: Discrete Math</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear Algebra Requirement: Select</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMS W3261: Comp Sci Theory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSEE W3827: Fund Computer Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probability Requirement: Select</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Math 2015 Linear Algebra and Probability may simultaneously satisfy both linear algebra and probability requirements without the need to take additional classes thus reducing the total number of points required.

### 4 Area Foundation Courses

Select from the dropdown menus, then enter the semester taken and grade earned. | Semester Completed | Grade |
|-------------------------------------------------|--------------------|-------|