

An aerial photograph of Cambridge, England, showing a dense cluster of historic buildings with red-tiled roofs and a prominent church spire in the center. A large green park is visible in the background, and the city extends to the horizon under a clear sky.

Understanding Cambridge Academics

Cambridge – need to start early

- Very quirky organization by subject – decentralized and can be hard to find class descriptions as some are behind firewalls.
- START EARLY, e.g., NOW if you want to apply to Cambridge. You really need to dig into the subject/tripos and understand the system!
- Complete regular Study Abroad Application & you need a non-Cambridge alternative. You will not be considered for Cambridge without one.

Cambridge –

Is this a good option for you?

- You need to have a strong academic record – grades count in all the programs, but especially so at Cambridge.
- A **minimum** of 3.6 cum is required but **3.7 GPA & up in your option really needed.**
- Is the academic fit a good one for you? Don't apply to Cambridge solely because of social reasons! You need a strong academic fit.
- Do you have strong ref letters from instructors in your option? This is particularly important.

Cambridge –

Is this a good option for you?

- Supervisions – *are you willing to speak up and engage in lively intellectual conversation with the supervisor?*
- **Supervisions** involve 1 supervisor to 2 or 4 students. **You need to be someone who speaks up and does not worry about whether you are “getting the answer correct!” And can work on their on sets, essays, projects independently!**

Cambridge –

Is this a good option for you?

- Are you socially confident?
- Are you articulate?
- **Do you keep up with the world news and like discussing world events?**
- Can you relate well to students majoring in non-science/engineering disciplines such as literature, philosophy, history, etc.?
- Are you fussy about what you eat as you will often eat in the “Hogwarts” dining hall of your college?
- Can you obey rules? Lots of traditions & lots of rules!

Cambridge GPA Advisory

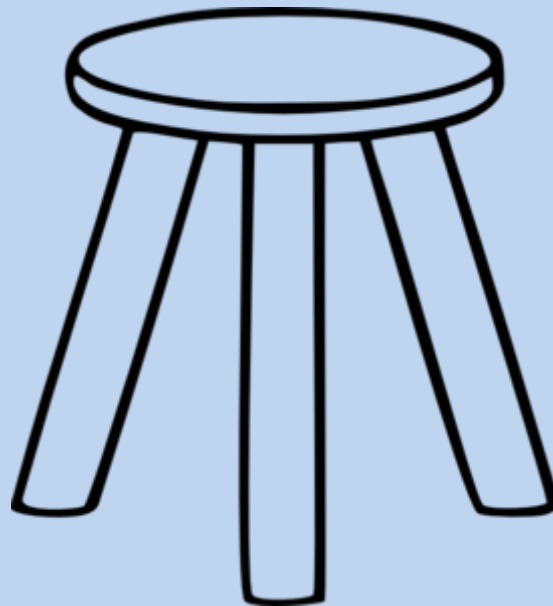
- Cambridge: 3.7 and up in option classes related to your tripos classes & min 3.6 cum
- Math at Cambridge 3.8+. Best to have taken Analysis for Part II
- Chemistry Part III – need 3.8+. These are master's level classes – need Part II background. Best for seniors who have taken junior level chem classes.

How Actual Cambridge Students Are Admitted

- **Regular degree undergrads are NOT admitted by a central university committee as at US universities —students are admitted by a college in a specific tripos/subject area!**
- Students apply to a college. College faculty (fellows) select applicants to interview and test. Interviews are academic – **not about personal fit. This is about academic fit.**
- Students are selected based on A level & college test scores, references, & the interview – faculty run process.

Triplos/Subject

Chemical Engineering
Computer Science and Technology
Engineering
Natural Sciences*
Mathematics



*Natural Sciences Triplos
contains multiple ***subjects...***

**You can only take courses
in your tripos/subject.**

One exception: In the Natural Sciences Tripos there are interdisciplinary classes for Physics, Earth Sciences, & Chemistry for Lent Term only

Typically, parts are split up
as follows:

Part 1A – 1st year

Part 1B – 2nd year

Part II }
Part IIA } 3rd year

Part IIB }
Part III } 4th year

You can mix parts,
just beware of
'schedule clashes'.

Limited Tripos & Subject

- At Cambridge you **CANNOT TAKE CLASSES IN SOCIAL SCIENCE OR HUMANITIES** Departments! No exceptions – Cambridge rule! A few tripos subjects offer electives, e.g., **Engineering, that have language or BEM/Econ classes.**

Tripes Info

- In some tripes areas, the subject is the same as the tripes, e.g., ChemE or CS.
- In NatSci or Engineering, there are subsets of subjects.
- In the Natural Sciences you choose ONE subject, e.g., PDN, Neuroscience, Earth Science, Chemistry, Physics, Math, etc., with exception of max of 1 interdisciplinary class in Lent. ***Cannot do Materials or Biochemistry***

Cambridge Colleges

- Each of the thirty-one Colleges is an autonomous corporation & is self-governed.
- 16 “old” colleges, founded between 1284 and 1596, and
- 15 “new” colleges, founded between 1800 and 1977.
- Three for women only & **Darwin** only admits only postgraduates

U. Cambridge Colleges

- We partner with 4 of the old colleges:
- Pembroke — founded 1347
- Corpus Christi — 1352
- St. Catharine's — 1473
- St. John's — founded 1511
- You cannot pick your college.

Role of the Colleges

- The elected or appointed Head of a College may be termed Master, President, Principal, Mistress, Provost, or Warden.
- The Governing Body is made up of the Head and some or all of the Fellows - the elected senior members of the College whose primary duty is teaching, administration or research.

The Role of the Colleges (cont.)

- Residential system – member only of your college.
- Lots of rules & traditions!
- Exeat Rule example.
- Much more scrutiny of your behavior and high standard expected.
- More dressing up!

You must have a 2nd choice program

- Michaelmas (fall) – 6 places
- Lent (winter) – 4 places
- **Apply to both to maximize selection to Cambridge, BUT you still need to apply to a program other than Cambridge! No exceptions.**
- If you don't get Cambridge, you don't have to study abroad, but you'd be missing out!

University & Departments

- 100 academic departments organized into six schools.
- They are:
- [Arts and Humanities](#)
- [Biological Sciences](#)
- [Clinical Medicine](#)
- [Humanities and Social Sciences](#)
- [Physical Sciences](#)
- [Technology](#)
-

Michaelmas Term



Or Lent Term?



Winter Becomes Spring in Lent!



Apply for both terms if you are serious about Cambridge

- Look at classes for best match.
- Both Michaelmas and Lent have their charms!

2nd Choice Options

- Copenhagen: DTU & UCPH
 - DTU works for engineering and most natural sciences & applied math.
 - UCPH for physics, biology, CS and math.

2nd Choice Options

- **Edinburgh** has the same feel to it as Cambridge – ancient university in a beautiful, walkable, small city, great academics that work for most options, i.e., CS, ME, EE, Physics/Astrophysics, GPS options, Biology, Chemistry, ChemE, Math, etc.
- You can take HSS classes – 1 or 2

2nd Choice Options

Want Old: Edinburgh –Founded 1583

TEVIOT
UNION
FOUNDED
1889



2nd Choice Options

If UCL is your 2nd choice look carefully at the admitting department 1st and 2nd year classes so you meet prerequisites.

- **UCL:** only an hour away from Cambridge!
 - Only allow fall students in biological sciences, chemistry, geology, mechE and neuroscience.
 - Can take HSS courses (up to 50% of classes)
- No Math/ACM, EE, Physics, or BioE or Chem E

2nd Choice Options

- People also list the University of Chicago
- Live in residential college
- But can take 2 classes in other STEM or HSS areas with 2 required classes in your option subject

2nd Choice Issues

- All Edinburgh & UCL programs have a supervision-like system (tutorials)
- DTU and UCPH have recitation sessions as part of block system

All Bachelors Degrees are 3 Years Long in England

All Engineering and some Science degrees have an optional 4th year (coursework masters), which is equivalent to a class at the 100 level.

Cambridge like all British Universities has two taught terms and a third term devoted to review and taking final examinations.

Natural Science (NatSci) Tripos

- Physics & Astronomy - Parts II or III

- Math is its own tripos, and includes Applied Math
- Experimental and Theoretical Physics or DAMTP: Physics & Math overlap (Physics students may be able to take some Maths Part II classes)
- Astronomy students may take physics classes & vice versa

You can ONLY do one Physics Experiment per term. Will not fulfill Physics lab requirement!

- Chemistry – Part III only & very challenging for jrs

- ChemE is a separate tripos (you can't mix them)
- No biochemistry – no exceptions No work assigned – just lectures.

- Geological Sciences - Parts II or III (classes alternate by year)

- Ok to take field courses for field credit if available.

- Interdisciplinary Classes - Part III

- Limited to Chemistry, Geological Sciences, or Physics. You can propose up to 2 of these- but check schedule carefully for time conflicts with your subject.

Natural Science (NatSci) Tripos

- Natural Sciences Overview – go to specific subjects via Cambridge Program Page:
<https://www.natsci.tripos.cam.ac.uk/contacts/course-websites>
- Biological Subjects - Part Ib and II only

Biological Sciences

- Natural Sciences Tripos
 - Biology: Part II preferred. Some IB allowed.
 - Psychology, Neuroscience & Behavior (PNB);
 - Physiology, Development, & Neuroscience (PDN), Plant Sciences, Zoology. Can choose only 1 Part II
 - Writing more than 1 well researched & well written essay per week
 - Choose 4 modules (classes)
 - Must be excellent time manager - student arranges supervisions
 - **NOT ALLOWED**: anatomy, biochemistry, clinical or veterinary medicine, genetics, pathology, or pharmacology.

PDN versus PNB

- The modules that make up the courses (PDN/PNB) are mostly shared and most are from PDN, but if a student wants to do cognitive related classes then they should take PNB.
- In addition to the lectures, there are some 'workshops', slightly different for PDN and PNB, but with the same general purpose, mainly based on skills rather than factual content. It would be problematic, however, for a student to undertake a project as they are for 2 terms and places are highly competitive. **This means modules only and no projects.** Still essay based meaning you write essays, two for each class and that is a lot of writing over 8 weeks.

PDN & PNB Websites

- PBN: Psychology, Neuroscience, Behaviour
<https://www.psychol.cam.ac.uk/study/ug/nst-ii>
- PDN: Physiology, Development, Neuroscience
<https://www.pdn.cam.ac.uk/undergraduate/supervisors/part-ii-courses>

Earth Sciences Part IIA or IIB

- Go to this link and then use the dropdown menu for Undergraduates to see the various Parts and classes:
- <https://www.esc.cam.ac.uk>

Mathematics Tripos

Includes Applied Math

- The Brits say “Maths”, not “Math”

<https://www.maths.cam.ac.uk/undergrad/course>

- Take classes from Part II, but can take Part IB. **NOTE THAT PART II AND PART IB are taught in buildings 20 minutes walk from each other.**

You cannot take Part III classes that is a graduate program.

Mathematics – Part IA, IB, or II only. Have C & D level classes. D are harder! (There is no separate applied math dept. Applied math is in math.)

NO PART III CLASSES ALLOWED in Maths! (Can audit for fun)

- There are some interesting lectures you can attend on the history of mathematics, but will not get credit because these are not formal classes and are now organized as a society:

Cambridge University History of Maths Society (CUHoMS). Click here to see their information and become a member on arrival:

<https://www.cambridgesu.co.uk/organisation/19573/>

- Must have at least 16 lectures = 6 CIT units & 24=9

Physics – Part II and III

- Only seniors or very advanced juniors should take Part III classes. You need to have covered standard Caltech junior year classes to take Part III.
- TP 1 (Michaelmas) and TP2 (Lent) are equivalents of Physics 125 ab.
- <https://www.phy.cam.ac.uk/students/teaching>. Page 22 has Part II classes & page 31 has Part III.

Chemistry Part III

- Students cannot take Part II because classes are taught on a 6 week schedule and the second part of the second group of classes runs 2 weeks in one term and 4 weeks in the next.
- Part III classes are taught for 4 weeks. Students choose 3 classes for 6 units per class for the first half of the term and 3 classes for 6 units per class in the second half of the term.
- Overview: <https://www.ch.cam.ac.uk/teaching/course-guides>
- Go to: <https://www.ch.cam.ac.uk/teaching>
- & For Chemistry Part III go to: https://www.ch.cam.ac.uk/teaching/files/III_main.pdf

Chem Eng versus Engineering

- Most Chem Eng students have opted for the Engineering tripos. Some have selected Chemistry Part III – depends on your track in the Chemical Engineering option. Go to <https://www.undergraduate.study.cam.ac.uk/courses/chemical-engineering> and <https://www.ceb.cam.ac.uk/undergraduates/current-students>
- Best to check classes in both the Chemical Engineering Tripos and the Engineering Tripos.
- NOTE that the Engineering Tripos has Information Engineering, Materials & Bioengineering "Groups."

Engineering Tripos

- You can take courses in Part IIA or Part IIB (3rd or 4th year), but must take at least 2 in IIA (IIB has no supervisions & max of 2 IIB). Classes are called MODULES.
- Has sub-groups such as:
 - Group A: Energy, Fluid Mechanics and Turbomachinery
 - Group B: Electrical Engineering
 - Group C: Mechanics Materials and Design
 - Group D: Civil & Structural Engineering
 - Group E: Management and Manufacturing
 - Group F: Information Engineering
 - Group G: Bioengineering



















Engineering Tripos

- You can take 4-5 classes, but at least 2 out of 4 or 3 out of 5 must be “real” engineering courses (not management, languages, etc. and Part IIA NOT IIB. And the two Part IIA classes must be in the group equivalent to your Caltech primary STEM option!

IIB classes do not have supervisions! And you need to check Part IA, IB and IIA to see if you have the background for IIB classes. Also true for IIA-check Part IA and IB.








- Has BEM type classes & language classes.

Examples of Part IIB Engineering elective classes

Module		Term (set)	Prerequisites	On-line resources	Leader	Lab Leader
Code	Title (linked to syllabus)		Assumed			
3E1	Business economics	M(9)		Moodle 	Dr A Rosato 	Dr A Rosato 
3E2	Marketing	M(9)		Moodle 	Dr V. Mak 	Dr V. Mak 
3E3	Modelling Risk	L(8)		Moodle 	Dr F Erhan-Oguz 	Dr R. Zanjirani-Farahani 
3E6	Organisational behaviour	L(8)		Moodle 	Dr J Stollberger 	Dr J Stollberger 
3E10	Operations management for engineers	L(8)		Moodle 	Dr F Erhan-Oguz 	Rev R McKenzie 
3E11	Environmental sustainability & business 	M (9)		Moodle	Prof J A Howard-Grenville 	Prof J A Howard-Grenville 



IIB Group M Modules

Group M: Multidisciplinary Modules

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Code	Title (linked to syllabus)			Assumed	Useful		
4M1	French	L(10)	Coursework			Moodle 	Mr D. Tual 
4M2	German 	L(10)	Coursework			Moodle 	Mr A Bleistein 
4M3	Spanish	M(10)	Coursework			Moodle 	Mr S. Bianchi 

IIB Group E Mgmt & Manufacturing

Group E: Management and Manufacturing

Module		Term (set)	Form of assessment	Prerequisites	
Code	Title (linked to syllabus)			Assumed	
4E1	Innovation and strategic management of intellectual property 	M(9)	Coursework		
4E3	Business innovation in a digital age 	M(9)	Coursework		
4E4	Management of technology	M(9)	Coursework		
4E5	International Business	L(9)	Coursework		
4E6	Accounting and finance	M(9)	Coursework		
4E11	Strategic management	L(9)	Coursework		
4E12	Project management	L(9)	Coursework		

Engineering Continued

- Go to this link and click on the Parts from the menu at the top of the page:
- <http://teaching.eng.cam.ac.uk>
- Engineering Lecture Timetable: <http://teaching.eng.cam.ac.uk/node/4112>
- Click on each Engineering Area for Part IIA Modules:
<http://teaching.eng.cam.ac.uk/node/4133#hdr-1>
- And for a better overview go to: <http://teaching.eng.cam.ac.uk/node/2979>
- IIB Modules: <http://teaching.eng.cam.ac.uk/node/3003>
- All classrooms in same area. No time transition conflict between Parts.
- LOOK VERY CAREFULLY AT ENGINEERING – COULD BE BETTER FIT FOR some CS, BioEng, CHEM ENG STUDENTS than the tripos that seems to match option. BUT, you have to make sure you have the background for Part IIA or IIB.
- You must take II Part IIA classes in the group/track most equivalent to your option and these must be STEM classes.

Chemical Engineering

- You can take courses in Part IIA or Part IIB – senior electives and specialization
- Some classes split into 2 sections, meaning some finish after winter break. You cannot take these.
- Has themes such as:
 - process applications and systems
 - mathematical methods
- The syllabus is available by going to the FASA Cambridge Page:
- Many ChemE's select the Engineering Tripos or can opt for Chemistry Part III

Computer Science and Technology

- Is a 3 year program. LOOK AT INFORMATION ENGINEERING in Eng Tripos. Could be better fit.
- You can take classes from any part, as long as there are no time conflicts
- Part II is the 3rd year- equivalent to junior/senior
Part IA is ok, but likely too easy
Part IB is sophomore/junior level
- Must have at least 16 lectures to equal 9 CIT units
- Classes are taught for various #'s of weeks.
- Part Ib & II classes are taught in the CS Bldg.

CompSci Tripos Info

- Computer Science – CompSci is its own subject. Has lots of issues as classes are taught for as few as two weeks to as many as 8. You must have at least 3 classes taught at any time in the term – no clustering at the start, middle or end of term.
- Note: CS students should also look at Info Science Track in Engineering Tripos-but can't "mix" with CompSci. One tripos ONLY!

All classes CST (Computer Science Tripos)

- Part II Classes – have supervisions
- All Parts: <https://www.cst.cam.ac.uk/teaching> (dropdown menu for Current Students)
- Part II: <https://www.cst.cam.ac.uk/teaching/part-ii>
- Note that Part II classes are taught in a building a 20 minute walk from Part IA or IB
- This can cause a time conflict due to the transition. No classes of different parts that immediately follow one another for “mixed” Parts.
- Famous day-by-day CS Timetable: <https://www.cst.cam.ac.uk/files/portrait.pdf>

CompSci Tripos Info

- Units of Assessment Classes – students can ONLY chose 1 max of these classes. They are have twice the workload of a regular class, have a final exam at the end of term & often a project taken during the term.
- Go to this link to see the CompSci classes including the units of assessment type classes:
- Part II Units of Assessment-exams and no supervisions. List only ONE of these classes per term:
- <https://www.cst.cam.ac.uk/teaching/part-ii/part2-units>
- Limited Enrollment in Units of Assessment due to exam spots!

More on Units of Assessment Classes

- Part II Units of Assessment-exams and no supervisions. List only ONE of these classes per term:
- <https://www.cst.cam.ac.uk/teaching/part-ii/part2-units>
- Have 3 assignments and a take home exam. Assignments for 2022-23 are listed here and click on the individual class on the left:
<https://www.cl.cam.ac.uk/teaching/2223/ADS/>

Units of Assessment Michaelmas Term

- [Advanced Graphics and Image Processing](#)
- [Category Theory](#)
- [Data Science: principles and practice](#)
- [Digital Signal Processing](#)
- [Multicore Semantics and Programming](#)
- [Natural Language Processing](#)

Units of Assessment Lent Term

- [Advanced Operating Systems](#)
- [Cloud Computing](#)
- [Computer Systems Modelling](#)
- [Cybercrime](#)
- [Deep Neural Networks](#)
- [Interaction with Machine Learning](#)
- [Mobile Robot Systems](#)

LS

LS

[illegible]

Cambridge Caveats

- You can take only take classes in one tripos/subject with exception of NatSci Lent only interdisciplinary classes (propose 2, take only 1).
- Mixing parts can cause shedule conflicts because classes can be taught in buildings 20 minutes walk from one another.
- **You MUST look at classes in previous Parts of the tripos as it is assumed you have the background from Part IA, IB for Part IIA or IIB or II.**
- Cambridge has a shorter term than other study abroad programs (good and bad)
- Some timetables/syllabi are listed on CamCORS/Raven, a locked system, so you'll have to write to the department for info or see if the FASA Office has a copy or has a copy posted online.

Cambridge Advantages

- The supervision system – but you need to be willing to engage!
- No Exams – but you still must learn and integrate material to be able to engage properly in supervisions where hard questions can be asked. Units of Assessment have exams as do a few other classes such as Theoretical Physics.
- Has fall or winter option (Michaelmas or Lent)
- It is a shorter term than other study abroad programs, both positive & negative & has residency requirements – no travel out of UK & limited to weekend daytrips or weekend trips. But plenty of time to travel in the UK or Europe before the term begins and for Michaelmas in Dec. after the term ends

Cambridge Handout Page

- Go to Cambridge Handout page first to get to specific departments and class lists:
- https://fasa.caltech.edu/documents/22704/Cambridge_Scholars_Study_Abroad_Program_2023-24.pdf
- Direct links to classes by subject/tripos area:
<https://fasa.caltech.edu/studyabroad/cambridge>

Course Info – getting complete info & understanding your prospective tripos and subject/part is time consuming!

Cambridge Timetable

<https://www.timetable.cam.ac.uk/>

The Timetable does **not** include all subjects & there is a RAVEN firewall for some subjects! Always check FASA Cambridge Handout for subject links.

- The Cambridge Handout:
- www.fasa.caltech.edu is your best source for specific class info – use the links provided.

Reference Letters – Cambridge prefers professors/instructors!

- Who can write for you?
 - Need at least one prof/instructor in your STEM option or highly related field for your 1st letter. (No Hum or SS letters.)
 - 2nd Letter:
 - Another Prof/Instructor in your option
 - Graduate TA's in your option or related field
 - Post-Docs you have done research with you
 - Employers in STEM related areas-research related only
 - Research supervisors
 - Your advisor or option rep – OK if that professor has not taught you as long as they know you
- Don't know who to ask? Come talk to us.

Lots to see in the Cambridge area

- Within an hour: St. Alban's—original Roman settlement with large swaths of Roman walls, Roman theater & a museum.
- Bury St. Edmunds—ancient abbey
- Ely—Ely Cathedral & Oliver Cromwell's house
- Lavenham—Guildhall, center of medieval wool trade
- London



Weekend trips from Cambridge

- Bath-train 3 hours
- Bristol-train 3 hours and 10 minutes west of Bath
- Oxford-train 2 hours
- Canterbury-train 2.5 hours
- Edinburgh-1 hour flight



Punting on the Cam



Questions?

