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 you will apply in and understand the system!
• Complete regular Study Abroad Application
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 3.4 cum is needed – some subjects require 3.7 cum & up, e.g., math & physics.

• 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 reference letters in your option? This is particularly important for Cambridge admission which is by college.
Cambridge – 

*Is this a good option for you?*

- Supervisions – are you willing to speak up and engage in lively intellectual conversation with the supervisor? You cannot sit silently in a supervision as these are usually 1 supervisor to 2 or 3 students. You need to be someone who speaks up and does not worry about whether you are “getting the answer correct!”
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?
Limited to your Option

• At Cambridge you CANNOT TAKE CLASSES IN SOCIAL SCIENCE OR HUMANITIES Departments! No exceptions – Cambridge rule! Some tripos subjects offer electives, e.g. Engineering that have language or BEM/Econ classes.
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.
How Cambridge Students Are Admitted

• Regular degree undergrads are admitted NOT 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.

• Students are selected based on A level & college test scores, references, & the interview – faculty run process.
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.
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.
• As of September 2017, Cambridge is ranked the world's second best university by [THE World University Rankings](https://www.timeshighereducation.com/world-university-rankings) (Oxford is ranked as #1 and Caltech & Stanford are tied for #3)
• MIT is #5 and Harvard #6
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!
2\textsuperscript{nd} Choice Options

- **Copenhagen**: KU and DTU
  - DTU works for engineering and most natural sciences & applied math.
  - KU for econ, physics, biology, and pure 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, Physics/Astrophysics, GPS options, Biology, Chemistry, ChemE, Math, etc.

• You can take HSS classes.
2nd Choice Options
Want Old: Edinburgh –Founded 1583

TEVIOT UNION
FOUNDED 1889
If UCL is your 2nd choice look carefully at the admitting department 1\textsuperscript{st} and 2\textsuperscript{nd} year classes so you meet prerequisites.

- **UCL**: only an hour away from Cambridge!
  - Second admission in economics with strong background and high GPA in econ (3.7+)
  - Have several bio oriented departments, plus classes like Global Health
  - Can take HSS courses (up to 50\% of classes)

- No Math, EE, or BioE
2nd Choice Issues

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

Chemical Engineering
Computer Science and Technology
Economics
Engineering
Natural Sciences*
Mathematics

*Natural Sciences Tripos contains multiple subjects...
Tripos Info

• In some tripos areas, the subject is the same as the tripos, 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.
Typically, parts are split up as follows:

- **Part 1A** – 1\(^{st}\) year
- **Part 1B** – 2\(^{nd}\) year
- **Part II**
  - **Part II A** – 3\(^{rd}\) year
  - **Part II B**
    - **Part III** – 4\(^{th}\) year

You can mix parts, just beware of ‘schedule clashes’.
All Bachelors Degrees are 3 Years Long in England

All Engineering and some Science degrees have an optional 4\textsuperscript{th} year (coursework masters), which is equivalent to a class at the 100 level.
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
  - Some Physics & Math overlap (Physics students may be able to take some Maths Part II classes)
  - Astronomy students may take physics classes & vice versa

- **Chemistry – Part III only**
  - 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

- **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

• Math – Part IA, IB, or II only. Have C & D level classes. D much harder! Max fo 2 D classes in mathematics.

NO PART III CLASSES ALLOWED in Maths!

• Biological Subjects - Part II only
Biological Sciences

• Natural Sciences Tripos – Part II ONLY
  – Biology
    • Neuroscience, PDN, Plant Sciences, Zoology-one only
    • Writing more than 1 well researched & well written essay per week
    • Choose 4 classes
    • Must be excellent time manager - student arranges supervisions
    • NOT ALLOWED: anatomy, biochemistry, clinical or veterinary medicine, genetics, pathology, or pharmacology.
The Brits say “Maths”, not “Math”

Take classes from Part II. *You cannot take Part III classes.*

There are some interesting “non-examinable” classes that you can attend, but will not get credit for because there is no assigned work, such as:

- Topics in the History of Mathematics, Ancients to the Renaissance (Michaelmas)
- Topics in the History of Mathematics, Renaissance to the 19th Century (Lent)

Must have at least 16 lectures to equal 9 CIT units
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.
- Best to check classes in both the Chemical Engineering Tripos and the Engineering Tripos.
- NOTE that the Engineering Tripos has Information Eng, 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). 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 must be “real” engineering courses (not management, languages, etc.)

• Has BEM type classes & Language classes.

IIA:
http://teaching.eng.cam.ac.uk/node/2979
(Look at Group E Management & Mfg)
<table>
<thead>
<tr>
<th>Module</th>
<th>Code</th>
<th>Title (linked to syllabus)</th>
<th>Term (set)</th>
<th>Prerequisites Assumed</th>
<th>On-line resources</th>
<th>Leader</th>
<th>Lab Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>3E1 Business economics</td>
<td>3E1</td>
<td>M(9)</td>
<td></td>
<td></td>
<td>Moodle</td>
<td>Dr A Rosato</td>
<td>Dr A Rosato</td>
</tr>
<tr>
<td>3E2 Marketing</td>
<td>3E2</td>
<td>M(9)</td>
<td></td>
<td></td>
<td>Moodle</td>
<td>Dr V. Mak</td>
<td>Dr V. Mak</td>
</tr>
<tr>
<td>3E3 Modelling Risk</td>
<td>3E3</td>
<td>M(9)</td>
<td>L(8)</td>
<td></td>
<td>Moodle</td>
<td>Dr F Erhan-Oguz</td>
<td>Dr R. Zanjirani-Farahani</td>
</tr>
<tr>
<td>3E6 Organisational behaviour</td>
<td>3E6</td>
<td>M(9)</td>
<td>L(8)</td>
<td></td>
<td>Moodle</td>
<td>Dr J Stollberger</td>
<td>Dr J Stollberger</td>
</tr>
<tr>
<td>3E10 Operations management for engineers</td>
<td>3E10</td>
<td>M(9)</td>
<td>L(8)</td>
<td></td>
<td>Moodle</td>
<td>Dr F Erhan-Oguz</td>
<td>Rev R McKenzie</td>
</tr>
</tbody>
</table>
## Group M: Multidisciplinary Modules

<table>
<thead>
<tr>
<th>Module</th>
<th>Code</th>
<th>Title (linked to syllabus)</th>
<th>Term (set)</th>
<th>Form of assessment</th>
<th>Prerequisites</th>
<th>On-line resources</th>
<th>Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4M1</td>
<td>French</td>
<td>L(10)</td>
<td>Coursework</td>
<td></td>
<td>Moodle</td>
<td>Mr D. Tual</td>
</tr>
<tr>
<td></td>
<td>4M2</td>
<td>German</td>
<td>L(10)</td>
<td>Coursework</td>
<td></td>
<td>Moodle</td>
<td>Mr A Bleistein</td>
</tr>
<tr>
<td></td>
<td>4M3</td>
<td>Spanish</td>
<td>M(10)</td>
<td>Coursework</td>
<td></td>
<td>Moodle</td>
<td>Mr S. Bianchi</td>
</tr>
</tbody>
</table>
## Group E: Management and Manufacturing

<table>
<thead>
<tr>
<th>Code</th>
<th>Title (linked to syllabus)</th>
<th>Term (set)</th>
<th>Form of assessment</th>
<th>Prerequisites Assumed</th>
</tr>
</thead>
<tbody>
<tr>
<td>4E1</td>
<td>Innovation and strategic management of intellectual property</td>
<td>M(9)</td>
<td>Coursework</td>
<td></td>
</tr>
<tr>
<td>4E3</td>
<td>Business innovation in a digital age</td>
<td>M(9)</td>
<td>Coursework</td>
<td></td>
</tr>
<tr>
<td>4E4</td>
<td>Management of technology</td>
<td>M(9)</td>
<td>Coursework</td>
<td></td>
</tr>
<tr>
<td>4E5</td>
<td>International Business</td>
<td>L(9)</td>
<td>Coursework</td>
<td></td>
</tr>
<tr>
<td>4E6</td>
<td>Accounting and finance</td>
<td>M(9)</td>
<td>Coursework</td>
<td></td>
</tr>
<tr>
<td>4E11</td>
<td>Strategic management</td>
<td>L(9)</td>
<td>Coursework</td>
<td></td>
</tr>
<tr>
<td>4E12</td>
<td>Project management</td>
<td>L(9)</td>
<td>Coursework</td>
<td></td>
</tr>
</tbody>
</table>
Engineering Continued

• IIA:  
  http://teaching.eng.cam.ac.uk/node/2979

• IIB:  
  http://teaching.eng.cam.ac.uk/content/part-iib-syllabuses-links-line-resources

• LOOK VERY CAREFULLY AT ENGINEERING – COULD BE BETTER FIT FOR CS, BioEng, CHEM ENG STUDENTS.
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 not available online, but can be found in the FASA Office

• 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 level

• Must have at least 16 lectures to equal 9 CIT units

• Classes are taught for various #’s of weeks.
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 an Info Science Track in Engineering Tripos.
### Example of CS Schedule

<table>
<thead>
<tr>
<th>Course</th>
<th>Time</th>
<th>Lectures/Supervisions</th>
<th>Units</th>
<th>Part</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Learning and Bayesian Inference</td>
<td>TR11</td>
<td>16/4</td>
<td>9</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>Computer Vision</td>
<td>TR12</td>
<td>16/4</td>
<td>9</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>Computer Systems Modelling</td>
<td>MWF9</td>
<td>12/3</td>
<td>6</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>Topical Issues</td>
<td>MWF11</td>
<td>12/3</td>
<td>6</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>Databases</td>
<td>MWF12</td>
<td>12/3</td>
<td>6</td>
<td>IB</td>
<td></td>
</tr>
</tbody>
</table>
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)

• It is 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.
- Has fall or winter option
- It is a shorter term than other study abroad programs, both positive & negative

(Less time studying abroad, but more time for travel before (fall or winter) or after, fall only.)
The Cambridge Timetable

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

This does not encompass all subjects & RAVEN firewall for some subjects! Always check FASA Cambridge Handout for subject links.
Course Info – getting complete info can be painful

Natural Sciences:
https://www.natsci.tripos.cam.ac.uk/contacts/course-websites

Computer Science:
http://www.cl.cam.ac.uk/teaching/1718/part2.html

Mathematics:
https://www.maths.cam.ac.uk/undergrad/course/coursesII.pdf
Course info continued

- Engineering
  - Part IIA:  
  - Part IIB:  
    [http://to.eng.cam.ac.uk/teaching/courses/y4/index.html](http://to.eng.cam.ac.uk/teaching/courses/y4/index.html)
  - The Cambridge Handout – online at fasa.caltech.edu is your best source for specific class info – use the links provided.
Reference Letters

• Who can write for you?
  – Need at least one prof/instructor in your STEM option (unless applying for Econ) or a highly related field for your 1st letter. (No Hum or SS letters please except for Econ students.)

2nd Letter:
  – Graduate TA’s in your option or related field
  – Post-Docs you have done research with you or
  – Employers in STEM related areas-research related
  – 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.
Punting on the Cam
Questions?