Understanding Cambridge Academics
Cambridge alternative program requirement

• You must apply to an official study abroad program other than Cambridge Michaelmas or Lent.

• There are only 6 Michaelmas and 4 Lent places.

• For all other programs we can get additional places beyond our set exchange number, e.g., DTU has a base of 5, but we can get additional places.

• Applications submitted with only Cambridge as an option will NOT be processed.
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 3.6 cum is needed 3.7 GPA & up in your option.
- 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 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!”
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?
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. Should go senior year!
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.
Chemical Engineering
Computer Science and Technology
Engineering
Natural Sciences*
Mathematics

*Natural Sciences Tripos 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.

Engineering tripos offers a few HSS type classes.
Typically, parts are split up as follows:

- Part 1A – 1\text{st} year
- Part 1B – 2\text{nd} year
- Part II
  - Part IIA
  - Part IIB
- Part III

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.
• 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 in Lent. *Cannot do Mat Sci or Biochem.*
Cambridge Colleges

- Each of the thirty-one Colleges is an autonomous corporation & is self-governed.
- 16 “old” colleges, founded between 1284 and 1596, and
- Three for women only & Darwin only admits only postgraduates
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 2\textsuperscript{nd} 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**: UCPH and DTU
  - DTU works for engineering and most natural sciences & applied math.
  - UCPH for physics, biology, chemistry, geosciences, and pure math.
  - Take Danish language, Danish Culture (UCPH), or History of Technology & BEM type classes at DTU.
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.
2\textsuperscript{nd} Choice Options

Want Old: Edinburgh – Founded 1583

TEVIOT
UNION
FOUNDED
1889
2\textsuperscript{nd} Choice Options

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!
  - 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 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.
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 – 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

• 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 of 2 D classes in mathematics.
  
  **NO PART III CLASSES ALLOWED** in Maths!

- Biological Subjects - Part Ib and II only
Biological Sciences

• Natural Sciences Tripos
  – Biology: Part II preferred. Some Ib allowed.
    • 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.
Mathematics Tripos

- The Brits say “Maths”, not “Math”
- Take classes from Part II. **You cannot take Part III classes that is a graduate program.**
- 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**

Maybe OK for IDS, but is both pure & applied math and should look at classes in Part Ia & Ib to see if you have the right background!
Chem Engineering Tripos versus Engineering Tripos

• 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 (3\textsuperscript{rd} or 4\textsuperscript{th} 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 IIA Level! IIA has supervisions and IIB does not.

• Has BEM type classes & Language classes.

IIA:

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

(Look at Group E Management & Mfg)
Examples of Part IIB Engineering elective classes

<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</td>
<td>3E1</td>
<td>Business economics</td>
<td>M(9)</td>
<td></td>
<td>Moodle</td>
<td>Dr A Rosato</td>
<td>Dr A Rosato</td>
</tr>
<tr>
<td>3E2</td>
<td>3E2</td>
<td>Marketing</td>
<td>M(9)</td>
<td></td>
<td>Moodle</td>
<td>Dr V. Mak</td>
<td>Dr V. Mak</td>
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<tr>
<td>3E3</td>
<td>3E3</td>
<td>Modelling Risk</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</td>
<td>3E6</td>
<td>Organisational behaviour</td>
<td>L(8)</td>
<td></td>
<td>Moodle</td>
<td>Dr J Stollberger</td>
<td>Dr J Stollberger</td>
</tr>
<tr>
<td>3E10</td>
<td>3E10</td>
<td>Operations management for engineers</td>
<td>L(8)</td>
<td></td>
<td>Moodle</td>
<td>Dr F Erhan-Oguz</td>
<td>Rev R McKenzie</td>
</tr>
<tr>
<td>Module</td>
<td>Code</td>
<td>Title (linked to syllabus)</td>
<td>Term (set)</td>
<td>Form of assessment</td>
<td>Prerequisites</td>
<td>On-line resources</td>
<td>Leader</td>
</tr>
<tr>
<td>--------</td>
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<td>-----------------</td>
</tr>
<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>
## IIB Group M Multidisciplinary

### 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>
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</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, IDS (Data Mgmt track), BioEng, CHEM ENG STUDENTS than the tripos that seems to match option.
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 on the FASA website.

• Many ChemE’s select the Engineering Tripos or can opt for Chemistry Part III
Computer Science & Technology aka CompSci Tripos

• 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 & IDS students should also look at Info Science Track in Engineering Tripos.
Computer Science & Technology Tripos

- 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.
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>1</td>
</tr>
<tr>
<td>Computer Vision</td>
<td>TR12</td>
<td>16/4</td>
<td>9</td>
<td>II</td>
<td>2</td>
</tr>
<tr>
<td>Computer Systems Modelling</td>
<td>MWF9</td>
<td>12/3</td>
<td>6</td>
<td>II</td>
<td>3</td>
</tr>
<tr>
<td>Topical Issues</td>
<td>MWF11</td>
<td>12/3</td>
<td>6</td>
<td>II</td>
<td>4</td>
</tr>
<tr>
<td>Databases</td>
<td>MWF12</td>
<td>12/3</td>
<td>6</td>
<td>IB</td>
<td>5</td>
</tr>
</tbody>
</table>

From: Lauren Stolper lstolper@caltech.edu
Subject: Add CS chart of course choice workshop for Cambridge
Date: November 6, 2016 at 12:51 PM
To: Lauren Stolper lstolper@caltech.edu
Cambridge Caveats

- You can take only take classes in one tripos/subject with exception of Natsci Lent only interdisciplinary classes (can propose 2)
- Cambridge 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 so start now

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

Computer Science:
https://www.cl.cam.ac.uk/teaching/1819/

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

• Engineering
  – The Cambridge Handout – online at [fasa.caltech.edu](http://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?
  – Letter 1: Need at least one prof/instructor in your STEM option or highly related field for your 1\textsuperscript{st} letter. \textit{(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
  – Other STEM related areas-research work, e.g, JPL
  – Research supervisors at Caltech or other university
  – 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? Email me.
Punting on the Cam
Questions?