

Imperial College
London



Centre for Transport Studies

MSc Course Handbook (2013-14)

MSc Course in Transport

MSc Course in Transport with Business Management

MSc Course in Transport with Sustainable Development

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Programme Specification – http://www.ulcts.cv.imperial.ac.uk/pdf_files/Programme.pdf

Cheating - <http://www3.imperial.ac.uk/registry/proceduresandregulations/policiesandprocedures/disciplinary>

About The Handbook

This handbook is intended for Students of the Department of Civil and Environmental Engineering and contains general information about the College, the Department and College Procedures. More specific information relating to your programme of studies is to be found on the following:

<http://www3.imperial.ac.uk/civilengineering/prospectivestudents/postgraduatetaughtadmissions>

and on Blackboard, which is our preferred Virtual Learning Environment.

Information about the staff, research interests, technical services, safety and much more, can also be found on the Department's web site.

<http://www3.imperial.ac.uk/civilengineering>

Useful Dates - Term Dates / Bank Holidays / College Closures

USEFUL DATES			2013-2014	
Week No	Dates	Term	Bank Holidays	
Week 01	30 September - 04 October 2013	Autumn	Christmas Day	25 December 2013
Week 02	07-11 October 2013	Autumn	Boxing Day	26 December 2013
Week 03	14-18 October 2013	Autumn	New Year's Day	01 January 2014
Week 04	21-25 October 2013	Autumn	Good Friday	18 April 2014
Week 05	28 October - 01 November 2013	Autumn	Easter Monday	21 April 2014
Week 06	04-08 November 2013	Autumn	Early May Bank Holiday	05 May 2014
Week 07	11-15 November 2013	Autumn	Spring Bank Holiday	26 May 2014
Week 08	18-22 November 2013	Autumn	Summer Bank Holiday	25 August 2014
Week 09	25-29 November 2013	Autumn		
Week 10	02-06 December 2013	Autumn		
Week 11	09-13 December 2013	Autumn		
Week 12	16-20 December 2013	Xmas		
Week 13	23-27 December 2013	Xmas		
Week 14	30 December - 03 January 2014	Xmas		
Week 15	06-10 January 2014	Xmas		
Week 16	13-17 January 2014	Spring		
Week 17	20-24 January 2014	Spring		
Week 18	27-31 January 2014	Spring		
Week 19	03-07 February 2014	Spring		
Week 20	10-14 February 2014	Spring		
Week 21	17-21 February 2014	Spring		
Week 22	24-28 February 2014	Spring		
Week 23	03-07 March 2014	Spring		
Week 24	10-14 March 2014	Spring		
Week 25	17-21 March 2014	Spring		
Week 26	24-28 March 2014	Spring		
Week 27	31 March-4 April 2014	Easter		
Week 28	07-11 April 2014	Easter		
Week 29	14-18 April 2014	Easter		
Week 30	21-25 April 2014	Easter		
Week 31	28 April-02 May 2014	Summer		
Week 32	05-09 May 2014	Summer		
Week 33	12-16 May 2014	Summer		
Week 34	19-23 May 2014	Summer		
Week 35	26-30 May 2014	Summer		
Week 36	02-06 June 2014	Summer		
Week 37	09-13 June 2014	Summer		
Week 38	16-20 June 2014	Summer		
Week 39	23-27 June 2014	Summer		

Term Dates : 2013-2014
Autumn Term: Saturday 28 Sept to Friday 13 Dec 2013 Spring Term: Saturday 11 January to Friday 28 March 2014 Summer Term: Saturday 26 April to Friday 27 June 2014

College Closure Dates
Christmas: Monday 23 Dec to Wednesday 1st Jan 2014 (incl) Easter:

Graduation Ceremonies
Commemoration Day Wednesday 23 October 2013 PG Awards Day Wednesday 7 May 2014

College Tutors

Student welfare is of particular concern to members of academic staff in departments and divisions, and to Wardening teams in Halls. Postgraduate students on taught courses have a course director and cluster administrator and research postgraduates have a supervisor, supported by the Department's Postgraduate Administrator and Postgraduate Tutor.

These should be the first point of reference if problems arise. However, all students also have confidential access - independent of department or division - to the College Tutors regarding academic issues, and all aspects of pastoral care and discipline within the College.

The College Tutors are:

Dr Mick Jones	m.d.jones@imperial.ac.uk	+44 (0)20 8383 1643
Dr Simon Archer	s.archer@imperial.ac.uk	+44 (0)20 7594 5368
Dr Lynda White	l.white@imperial.ac.uk	+44 (0)20 7594 8527

Graduate School

As a member of the Department of Civil and Environmental Engineering students are automatically made a member of the Graduate School. Membership means students become part of a wider community, broadening and enriching their academic and social experience whilst at Imperial.

The Graduate School has an overarching role with a remit that covers both professional skills development training and the quality assurance of all masters and research programmes.

The Graduate School's "professional skills development" programme focuses on developing generic personal skills such as communication, teamwork, project management and planning skills. Whilst some courses are compulsory for first year research students, all postgraduates are welcome to relevant courses. The Graduate School's programme has twice received the Times Higher Award for Outstanding Support for Early Career Researchers.

Full details of the skills courses and how to reserve a place can be found on the Graduate School website:

<http://www3.imperial.ac.uk/graduateschool/transferableskillsprogramme>

The Graduate School also organises a number of social activities throughout the year. These include a welcome event, careers events, distinguished guest lectures, receptions and a research symposium with a poster competition. The Graduate School also hosts the Ig-Nobel Tour Show. These events are intended to promote intellectual discussion and exchange of ideas across disciplines.

Further information about Graduate School can be found online at:

<http://www3.imperial.ac.uk/graduateschool>

or contact them by emailing graduate.school@imperial.ac.uk

Imperial College London Library

The Central Library, open 24 hours during term time, is the main focus for library services on the South Kensington Campus. With over 1,100 study spaces, the Library is home to our engineering and science print collections, as well as a broader range of humanities and humanities material. With subscriptions to over 28,000 electronic journals and databases you'll find much of what you need is available wherever you have internet access. Where the library doesn't have immediate access to material – there is a document supply service that can track down what you need, nationally and internationally. A vital part of the library service is its team of subject librarians who can advise on everything from where to find the best information to how to manage your references and more.

For more information and the name of your librarian see www.imperial.ac.uk/library.

Printing Services

There are both colour and black and white printing facilities available to students within the Central Library at a small cost. Printing credit for these facilities is stored on your college ID card and can be purchased in the Central Library.

Additionally the Print Shop is located in Room 024 of the Sherfield Building.

Room 024 is located in the basement of the Sherfield Building. Access can be made by entering Sherfield through the double doors next to the branch of Santander. From there you can take the lift to Level 0 where Office Depot is now situated.

Please click on the link below for the full details and the contact information.

<http://www.purchasing.ad.ic.ac.uk/Product%20Areas/Print/index.htm>

Affordable external printing shops near the South Kensington Campus include Kall Kwik and Prontaprint.

Clubs and Imperial College Union

There are a large number of clubs providing opportunities to meet people who share similar interests. These include: Chess, Riding & Polo, Martial Arts Clubs, Chamber Music, Film Society, Choir, 2 Orchestras, Wind Band, Wine Tasting Club, Imperial College Amnesty International, and many religious and ethnic-based groups covering most religions and nationalities. A complete list can be obtained from the Students' Union.

All postgraduate students and staff registered for degrees are eligible for membership of the Students' Union.

1. All students of Imperial College, regardless of whether or not they are PhD or masters students, are automatically members of Imperial College Union.
2. All students of Imperial College may join any of the Union's 260+ clubs and societies. Some of these clubs charge small membership fees, others don't.

3. All civil engineering undergraduates and postgraduates are automatically members of "CivSoc", the Civil Engineering Society, and the "City & Guilds College Union", the Faculty of Engineering Union. All graduate students are also members of the "Graduate Students Association", a body that represents graduate students to the College and co-ordinates social events for graduate students. All of these bodies are part of Imperial College Union.
4. If not a single one of the 260+ clubs and societies of Imperial College Union are doing what you want to do, then you can start your own!
5. All students have access to the Union's bars, catering outlets and the advice centre. These facilities are based in the Union Building, which is located in the Beit Quadrangle on the northern edge of the South Kensington campus.
6. The Union runs a network of academic representatives ranging from year representatives to the ICU President. Research students traditionally elect group and Departmental representatives from amongst themselves whilst faculty and college level representatives are elected by formal online cross campus votes throughout the year. Undergraduate and MSc students traditionally elect course/year representatives in lectures at the start of the year.
7. Rail discounts and Oyster card discounts have nothing to do with membership of ICU. These discounts are available to every student in the country by right. To get your Oyster card discount, you need first to prove to Transport for London that you are a registered student of Imperial College. The Student Hub on level three of the Sheffield Building will help you with the application process for your Oyster Card.
8. Staff (Research Assistants registered for PhD) are not members of Imperial College Student Union as they are represented by trade unions. However, research staff may join clubs after buying Associate membership and use the union's bars and catering services.
9. Under the 1994 Education Act, students may opt out of membership of ICU. Students who do so still have access to all of the facilities ICU offers and may continue to participate in clubs. However, students who opt out may not vote in elections.
10. For further information please see www.imperialcollegeunion.org

Health Centre & Dental Surgery

The College Health Centre is located on 40 Prince's Gardens, SW7 1LY. It is a NHS practice and students and staff may register as patients if they live within its registration area. A triage clinic is run from 8.30am – 10.00am Monday-Friday and 3.00pm – 4.00pm Monday, Wednesday – Friday. These clinics are intended for brief consultations for patients who need to be seen on the same day. This clinic operates a queuing system and this may involve a wait. For an appointment to see a specific doctor, you should ring the Health Centre Receptionist on 49375/6. A Nurses' Clinic is also available without an appointment Monday-Friday 9.00am -11.00am and 3.00pm – 4.00pm Monday, Wednesday – Friday. Services offered in this clinic are for pregnancy testing, dressings, sports injuries, minor illnesses and accidents. You can also book routine appointments with them.

Imperial College Health Centre is closed at weekends and on public holidays. On weekdays during the Christmas and Easter closures, the Health Centre runs an emergency clinic only, from 8:30am to 10.00am. However, reception is open until 1.00pm. The Health Centre provides a 24-hour emergency service for its NHS registered patients only, however, in the event of an emergency when the Health Centre is closed, telephone the Health Centre on +44 (0)20 7584 6301 or internal extension 49375/6. A recorded message will give you the out of hour's answering service telephone number. Please ring this number and ask for the Imperial College doctor. A doctor will return your call at the earliest opportunity.

The nearest accident and emergency departments are at Chelsea and Westminster Hospital, 369 Fulham Road, London SW10 9NH, and St Mary's Hospital, Praed Street, London W2 1NY. Nights, weekends, public holidays, College closures (NHS registered patients only)

For more information about the NHS registration area, international students & the NHS and how to register with a doctor please visit the health centre website at: <http://www.imperialcollegehealthcentre.co.uk/>

You can also find more information about repeat prescriptions, home visits, nurses' services and vaccinations at the above website.

The services of an acupuncturist, osteopath, chiropractor and Alexander Technique teacher and College Counsellors are also available for all students. The student counsellors, David Allman, Catherine Perry, Rosie Summerhayes and Cathy Ingram can be found on Level 4 of the Sherfield Building. (counselling@imperial.ac.uk).

The dental clinic welcomes all new patients. New patients and current patients are required to sign up annually to be entitled to NHS dental treatment.

The dental team provides the full range of NHS treatments. If you feel you may require dental treatment within the next year and are not already registered with a London dentist, register as soon as it is convenient in order to become eligible for NHS treatment. You can register from Monday to Friday 09.00–17.00. The surgery can also provide private treatment. The Dental Surgery can be contacted on 49396.

Where to find snacks or meals

There are various places where meals or snacks can be obtained scattered around the South Kensington campus. In the Sherfield Building the Senior Common Room (SCR) is open to all staff and postgraduates on non-taught courses and their guests. **The SCR is not open to MSc students.** The SCR provides hot meals, snacks and salads and has a separate café/bar area which is open all day. The Junior Common Room (JCR), which is open from 8.30am for breakfast, within which is the 'QT' shop which sells sandwiches, pies and other snacks to take away. The entrances to both Common Rooms are on the Walkway^[1]. On the ground floor is the Main Dining Hall (known as the Queen's Tower Rooms), which sells hot and cold meals and is open to all.

Next to the Sherfield Building facing onto the Queen's Lawn, the newly renovated Library Café offers hot meals as well as drinks and snacks. It is usually open as follows:

Mon-Thursday	08:30 - 23:00
Friday	08.30 - 21:00
Saturday & Sunday	10:00 - 17:00

Other food outlets around the campus include 170 Queen's Gate (dinner only), the Students' Union in Beit Quad and Eastside. At 170 Queen's Gate (the Rector's residence), there is a waitress service restaurant which is available to all who wish to eat in a more relaxed environment than the other dining facilities offered within the College, however, tables must be booked in advance.

Shops and Banking Facilities

Imperial College Students' Union runs the Union Shop and the Newsagents, which can be found on the Walkway. The Union Shop sells stationery, greetings cards, postage stamps, telephone cards, calculators, and many other items including clothes. The Newsagents sell papers, magazines, snacks, drinks and other small items. Also located on the Walkway is an optician's and Blackwell's bookshop.

Away from the campus, within 5 minutes walk, you will find a variety of shops in Gloucester Road and, slightly further afield, there are shops in South Kensington, Knightsbridge and Kensington High Street.

There ATM machines located in the Ground Floor lobby of Sherfield Building. Other banks are situated on Gloucester Road, and in South Kensington and Knightsbridge.

Post Office

There is no Post Office on campus, normal post can be sent via the Department's General Office.

The nearest Post Office is located at the corner of Gloucester Road and Exhibition Road, close to Gloucester Road Underground station.

^[1] The Walkway runs from the Mechanical Engineering building on Exhibition Road through to the rear entrance of the Huxley building, which houses the Maths, Physics and Computing Departments.

Access to Learning Fund (ALF)

The Government provides Higher Education institutions with ALF to provide discretionary financial help for both full and part-time undergraduate and postgraduate students.

The College uses ALF to assist students who need additional support, whether because they have higher than expected costs, or unexpected difficulties. Priority is typically given to mature students, students from low-income families, students with dependents (especially lone parents), disabled students, care leavers, final-year students, and part-time students.

Before submitting an application, undergraduate students must have applied for their maximum student loan entitlement and have received the first instalment. Postgraduate students must be able to demonstrate that they made a realistic financial provision to fund their course. For further enquiries please email:

student.funding@imperial.ac.uk

The College Hardship Fund

The College has a Fund to help European and overseas students who are experiencing financial difficulties.

The Hardship Fund is primarily intended to assist those students who have experienced a change in their financial circumstances after registering with the College. Grants cannot be made to assist with tuition fee payment.

If you apply to the Fund then your Senior Tutor, Postgraduate Tutor or supervisor will be asked to confirm that your attendance and academic progress are satisfactory. Applications are considered by a panel that meets once per term.

Ethos (Sports Centre)

Ethos, Imperial College's sports centre opened in January 2006 and boasts the following state of the art facilities:

- Climbing wall
- Exercise studio
- 25m deck-level swimming pool
- Sauna/steam room and spa
- 5 badminton court sports hall
- 76 station Fitness Gym
- Three squash courts
- Sports Injury treatment rooms
- Massage Capsule
- Spacious reception area with Fair Trade coffee

Check out the website for more details <http://www.imperial.ac.uk/sports>

English Language Support Unit

<http://www3.imperial.ac.uk/humanities/englishlanguagesupport>

The English Language Support Unit (ELSP) offers classes, the majority of which are free of charge, to students and members of Imperial College London who are not native speakers of English.

Please note our classes are NOT open to non-members of Imperial College. Non-members can search for English language courses in London at the Association of Recognised Language Schools website: www.arel.org.uk.

To attend an English class the first step is to come to one of the English test and registration sessions at the beginning of each term.

Details of the test sessions can be found on their webpage and on the ELSP notice board in the Humanities department (Level 3, Sheffield Building).

Humanities Evening Classes

The Centre for Co-Curricular Studies at Imperial College London offers a range of evening classes in a variety of languages at various levels, as well as classes in Creative Writing and Music Technology. Also on offer are Introductions to Film, Opera, Theatre and Art.

Courses available comprise 20 weekly sessions during the Autumn (9 weeks) plus Spring (11 weeks) Terms. All courses are 2-term courses that begin in the WEEK COMMENCING 14 OCTOBER 2013, break for Christmas by 12 December 2013, resume for the Spring term in the week commencing 13 January 2014 and finish by 27 March 2014. We do NOT have any new classes starting in January 2014.

All 2-term courses begin at 6pm on the day of the week as indicated on our [time-table](#). All classes are taught for two hours per week (2 hours x 20 weeks = 40 hours of tuition).

Our courses, **OPEN TO ALL**, are attended by Imperial College members and alumni, local Museum staff, students of nearby colleges or other London universities, as well as members of the wider general public

For more information visit: <http://www3.imperial.ac.uk/humanities/eveningclasses>

Chaplains and Faith Advisors

The Chaplaincy has links with representatives of many of the major world religions. These representatives are either Chaplains working with students across London or act as Faith Advisors to the Chaplaincy. All can provide advice on matters relating to their own religious tradition and are willing to see individuals either directly or when referred by the Chaplaincy.

<http://www3.imperial.ac.uk/chaplaincy/resources/chaplains>

Student Counselling Service

The Student Counselling Service offers short-term counselling to all registered students of Imperial College London. It is free and confidential. Counsellors are available at the South Kensington, Hammersmith and Silwood Park Campuses. For more information visit: <http://www3.imperial.ac.uk/counselling>

Wardens

- Wardens are responsible for the wellbeing of all residents of Imperial halls
- They are on call every evening and all weekend to sensitively handle any emergencies
- Wardens act as your first port of call for help and support for any matters relating to life in halls
- Wardens are in charge of making sure the hall environment is conducive to study
- Wardens promote social life by providing entertainment and social activities to help you to settle in, get to know one another and have fun in halls

The Wardening Team

Wardens - There is a warden in charge of running each hall. Wardens all work at Imperial during the day, so they will quickly become familiar faces.

Assistant Wardens – Sometimes an assistant warden supports the warden, helping with the day-to-day management and administration of the hall, ensuring that there is always someone available to help.

Subwardens - These are usually PhD students. They also assist the Warden in the running of the Halls, and play a big part in planning social activities as well as providing pastoral care.

Hall Seniors - These are Imperial undergraduate students who loved halls so much they decided to come back for another year. They organise events, answer questions and ensure that settling in and having fun in your first year is as easy as possible.

Hall Committee – Made up of current students living within the Hall of Residence, Hall Committees help plan social events and work with the wardening team to resolve any issues arising.

London Nightline

London Nightline is a confidential listening, support and practical information service for students in London. We are open from 6pm to 8am every night of term.

You can talk to us about anything - big or small - in complete confidence. We won't judge you or tell you how to run your life: we'll simply listen to whatever is on your mind.

All our volunteers are students themselves, who have undergone extensive training and who understand that university life in London isn't always plain sailing.

Email: listening@nightline.org.uk

Tel: 0207 631 0101

SECTION 2 - GENERAL INFORMATION ON THE DEPARTMENT

How to Find Your Way around the Department

The Department is self-contained within the Skempton Building. Most of the teaching areas are to be found on Levels 0, 1, 2, 3 and 6 with the exception of the teaching laboratories, which are located on levels 0, 1 and 5.

Room bookings may be requested by e-mail to cvgenoff@imperial.ac.uk or in person at the General Office.

Room	Level	Purpose
Teaching Room 060A	0	Lectures – tutorials – examinations – presentations
Teaching Room 060B	0	Lectures – tutorials – examinations – presentations
Teaching Room 060C	0	Lectures – tutorials – examinations – presentations
Learning Centre 062	0	Lectures – tutorials – examinations – presentations
Teaching Room 064A	0	Lectures – tutorials – examinations – presentations
Teaching Room 064B	0	Lectures – tutorials – examinations – presentations
Laboratory Room 043	0	Hydrodynamics Laboratory
Teaching Room 163	1	Lectures – tutorials – examinations – presentations
Lecture Theatre 164	1	Lectures – presentations – seminars
Teaching Room 165	1	Lectures – tutorials – examinations – presentations
Laboratory Room 158	1	Structures Laboratory
Lecture Theatre 201	2	Lectures – presentations – seminars
Lecture Theatre 207	2	Lectures – presentations – seminars
Computing Lab 208	2	Computing – lectures – tutorials
Teaching Room 224	2	Lectures – tutorials – presentations – seminars
Mezzanine Lab 240	2	Workshops – Lab Practical's – Design Classes
Teaching Room 301	3	Lectures – tutorials – examinations - presentations – seminars
Teaching Room 307	3	Lectures – tutorials – examinations - presentations – seminars
Computing Lab 314	3	Computing – lectures – tutorials
Teaching Room 315	3	Lectures – tutorials – presentations
Computing Lab 317	3	Computing – lectures – tutorials
Library 402	4	Study area
Reprographics Room 412	4	Printing & Binding facilities
Common Room 414	4	Staff & PhD Students only
Meeting Room 444	4	Meetings – PhD Examinations – presentations – seminars
Teaching Room 427	4	Lectures – tutorials – presentations – seminars
Laboratory Room 509	5	Environmental Laboratory (Roger Perry)
Laboratory Room 528	5	Geotechnics Laboratory
Teaching Room 601	6	Lectures – tutorials – meetings - examinations – presentations

Please note that Room 060A-C, Learning Centre 062, 064A-B, 163, 164, 165, 201, 207, 208 and 203 (which is located in the Mechanical Engineering Building) are shared faculty spaces known as “SKEM”. In addition, there is a shared student area on level 2 known as “BOSS”.

Break out Student Space (BOSS)

The student break out space on Level 2 of the Skempton Building provides an informal study space for engineering students, comprising PC/laptop benching, comfortable seating and meeting spaces. The area is provided with drinking water, vending machines, copiers and a recycling station.

Safety

As a student at Imperial College you have the responsibility to ensure that you take reasonable care of your own and others' health and safety. This means that you must adopt safe working practices and make proper use of any facilities provided. You must also comply with College Health and Safety Policies, and co-operate with College Staff holding safety responsibilities.

In Civil & Environmental Engineering we try to ensure that all our staff and students work safely which is not only better for one's health but also is cost-effective - having accidents costs money in lost manpower and lost resources. Do not cut corners, always use the correct equipment for the job, ensure you know what the hazards are and, if in doubt, seek advice.

If you have any queries regarding safety matters contact

Dr. Geoff Fowler - Departmental Safety Officer

Room: 415

Tel. no: 45973

Email: g.fowler@imperial.ac.uk

A copy of the Department Health & Safety Booklet can be found at the back of this handbook and on the Blackboard UG Year Resources site.

Departmental Officers and Contact Details

Central Administration			
	Room	Tel. No	e-mail@imperial.ac.uk
Head of Department Professor Nick Buenfeld	442	45955	n.buenfeld
Departmental Operations Manager Colin Kerr	440A	46044	c.j.kerr
Technical Services Manager Clive Hargreaves	408	45993	c.hargreaves
General Office Manager Fionnuala Donovan	118	45929	f.donovan
Academic Administrator Louise Green	440B	46045	l.green
Tutor for Female Students Dr Stavroula Kontoe	535	45996	stavroula.kontoe
Disabilities Officer Louise Green	401	46042	l.green
Departmental Safety Officer Dr Geoff Fowler	415	45973	g.fowler
General Office Stephen Hullock Angela Frederick Yamini Chikhliya	118A	45931 46123 45932	cvgenoff
Liaison Librarian Angela Goldfinch	Central Library	48882	a.goldfinch
Librarian Nicole Lau Paul Harrop	403 403	46007 46007	n.lau p.harrop
MSc Cluster Director2			
	Room	Tel. No	e-mail@imperial.ac.uk
Transport Prof Dan Graham	605	46088	d.j.graham
Business Management Ms Alison Ahearn	321	45981	a.ahearn
Sustainable Development Dr James Keirstead	407	46010	j.keirstead

Postgraduate and General Office

Your first point of contact in the Department for enquiries relating to your MSc will be your Cluster Administrator. The Postgraduate Office is primarily responsible for the processing of applications, central administration and supporting digital media.

Postgraduate Administration			
	Room	Tel. No	e-mail@imperial.ac.uk
Postgraduate Administrator Fionnuala Donovan	118	45929	f.donovan
Director of MSc Programme Professor Bassam Izzuddin	330	45985	b.izzuddin
Director of PhD Programme Professor Chris Cheeseman	305	45971	c.cheeseman
Postgraduate Tutor Dr Ahmer Wadee	443	46050	a.wadee
Cluster Administrator			
	Room	Tel. No	e-mail@imperial.ac.uk
Transport Jackie Sime	616	46100	j.sime

Education, Information and Guidance

The Department encourages you to take early advantage of the careers education, information and guidance available from the following sources:

1. The professional skills development programme run by the Graduate School of Engineering and Physical Sciences: <http://www3.imperial.ac.uk/graduateschools/>
2. College Careers Advisory Service (Level 5, Sherfield Building) <http://www.imperial.ac.uk/careers/>, with which you can book for: Careers appointments, Quick query sessions, Employer-led skills workshops, Mock interviews (with a Careers Adviser), Mock interview sessions (with a graduate employer), Psychometric testing, Practice aptitude test sessions, personality questionnaires. You can also register to receive weekly bulletins of one of ten types of job vacancies (E-vacancy Alerts) by e-mail. There is an advice facility especially for Postgraduate students: <http://www3.imperial.ac.uk/careers/pg>
3. The College Careers Advisory Service website (<http://www.imperial.ac.uk/careers/>) also contains information about how one can register for 'JobsLive'. This is an electronic portal through which numerous job opportunities are advertised and through which you can obtain further background information about the types of companies typically looking to employ Imperial graduates. You are encouraged to register for this service.
4. Departmental Careers Adviser: Dr Peter Stafford, Room 405, Skempton Building, p.stafford@imperial.ac.uk.
5. Departmental careers website: <http://www3.imperial.ac.uk/civilengineering/intranet> - accessible only from computers connected to the Departmental network.
6. Careers notice boards located on Level 4 (close to the Head of Department's office) also contains hard copies of some of the postings placed on the intranet site.
7. A small library of careers and employer information is held by Dr Peter Stafford in Room 405.
8. Various careers presentations and careers fairs which occur throughout the autumn and spring terms, including an Engineering Careers fair in October 2013 – further details from <http://www3.imperial.ac.uk/careers/ug/graduaterecruitment/programme>
- 9. Your research project supervisor / personal tutor.**

It should be noted that most major companies do the bulk of their recruitment during the autumn term. While PhD graduates are generally treated differently to other types of students, it is worth being aware of when the employers are most focused upon recruitment.

Dr P Stafford
Departmental Careers Adviser

Departmental Library

Library Opening hours:

Monday – Friday 09.30 – 17.00

The departmental library provides a quiet working area for all students and staff. The library holds over 19,000 books and around 5,500 volumes of journals, including conference proceedings and research reports. The hard copy collection of theses ended in 2009 and theses after this date **may** be available in electronic format on the Spiral database on the main, central library catalogue. There is a large specialist print journal collection as well as a collection of postgraduate and undergraduate textbooks. The Central Library has multiple copies of textbooks available for loan.

The library website (www.imperial.ac.uk/library) also provides access to a wide range of electronic resources. You can access hundreds of databases, thousands of electronic journals and an increasing collection of electronic books. The majority of these resources can be fully accessed on- or off-campus. Please ask library staff for more information about off-campus access.

Further information about the library and its services is available from the library staff and from the library website: www.imperial.ac.uk/library

Other Useful Libraries in London

Institution of Civil Engineers Library

<http://www.ice.org.uk/Information-resources/Library>

The Library located at the Institution of Civil Engineers (ICE) has over 100,000 titles and is the largest resource in Civil Engineering in the world. A vast collection of books, journals, reports, DVDs and images are available. Visitors are welcome by appointment or introduction from existing members. Non-members without an appointment can access the Library for £10 per day (£5 for students). The Library's contact details are as follows:

Institute of Civil Engineers Library
1 Great George Street, London, SW1P 3AA
Tel: 020 7665 2251

The Earth Sciences Library at the Natural History Museum

www.nhm.ac.uk/research-curation/library/earth-science-library

The Earth Sciences Library is located in the Natural History Museum on Cromwell Road in South Kensington. The library is by appointment only to researchers. The collection is available for reference only (i.e. items may not be borrowed). The Library's contact details are as follows:

Earth Sciences Library
Natural History Museum, Cromwell Road, London, SW7 5BD
Tel: 020 7972 5476

College ID Cards

For students who have uploaded their photos and registered online, ID cards can be collected from the General Office, Skempton Building on arrival. For those who have their photos taken on arrival, the ID Card is normally available from the General Office in the Skempton Building within two days.

If your college ID card is lost or stolen it must be reported immediately to the security office on telephone ext. 58900 or 58920 so your card can be cancelled.

Replacing your college ID card is free the first time, but there will be a £10 charge each time after that. This can be done at the Security Office in Sheffield.

For further information regarding your ID swipe card please go to <http://www3.imperial.ac.uk/facilitiesmanagement/security/services/idcard>

Student Names

When submitting coursework or official forms within the Department and College can all students please ensure they use their official name (i.e. the names that are used on college registers). Nicknames and shortened names **must not** be used.

Access to Skempton Building

The Skempton building can be accessed from 07:00 – 23:00 daily. The main entrance requires the use of your college ID card between the hours of 07:00 – 08:30 and 18:00 – 23:00 Monday to Friday. During weekends and vacations you will be required to use your college ID card each time you enter/exit the building.

The building will be locked at **23:00** every night, so please ensure you have left the building in good time.

Remember to check that no one else enters with you without using their own college ID card

Lost Property

If you think you have lost something within the Department your first port of call should be the General Office/ Reception. If it is not there you should check with the Security Office in Sheffield as it may have been handed in there. (If an item is handed in with ID and email will be sent to the owner immediately to inform them).

All items found within the Department (e.g. keys/phones/bags) should be handed into either the General Office or Reception. All items found outside the Department should be handed into the Security Office in Sheffield.

<http://www3.imperial.ac.uk/facilitiesmanagement/security/services/lostandfoundproperty>

Bicycles

Bicycles are **not** permitted within the Department. This is college policy. The following link provides information on suitable bicycle storage within the South Kensington

Campus. Showering facilities are available within the department and are located in the toilets on levels 0 and 3. <http://www3.imperial.ac.uk/facilitiesmanagement/security/bicycles>

Back up of Data

Always back-up your files regularly as data may be lost for a number of reasons e.g. hardware failure, fire, flooding, theft. It is recommended that your back-up files are located in two different locations e.g. on your own computer, CD/DVD, USB stick, college server.

This should be done as a matter of course; however it is particularly important when working on your dissertation and major projects.

Basic Examination Rules and Regulations

Examination Instructions

1. Be prepared.
2. Take with you only the items from the Materials Permitted list below.
3. Arrive 15 minutes before the exam is scheduled to begin.
4. When you enter the examination room, do so in **SILENCE**.
 - a. Switch off your phones (and any other electronic devices) and place them in your bag
 - b. Put your bags at the area indicated by the Invigilator or Supervising Academic
 - c. Find the desk with an examination card which has your Candidate number (or name) on it, then sit down at this desk.
 - d. **DO NOT turn over or open your examination paper until you are instructed to do so by your invigilator.**
 - e. You may at this point start to fill in the front of your Answer Book:
 - i. Candidate number
 - ii. Degree (Subject)
 - iii. Title of Paper
 - iv. Date
5. You **MAY NOT SPEAK** to anyone other than the invigilator. If you do speak to the invigilator raise your hand. Speak in a quiet voice so as not to disturb the other candidates.
6. Write in **blue** or **black** INK!!! Candidates **are not permitted to use red or green** ink, or to use any writing implement that is capable of producing red or green marks on the script. You should **not** write in PENCIL as this can be smudged by you or the person marking the paper.
7. Read the RUBRIC carefully BEFORE answering any questions.

NOTES:

- Calculator Model: **CASIO FX85GTplus** provided by the Department
- No dictionaries permitted
- If unsure of the meaning of a word in the examination, write down your interpretation of the word, or the question, in the answer book.
- The use of correction fluids (e.g. Snopake® and Tippex®) is explicitly not permitted.

- Candidates should indicate incorrect work by drawing a single diagonal line through the work concerned.

Materials permitted in Examinations

Pencil cases must be of clear plastic.

Identity Cards

- Candidates must bring their College identity card (i.e. swipe card) into all examinations.

Writing Implements and Drawing Instruments

- Candidates must write out their answers to examination questions in ink. As an exception, graphical solutions, diagrams and figures may be drawn in pencil.
- Candidates may take into the examination only the following: pens, pencils, pencil erasers and other drawing instruments as required.

Data Sheets, Codes etc

- Unless specified or designated "Open Book", no additional materials may be introduced into examinations by candidates. If, in the opinion of the Board of Examiners, such materials are required, they will be provided or notified to all candidates and the standard examination rubric amended to state that they will be provided or allowed.

Exam Technique

1. Take 5-10minutes to read through the questions, make a sensible decision as to which questions to tackle.
 - a. Which questions can I answer fully?
 - b. Out of the questions I can't answer fully which ones can I answer the most of?
 - c. Am I fulfilling the exam rubric?
 - d. **Example:** if there are 5 questions to complete in 3 hours, that is approximately 35 minutes each.
2. If you make a mistake just put a line through your work.

Examination Preparation Tips

1. Do all your tutorials for each subject.
2. Work with your colleagues on subjects you don't understand so clearly
3. Find past papers and work through these
4. Ideally time yourself to check you can complete in the allotted time

At the end of the Examination

When instructed by the Invigilator:

- Stop writing.
- Remain seated and silent , there may be candidates with additional time to be considered.

- Ensure that all material carries your College Identifier Number (which is also your exam candidate number), and that all graph paper and supplementary examination books are securely tied together inside the back cover of the main answer book.
- When all examination materials have been collected by the Examination team and you have been released, leave the room quietly – collecting your belongings on the way out.
- Do not remove any examination material from the room.

Vacation Training Scheme

Details of jobs will be posted on the notice boards (3rd Floor, Skempton Building) and also on the Careers page of the Departments website. New posts are notified to us throughout the year, so check both these sources regularly. Other sources of help/advice can be found at the sites listed below.

The **International Association for the Exchange of Students for Technical Experience** (IAESTE) was founded in 1948 at Imperial College. Imperial College remains affiliated to IAESTE to date. IAESTE UK gives an annual presentation to Imperial College students and this is usually held in December. For more information about vocational training contact Louise Green, Room 440B.

<http://www3.imperial.ac.uk/urop/opportunitiesdirectory/otheropportunities/iaeste>

Sabbatical Student Positions

There are a number of sabbatical student positions that together run the Union each session. If you are considering standing for election to one of these positions then before allowing your name to go forward you are strongly recommended to discuss with your Senior Tutor the possible effect this will have on your academic studies and where appropriate how best to prepare to resume your studies in the event that you are elected.

Printing Facilities (Departmental)

The ICTprintservice provides printing, copying and scanning to email on multi-function printers located around the campuses. It is a chargeable printing and copying service. Identification is via your College ID card. Payment may be made by credit or debit card. Payment may also be made in cash using money loaders located in Central and major Campus libraries or by cash-over-counter at certain other medical campuses.

You can view a list of your pending print jobs, manage your print jobs, and check on the status of your prepaid credit on your account.

There are two of the above mentioned multi-function printers located within the Department. The first is in Room 317 and the second is in Room 412.

Report binding

A report binding service is available from Office Depot located in Sherfield building room 024 level 0 between “Santander” and “Blackwell’s” on the main walkway. Students wishing to bind their own material may use the free service located in Room 412. This includes the provision of covers and binding combs.

Accreditation/Professional Membership

All of our undergraduate and postgraduate courses are accredited by a variety of institutions including the Institution of Civil Engineers (ICE), the Institution of Structural Engineers (IStructE), the Institution of Highways and Transport (IHT), the Institute of Highway Incorporated Engineers (IHIE) and the Chartered Institution of Highways and Transport (CIHT).

To check which institutions are accrediting your programme, click on the following link <http://www.engc.org.uk/education--skills/accreditation/accredited-course-search> search for Imperial College, London and scroll down to your current programme.

Students are strongly encouraged to apply for membership which is free to students.

<http://www.ice.org.uk/Membership/Membership-grades-and-how-to-join/Students>

<http://www.istructe.org/membership/types-of-membership/student-member>

<http://www.ciht.org.uk/en/membership/membership-grades/student/index.cfm>

<http://www.theihe.org/membership/how-to-join/>

The Institutions Liaison Officer for the Department is Dr Ana Ruiz-Teran.

Civil Engineering Society (CivSoc)

The Civil Engineering Society is the departmental student society, of which all undergraduate and postgraduate students are automatically members. Run by an elected committee of students, CivSoc is one of the most active departmental societies in the college and organises regular events throughout the academic year. These include numerous lunchtime lectures given by industrial companies, site visits, social events and parties. The highlight of the CivSoc year is the extremely popular international trip in the spring, open to all students in the department. Additionally, CivSoc writes and publishes the departmental student newspaper Livic.

All students are encouraged to participate in CivSoc run activities. Announcements concerning upcoming events and society news are on the CivSoc notice board in the 2nd floor common room and on the ICE notice board outside room 201.

Computer Rooms

The Department has three PC Computer Laboratories located in rooms 208, 314 and 317. These facilities are normally open to all registered students of the Department from 08.00 to 22.30 daily, except when timetabled for classes or short courses. A further 20 PCs are available in the Department Library.

Please note that departmental computing facilities are provided for registered students only for their academic studies. Anyone found to be using the facili-

ties for anything other than these purposes (e.g. for friends) could be fined or have their account suspended.

Computer Rules

Civil Engineering

- NO eating or drinking in the computer rooms

College Wide

- Password and Login Names cannot be disclosed to anyone else
- Use is restricted to non-commercial college related work
- Displaying, handling, or sending offensive, derogatory or pornographic material is strictly forbidden
- Users must respect copyright laws and intellectual property rights
- Users must comply with the DATA PROTECTION ACT 1984 regulating the use of data about living persons

Failure to observe the college rules will lead to disciplinary action. Penalties can go from temporary suspension from all use of the computing facilities to in serious cases, expulsion and dismissal from the college.

More information about ICT policies can be found at:

<http://www3.imperial.ac.uk/ict/aboutict/policies>

Using your Own Laptop

Students may register a privately owned laptop for connection to the College network and full details of how to do this and all ICT related matters can be found at

<http://www3.imperial.ac.uk/ict/services/newstudents>

Students can find out how to register their laptops for campus network use by clicking [here](#) or from any of the lab PCs mentioned above. The website also informs about other public access areas on campus.

Wireless Access

Public wireless access (registration required) is available in many areas within the College, including the libraries, for full details for areas covered, please see the following: [wireless connection](#) or by email from service.desk@imperial.ac.uk .

All computers connected to the network must be registered. Activity may be monitored to ensure legitimate use of the facilities. The systems are operated in conjunction with Information and Communication Technologies (ICT). ICT also supply necessary documentation and run an advisory service (Help Desk) on Level 4, West Wing of the Sherfield Building. They can help with most questions on general subjects. Help desk support can be obtained by visiting the Help Desk, telephoning ext. 49000, or by e-mail to service.desk@imperial.ac.uk.

In addition, ICT are responsible for the overall running of the e-mail system and Home Drive (H:) Facility and for other aspects of the computing service, including networking and the provision of site licenses for certain 'core' software, some of which is available to undergraduates and postgraduates. For more information on

free software available for students to download, please visit <http://www.imperial.ac.uk/ict> and select “services/software shop”.

Blackboard

Full details and login is available at: [Blackboard Login](#)

Students will only be able to see information on courses for which they are registered. If you do not have access to a course you think you have registered for then please contact the General Office (cvgenoff@imperial.ac.uk). (Please note however we do not deal with the Humanities courses on Blackboard; in such an event you need to contact the relevant course lecturers).

New Students Website

The **New Students website** is a resource for all new and returning students. This website is designed to help you throughout your course of study. Everything you need to know as a student at Imperial College can be found in this website, and in the ‘**Student Resources**’ section. There are links to access MyTimetable, Blackboard, etc. including the Student e-Service link, where you can complete all of your personal details, register, etc. under ‘**Academic Matters**’.

<http://www3.imperial.ac.uk/students/newstudents>

Student e-Service

Student e-Service is where you would update your personal details, access your academic records, etc. (examination marks transcript).

<http://www.imperial.ac.uk/studenteservice>

SOLE & PG SOLE (Student Online Evaluation Survey)

Student evaluations of undergraduate and postgraduate lecture modules and laboratory modules are organised by the College centrally using the Student On Line Evaluation system ([SOLE](#) & PG SOLE). Both numerical and textual feedback is captured during a 2 week period at the end of each term ([SOLE - Login page](#)).

There are 3 SOLE & PG SOLE surveys that take place during the year:

- Autumn SOLE - runs during the last 2 weeks of the autumn term.
- Spring SOLE - runs during the last 2 weeks of the spring term.
- Summer SOLE - runs for 3 weeks in late May/early June

Once the SOLE & PG SOLE surveys has closed the Directors of Undergraduate Study and MSc Cluster Directors in each department are asked to check the student comments in the SOLE database to see if they would like to remove any comments, then the survey results are published. An email is sent to each individual member of staff that received feedback in the survey, giving details of the responses to along with all the free text student comments. The Directors of Undergraduate Study and MSc Course Director also have access to these results for all the members of staff in their department.

Student Representatives

Undergraduate and MSc students traditionally elect course/year representatives in lectures at the start of the year. Research students traditionally elect group and Departmental representatives from amongst themselves.

The role of student representatives is to represent the student's viewpoint at Staff/Student Liaison Committees, organise social activities and act as an intermediate between staff and students should an urgent problem arise within a course.

SSLC (Staff-Student Liaison Committee)

There are three such committees, for undergraduate, MSc and Research Students/Staff. They meet once each term, their remit is as follows:

- To provide a forum for debate about important matters
- To receive feedback from students
- To initiate enquiries or investigations on matters of concern to students
- To represent the interests and requirements of the student body
- To air grievances

The membership is drawn from the student body, with members being elected by their peers at the beginning of term; the Graduate Student Association representative and the relevant Departmental Officers.

For a full list of Staff-Student Liaison Committee Good Practice Guidelines, click [here](#).

Submission of Coursework

Coursework Cover Sheets

Coursework coversheets for individual and group work can be found in the General Office. Each one contains a plagiarism declaration on the back which must be signed. An example of the Coursework cover sheets used for individual and group work can be found in the appendices section.

Submitting Coursework

You may be required to submit coursework online or in paper copy. All coursework will, in either electronic or paper copy, include the Coursework Cover sheet. Paper submission is direct to your Cluster Administrator for logging, unless advised otherwise.

Receiving Marked Coursework

Lecturers are meant to return coursework within 2 weeks of it being handed in (or more if this period includes a college vacation).

Returning Marked Coursework

You are required to return all your marked coursework to your Cluster Administrator before the end of the academic session for the inspection of the External Examiners and the Board of Examiners

Penalties for late submission

You will be informed of the deadline for submission of coursework, you should be aware that penalties for late submission of coursework may apply, unless mitigating circumstances are presented, and agreed, in advance. These should be arranged via your Cluster Administrator.

Module Descriptions

A full list of all MSc Transport module descriptions can be found on the following link: <http://www3.imperial.ac.uk/civilengineering/prospectivestudents/postgraduatetaughtadmissions/moreinfotransport/transportsyllabus>

Transferring between Courses

Students wishing to transfer between courses should first contact the appropriate member of staff below, who will advise you as to whether or not this may be possible. Please note that for MSc students, transfers must be requested by the end of the first cycle of lectures.

Contact	Room	Tel. No	e-mail@imperial.ac.uk
Business Management & Sustainable Development Fionnuala Donovan	118	45929	f.donovan
Transport Jackie Sime	616	46100	j.sime

SECTION 3 – COLLEGE PROCEDURES

A full list of the following, and other useful links, are also to be found at: <http://www3.imperial.ac.uk/civilengineering/currentstaffandstudents/students/collegeprocedures>

The Colleges' Regulations for Students:

<http://www3.imperial.ac.uk/registry/proceduresandregulations>

Mitigation / extenuating circumstances policy and procedures:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/policiesandprocedures/examinationassessment>

Complaints and Appeals procedures:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/policiesandprocedures/complaintsappeals>

Academic integrity:

<https://workspace.imperial.ac.uk/registry/Public/Procedures%20and%20Regulations/Policies%20and%20Procedures/Examination%20and%20Assessment%20Academic%20Integrity.pdf>

Cheating offences policy and procedures:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/policiesandprocedures/disciplinary>

Guidance on Good Practice:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/qualityassurance/goodpractice>

Academic and Examination Regulations:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/regulations>

Statement of Quality Assurance Policies and Procedures

<https://workspace.imperial.ac.uk/registry/Public/Procedures%20and%20Regulations/Quality%20Assurance/Statement%20of%20Quality%20Assurance%20Policies%20and%20Procedures.pdf>

INTRODUCTION

The Courses

The Centre for Transport Studies offers a cluster of three Masters courses in the field of transport:

- MSc course in Transport
- MSc course in Transport with Business Management
- MSc course in Transport with Sustainable Development

The objectives of these courses are:

- To provide a systematic understanding of the causes and motivations of personal travel and good movement and of the means by which movement takes place;
- To provide a thorough grounding in techniques for analysing transport problems and developing and implementing policies and measures for resolving such problems;
- To develop appreciation of the importance and methods of evaluating transport projects, plans and policies, taking into account the political, social, environmental, commercial and financial issues involved.

In pursuit of these objectives, the Courses place emphasis on road and rail transport in the more industrialised countries, whilst recognising the important roles of other forms of transport and interchange with them, and the different context in which transport problems present themselves in less industrialised countries. Subject to this emphasis, the fundamentals are addressed in ways that are relevant to all means of transport and to every kind of society. The Courses are designed to equip their graduates for work in transport planning, engineering, operations, management, policy and research.

Availability

The Courses can be taken by full-time attendance over 12 months or part-time attendance over either 2 or 3 years, starting at the beginning of each academic year, which is usually the first Monday in October.

The academic requirements associated with the part time mode are exactly the same as those for full time study, but attendance at College is spread over two or three years on a day release or term release basis. In day release mode, students attend College between one and two days per weeks over two or three years. In each year they take a combination of relevant core and option modules. In their penultimate year they commence work on their Special Study Report, which is completed in the final year. In term release mode, the student attends College full time for a term in each of three years. Throughout their period of part time study, students are supported through contact with their Personal Tutors and Special Study Supervisors. Further details regarding the arrangements for part time study are presented later in this handbook.

Overview of Requirements

Full time students study core modules the first term (October-December) and select from a wide range of optional modules in the second term (January-March). In addition, an individual investigative design or research project (called the Special Study) is carried out continuously from May to September. From May onwards, all student time is devoted to the Special Study. Part time students carry out the same activities spread over their periods of study.

The assessment of candidates is carried out by a Board of Examiners comprising academic staff and an External Examiner. It is based on three elements:

- Written papers, covering the material in each core and option module.
- Coursework associated with the core and option modules, and
- The individual special study report.

Teaching

Lectures are coordinated by the teaching staff from the Centre for Transport Studies at both Imperial College London and University College London and students are formally registered at both Colleges. This means that you have access to the facilities (e.g., lecture rooms, libraries, social and sporting facilities) of both Colleges. Lectures take place at both Colleges and the location of each lecture is clearly set out in the timetables available at the end of this document and on the course web site (www.ulcts.cv.imperial.ac.uk)

Substantial contributions are also made from other experts and professionals in the field. This provides a wide range of expertise amongst the staff and allows students to conduct their special study project with appropriate expert supervision. It is common for special study projects to be undertaken in collaboration with an industrial collaborator.

The teaching provided by the academic staff responsible for the Courses is enriched by their active involvement in internationally recognised research, in advice to local, national and international transport agencies, in the work of relevant professional institutions, in collaborative work with leading firms of consultants, and in the provision of short courses in Britain and overseas for a range of transport professionals.

Further information about ongoing research and opportunities for PhD research in Transport at Imperial College London or UCL can be obtained from:

www.imperial.ac.uk/cts

www.cts.ucl.ac.uk

Transferring between Courses

Students wishing to transfer between courses should first contact the appropriate member of staff below, who will advise you as to whether or not this may be possible. Please note that for MSc students, transfers must be requested by the end of the first cycle of lectures.

Contact	Room	Tel. No	e-mail@imperial.ac.uk
Business Management & Sustainable Development Fionnuala Donovan	118	45929	f.donovan
Environmental & Water Resources Engineering Judith Barritt	230	45967	j.barritt
Geotechnics (including Engineering Geology) Sue Feller	529	46077	s.feller
Structures Ruth Bello	439	46040	r.bello
Transport Jackie Sime	616	46100	j.sime

Continuing Professional Development

Students may also wish to be aware of the fact that one or more individual modules from our MSc course portfolio can be taken on a 'Continuing Professional Development' (CPD) basis. Although CPD students are not registered for the MSc degree, they follow the same programme of study as a Masters student, in the relevant modules. Note that these arrangements are intended principally for individuals who are already employed in the UK transport industry and who wish to extend or update their professional competence; in particular, these arrangements are **not** an alternative route to a Masters degree.

Since our Masters courses evolve over time to reflect changing industry needs and priorities, you may wish to consider returning as a CPD student at some point in the future. Note that graduates of the Intercollegiate course benefit from a substantial discount on the normal price of this CPD activity.

<http://www3.imperial.ac.uk/civilengineering/prospectivestudents/continuingprofessionaldevelopment>

Attendance and Certification of Absence or Illness

College Regulation for Certification of Absence: Taught Course Postgraduate Students who are absent from the College for more than three days must advise the Course Director (or Cluster Administrator) of the reason for their absence. An absence of more than seven days, if due to illness, must be supported by a medical certificate from the Imperial College Health Centre. However, if an examination is missed on account of illness, a medical certificate from the Imperial College Health Centre must be produced immediately. No other medical certificate will be accepted,

except for a hospital medical certificate where the illness has resulted in a period in hospital.

If students are absent from the programme of studies without the permission of the Course Director, it will be presumed that they have withdrawn from the College. The Academic Registrar will then be asked to terminate their registrations for the MSc degree.

If a situation arises that requires a substantial absence from the Department, the Course Director will seek an Interruption of Studies. This will allow the student to remain registered for the MSc degree, but would mean that the student would complete the degree in the following year.

Course Governance and Management

The Intercollegiate MSc courses in Transport operates in accordance with the relevant strategic agreement that has been established between the two Colleges. The courses are governed by a Course Coordinating Committee drawn from the permanent academic staff involved in teaching the course from the Centre for Transport Studies at Imperial College London and Centre for Transport Studies at University College London.

The management structure consists of the Course Director, normally drawn from the permanent academic staff at Imperial College London and a Course Chairman, normally drawn from the academic staff at University College London. The Course Director, acting in consultation with the Course Chairman, is responsible for the overall academic management of the courses. The Course Chairman chairs the Course Coordinating Committee and the Board of Examiners. The Course Director and the Course Chairman are supported by a Cluster Administrator, based at Imperial College London. This structure ensures that students have access to day-to-day communication and support. If a student has a concern, he/she should in the first instance raise it with the individual concerned, before seeking the advice of the Cluster Administrator and the Course Director. If the matter is not resolved to the student's satisfaction, he/she should seek the advice of the Post Graduate Administrator and Director of the MSc programme, before consulting the Imperial College's Registry website on how to take the matter further.

<http://www3.imperial.ac.uk/registry/proceduresandregulations/policiesandprocedures/complaintsappeals>

Further Information

Further information on the MSc courses can be obtained from the following sections of this handbook and from the MSc course web site:

www.ulcts.cv.imperial.ac.uk

ASSESSMENT PROCEDURES AND REQUIREMENTS: MSc IN TRANSPORT

Introduction

Assessment of candidates for the MSc Degree and the DIC in Transport is by a Board of Examiners comprising academic staff and an External Examiner. It is based on three elements:

- Written papers, one for each core and elective module, taken at the beginning of the Summer term,
- Coursework associated with the core and elective modules, and
- The individual special study report.

Candidates are required to satisfy the Examiners in each element separately. Failure to satisfy the examiners in all elements of the course will result in the degree not being awarded.

Candidates are required to **preliminary select by early December in which elective** modules they wish to be assessed that year: 4 modules for full time students, and for part-time students normally 1 module in the first year and 1 or 2 in each of the second and third years making a total of 4.) **Confirmation of running of modules will be confirmed by end of term (13 December 2013)**

The Board of Examiners is governed by the relevant regulations for students. This note is intended only to inform candidates of the relevant procedures and requirements; in no way does it modify the regulations.

Written Papers

The timetable for written papers is announced towards the end of the Spring Term. The papers are spread over the first **three** weeks of the Summer Term. Each paper lasts for 2 hours, and candidates are **normally** required to answer 3 questions out of 5. Choice may be restricted by dividing the paper into sections. Information about the examination requirements is given in the course description for each module.

As far as is practicable, the papers are scheduled so that each candidate has to take only one paper on a given day, but it is sometimes necessary to require candidates to take two papers on the same day.

Equal weight is attached to all modules, and candidates should assume that they must satisfy the Board in each module separately.

Part-time students take in each year the written papers for the modules they have attended that year.

The Board of Examiners usually meets in **July** and September. All full-time and all part-time students in their final year are required to meet the External Examiner immediately after the **July** meeting. After this meeting, staff are able to discuss with candidates their general performance in the written papers. Where a candidate's examination outcome is affected by borderline performance in certain papers, at the

discretion of the Board of Examiners extra work may be set to assist the Board in interpreting the overall performance of the candidate.

Each part-time student in their first or second year will be advised whether their performance provides a sufficient basis for proceeding to the next year of the Course. Where such a student is advised to proceed notwithstanding borderline performance or the requirement to re-enter (i.e., re-sit) a particular paper, they will be told of this.

Where a candidate's performance in written papers does not satisfy the Board, the candidate may re-enter for the relevant papers at the same time in the subsequent session. Which papers are relevant is determined by the Board. There is no opportunity to re-enter for papers in the same session.

Coursework

Each item of coursework in the Core Modules and each item in the option modules in which a candidate has chosen to be assessed must be completed to the Board's satisfaction. All items of coursework set must be completed to the satisfaction of the examiners. The teaching staff may send messages about coursework by e-mail, so all candidates should make a habit of checking their e-mail regularly.

Students are permitted and encouraged to discuss coursework freely among themselves. However, each student must prepare and submit his or her coursework individually. It is not acceptable for students to submit material that has been prepared by someone else, or for two or more students to submit separate copies of the same material which they have prepared together. The only exception is where coursework is explicitly set as joint work or group work. If you are unsure, ask the relevant member of the academic staff.

Each item should be submitted by the due date. Where a candidate is unable to do this, they should contact the teacher who has set the work before the due date to explain why the work is delayed and arrange a revised submission date. Where there is good reason for the delay, work submitted by the revised date will be treated as if it had been submitted on time. All issues discussed of a confidential or sensitive nature are treated as such. If you are experiencing an issue of sensitive nature that you do not want to generally discuss you should get in touch with Jackie Sime who will advise on the best course of action.

Each item of work will be returned after marking with a grade in the range A to F. The grade may be interpreted as follows:

- A distinction standard
- B good
- C adequate
- D unsatisfactory taken by itself, but acceptable in the context of a good overall coursework record
- E far from satisfactory, but containing some elements of correct work
- F completely unsatisfactory

Those whose work is graded E or F will be given about 4 weeks in which to make a revised submission.

Work that is submitted late without good reason **or prior approval** or is resubmitted because it was originally graded E or F, will be graded as indicated above, but annotated to the effect that a lower grade has been recorded because of late submission or because it is a resubmission.

Each candidate must retain all marked coursework carefully because all candidates may be asked to bring in all their coursework for the year during **July** for inspection by the Examiners.

Where a candidate's performance in coursework does not satisfy the Board, the candidate may repeat relevant items of coursework in the subsequent session. Which items are relevant is determined by the Board.

Individual Special Study

Students **will** attend a number of lectures aimed at helping them complete their special studies. These lectures take place throughout the autumn and spring terms. Part time students should attend these sessions in their penultimate years. The sessions are:

1. Conducting a literature review
2. Formulating a research problem
3. Principles of research design
4. Data collection and analysis (to complement T2)
5. Presenting your research

Students are also required to complete 2 pieces of work in addition to the individual study report. Further details will be circulated early in the course.

The submission date for individual study reports is 15 September, or the previous Friday if the 15th is a Saturday or Sunday. A note giving advice on the preparation and submission of individual study reports is circulated early in the course.

All full time students must submit their individual project reports in the academic year in which they commenced their studies.

Part-time students begin their individual special studies in their penultimate year and submit their individual study report in their final year.

Any candidate who has exceptional reasons for wishing to do so may apply to the Course Director to defer submission of the individual study report by one year, but application to do so must be made in writing before the start of the written papers, and the decision whether deferment can be permitted is made by the Colleges.

Where a candidate's individual study report is largely satisfactory but requires minor corrections, the Board may require these to be made within one month to the satisfaction of nominated Examiners as a condition of being recommended for award of the degree.

Where a candidate's individual study report does not satisfy the Board, the candidate will be required to submit again at the same time in the subsequent session.

Notification of Results

Following its September meeting, the Board usually announces the names of those it has decided to recommend for the award of the degree (with distinction or merit or conditional upon minor amendments where appropriate).

Formal notification of the result of the examination is subsequently sent to each candidate individually from the Imperial College Registry. This includes the percentage marks obtained for each module, on average for the written papers, on average for coursework, for the individual study, and in aggregate overall.

The aggregate mark is obtained by weighting the average marks for written papers and coursework and the individual study mark in the ratios 2:1:2, but candidates should remember that each of these 3 marks must be satisfactory in itself.

Part-time students are sent corresponding percentage marks by Registry after each year of the course.

No numerical marks may be disclosed to candidates except in this communication from the Imperial College Registry, via the individual student-e-service accounts. Please do not ask staff to do this, because they will have to refuse.

Course Structure and Requirements: MSc Transport

Full-time students

Autumn Term	Spring Term
CI9 - T-01 - Transport and its Context	Four Transport option modules of your choice
CI9 - T-02 - Quantitative Methods	Select Special Project topic
CI9 - T-03 - Transport Engineering & Operations	
CI9 - T-04 - Transport Economics	
CI9 - T-05 - Transport Demand and its Modelling	
CI9 - T-06 - Transport Policy	
Students should attend special sessions during 1 st two weeks of the term	

Part-time students taking the course over 3 years

Autumn Term – 1st year	Spring Term – 1st year
CI9 - T-01 - Transport and its Context	One Transport option module of your choice
CI9 - T-02 - Quantitative Methods	
CI9 - T-05 - Transport Demand and its Modelling	
Students should attend special sessions during 1 st two weeks of the term	

Autumn Term – 2nd year	Spring Term – 2nd year
CI9 - T-03 - Transport Engineering & Operations	Two Transport option modules of your choice
CI9 - T-04 - Transport Economics	Select Special Project topic

Autumn Term – 3rd year	Spring Term – 3rd year
CI9 - T-06 - Transport Policy	One Transport option module of your choice
Continue work on Special Project	Continue work on Special Project

Note that the 3-year part time trajectory is designed to allow students to attend College on just 1 day per week during the teaching terms.

Part-time students taking the course over 2 years

Autumn Term – 1st year	Spring Term – 1st year
CI9 - T-01 - Transport and its Context	Two Transport option module of your choice
CI9 - T-02 - Quantitative Methods	Select Special Project topic
CI9 - T-03 - Transport Engineering & Operations	
CI9 - T-05 - Transport Demand and its Modelling	
Students should attend special sessions during 1 st two weeks of the term	

Autumn Term – 2nd year	Spring Term – 2nd year
CI9 - T-04 - Transport Economics	Two Transport option modules of your choice
CI9 - T-06 - Transport Policy	Continue work on Special Project
Continue work on Special Project	

Note that the 2-year part time trajectory is flexible, but will typically require attendance at College on 2 days per week, for at least some of the teaching terms.

ASSESSMENT PROCEDURES AND REQUIREMENTS: MSc IN TRANSPORT WITH BUSINESS MANAGEMENT

Introduction

The MSc Course in Transport with Business Management comprises a combination of material from (a) the specialist MSc Transport course ('T' modules) and (b) specialist modules in Business Management ('B' modules).

Assessment of candidates for the MSc Degree and the DIC in Transport with Business Management is by a Board of Examiners comprising academic staff and an External Examiner.

The Business Management module will convene a separate Sub Board of Examiners (with an External Examiner) that will assess the modules within the Business Management module. Their recommendations will be passed on to the main Transport Board of Examiners.

Assessment of the Business Management module is based on two elements:

- Written examination papers. This will consist of two papers, each two hours in length. One administered in the first week of the Spring Term, the second in the first week of the Summer Term.
- Coursework including a Case Study Project (and associated presentations)

Candidates are required to satisfy the Examiners in each element separately.

The assessment procedures that apply specifically to the Business Management module are described on the Departmental Website.

The Board of Examiners is governed by the relevant regulations for students. This note is intended only to inform candidates of the relevant procedures and requirements; in no way does it modify the Regulations.

Written Examination Papers for the Business Management Module

One written examination paper will cover the first two units of the Business Management module. The second paper will cover the last two units of the Business Management module. Each paper will be two hours in length. The choice of questions may be restricted by dividing the paper into sections and/or having some mandatory questions (multiple-choice format). The timetable for the examinations will be announced at least one month before they are taken.

Where a candidate believes that their performance in the written papers is affected by illness, they should obtain a written statement from a doctor or the Student Health Centre and submit this to the Business Management Module Director and to MSc Transport Course Director as soon as is practicable. In the case of other unusual personal circumstances the candidate should submit a written statement to both before or as soon as practicable after taking the written papers. All such cases are dealt with individually. Where a candidate fails to attend an examination, including submission of the dissertation, and further fails to provide a medical certificate or

proof that deferral was agreed in advance by the appropriate College committee, he/she will be deemed to have failed the degree programme in its entirety, without exemption allowed on re-entry.

The Board of Examiners usually meets in July and September. All full-time and all part-time students in their final year are required to meet the External Examiner immediately after the June meeting. After this meeting, staff are able to discuss with candidates their general performance in the written papers. Where a candidate's performance is affected by borderline performance in certain papers, extra work may be set to assist the Board in interpreting the overall performance of the candidate.

Each part-time student in their first or second year will be advised whether their performance provides a sufficient basis for proceeding to the next year of the Course. Where such a student is advised to proceed notwithstanding borderline performance or the requirement to re-enter (i.e., re-sit) a particular paper, they will be told of this.

Where a candidate's performance in written papers does not satisfy the Board, the candidate may re-enter for the relevant papers at the same time in the subsequent session. Which papers are relevant is determined by the Board. There is no opportunity to re-enter for papers in the same session.

No numerical marks may be disclosed to candidates except in communication from the Imperial College Registry via the individual student-e-service accounts. Please do not ask staff to do this, because they will have to refuse.

Coursework for the Business Management Module

Each item of coursework in the Business Management modules will be assessed by the Board. Teaching staff may send messages about coursework by e-mail, so all candidates should make a habit of checking their e-mail.

Students are permitted and encouraged to discuss coursework freely among themselves (unless explicit instructions are given otherwise). However, each student must prepare and submit his or her coursework individually. It is not acceptable for students to submit material that has been prepared by someone else, or for two or more students to submit separate copies of the same material which they have prepared together. The only exception is where coursework is explicitly set as joint work. If you are unsure, ask the relevant member of the academic staff.

Each item should be submitted by the due date. Where a candidate is unable to do this, they should contact the teacher who has set the work before the due date to explain why the work is delayed and arrange a revised submission date. Where there is good reason for the delay, work submitted by the revised date will be treated as if it had been submitted on time. In all other cases, late submission penalties may apply.

Each item of work will be returned after marking with a grade in the range A to F. The grade may be interpreted as follows:

- A distinction standard
- B good
- C adequate

- D unsatisfactory taken by itself, but acceptable in the context of a good overall coursework record
- E far from satisfactory, but containing some elements of correct work
- F completely unsatisfactory

Each candidate must retain all marked coursework carefully because all candidates may be asked to bring in all their coursework for the year during June for inspection by the Examiners.

Where a candidate's performance in coursework does not satisfy the Board, the candidate may be asked to repeat relevant items of coursework in the subsequent session. Which items are relevant is determined by the Board.

Overall Assessment

The overall assessment of each candidate will be determined by the main Transport Board of Examiners.

Course Structure and Requirements: MSc Transport with Business Management

Full-time students

Autumn Term	Spring Term
CI9 - B1 - Microeconomics	C19 - B3 - Project Management
CI9 - B2 - Principles of Accounting	C19 - B4 - Business Environments and Construction Law
CI9 - T-01 - Transport and its Context	Two Transport option modules of your choice
CI9 - T-02 - Quantitative Methods	Select Special Project topic
CI9 - T-04 - Transport Economics	
C19 - T-05 - Transport Demand and its Modelling	
Students should attend special sessions during 1 st two weeks of the term	

Part-time students taking the course over 3 years

Autumn Term – 1st year	Spring Term – 1st year
CI9 - T-01 - Transport and its Context	One Transport option module of your choice
CI9 - T-04 - Transport Economics	
Students should attend special sessions during 1 st two weeks of the term	

Autumn Term – 2nd year	Spring Term – 2nd year
CI9 - T-02 - Quantitative Methods	One Transport option module of your choice
CI9 - T-05 - Transport Demand and its Modelling	Select Special Project topic

Autumn Term – 3rd year	Spring Term – 3rd year
CI9 - B1 - Microeconomics	CI9 - B3 - Project Management
CI9 - B2 - Principles of Accounting	CI9 - B4 - Business Environments and Construction Law
Continue work on Special Project	Continue work on Special Project

Note that the 3-year part time trajectory is designed to allow students to attend College on just 1 day per week during the teaching terms.

Requirements for Part-time students taking the course over 2 years

Autumn Term – 1st year	Spring Term – 1st year
CI9 - T-01 - Transport and its Context	Two Transport option modules of your choice
CI9 - T-02 - Quantitative Methods	Select Special Project topic
CI9 - T-04 - Transport Economics	
CI9 - T-05 - Transport Demand and its Modelling	
Students should attend special sessions during 1 st two weeks of the term	

Autumn Term – 2nd year	Spring Term – 2nd year
CI9 - B1 - Microeconomics	CI9 - B3 - Project Management
CI9 - B2 - Principles of Accounting	CI9 - B4 - Business Environments and Construction Law
Continue work on Special Project	Continue work on Special Project

Note that the 2-year part time trajectory is flexible, but will typically require attendance at College on 2 days per week, for at least some of the teaching terms.

ASSESSMENT PROCEDURES AND REQUIREMENTS: MSc IN TRANSPORT WITH SUSTAINABLE DEVELOPMENT

Introduction

The MSc Course in Transport with Sustainable Development comprises a combination of material from (a) the specialists MSc Transport course ('T' modules) and (b) specialist modules in Sustainable Development ('S' modules).

Assessment of candidates for the MSc Degree and the DIC in Transport with Sustainable Development is by a Board of Examiners comprising academic staff and an External Examiner.

The Sustainable Development module will convene a separate Sub Board of Examiners (with an External Examiner) that will assess the modules within the module. Their decision will be passed on to the main Transport Board of Examiners.

Assessment of the Sustainable Development module is based on two elements:

- Written examination papers. This will consist of one paper, three hours in length and administered in May.
- Coursework including a Design Guide

Candidates are required to satisfy the Examiners in each element separately.

The assessment procedures that apply specifically to the Sustainable Development module are described below.

The Board of Examiners is governed by the relevant regulations for students. This note is intended only to inform candidates of the relevant procedures and requirements; in no way does it modify the Regulations.

Written Examination papers for the Sustainable Development Module

The written examination paper will normally be conducted in May. The paper will be three hours in length and normally will require 4 out of 5 questions to be answered. The choice of questions may be restricted by dividing the paper into sections and/or having some mandatory questions. The timetable for the examinations will be announced at least one month before they are taken.

Where a candidate believes that their performance in the written paper is affected by illness, they should obtain a written statement from a doctor or the Student Health Centre and submit this to the Sustainable Development Module Director and to MSc Transport Course Director as soon as is practicable. In the case of other unusual personal circumstances the candidate should submit a written statement to both before or as soon as practicable after taking the written papers. All such cases are dealt with individually. Where a candidate fails to attend an examination, including submission of the dissertation, and further fails to provide a medical certificate or proof that deferral was agreed in advance by the appropriate College committee, he/she will be deemed to have failed the degree programme in its entirety, without exemption allowed on re-entry.

The Board will normally meet in July. Staff will be able to discuss with candidates their general performance in the written papers after their respective Civil Engineering MSc Board has met to assess their overall performance (normally this will be in September after all projects are assessed, but some Examination Boards may have different procedures). Where a candidate's performance is affected by borderline performance in certain papers, extra work may be set (by either Board) to assist the Board in interpreting the overall performance of the candidate.

Each part-time student in their first or second year will be advised whether their performance provides a sufficient basis for proceeding to the next year of the Course. Where such a student is advised to proceed notwithstanding borderline performance or the requirement to re-enter (i.e., re-sit) a particular paper, they will be told of this.

Where a candidate's performance in written papers does not satisfy the Board, the candidate may re-enter for the relevant papers at the same time in the subsequent session. There is no opportunity to re-enter for papers in the same session.

No numerical marks may be disclosed to candidates except in communication from the Imperial College Registry via the individual student e-service accounts. Please do not ask staff to do this, because they will have to refuse.

Coursework for the Sustainable Development Module

Each item of coursework in the Sustainable Development modules will be assessed by the Board. Teachers may send messages about coursework by e-mail, so all candidates should make a habit of checking their e-mail.

Students are permitted and encouraged to discuss coursework freely among themselves (unless explicit instructions are given otherwise). However, each student must prepare and submit his or her coursework individually. It is not acceptable for students to submit material that has been prepared by someone else, or for two or more students to submit separate copies of the same material which they have prepared together. The only exception is where coursework is explicitly set as joint or group work. If you are unsure, ask the relevant member of the academic staff.

Each item should be submitted by the due date. Where a candidate is unable to do this, they should contact the teacher who has set the work before the due date to explain why the work is delayed and arrange a revised submission date. Where there is good reason for the delay, work submitted by the revised date will be treated as if it had been submitted on time. In all other cases, late submission in the first week will result in a 10% reduction in marks, in the second week in a 20% reduction in marks, and thereafter a mark of zero will be awarded.

Each item of work will be returned after marking with a grade in the range A to F. The grade may be interpreted as follows:

- A distinction standard
- B good
- C adequate
- D unsatisfactory taken by itself, but acceptable in the context of a good overall coursework record

- E far from satisfactory, but containing some elements of correct work
- F completely unsatisfactory

Each candidate must retain all marked coursework carefully because all candidates may be asked to bring in all their coursework for the year during June for inspection by the Examiners.

Where a candidate's performance in coursework does not satisfy the Board, the candidate may be asked to repeat relevant items of coursework in the subsequent session. Which items are relevant is determined by the Board.

Overall Assessment

The overall assessment of each candidate will be determined by the main Transport Board of Examiners.

Course Structure and Requirements: MSc Transport with Sustainable Development

Full-time students

Autumn Term	Spring Term
CI9 - S1 – Introduction to Sustainable Development	C19 - S2 - Sustainable Development Case Studies
CI9 - T-01 - Transport and its Context	Two Transport option modules of your choice
CI9 - T-02 - Quantitative Methods	Select Special Project topic
CI9 - T-04 - Transport Economics	
CI9 - T-05 - Transport Demand and its Modelling	
Students should attend special sessions during 1 st two weeks of the term	

Part-time students taking the course over 3 years

Autumn Term – 1st year	Spring Term – 1st year
CI9 - T-01 - Transport and its Context	One Transport option module of your choice
CI9 - T-04 - Transport Economics	
Students should attend special sessions during 1 st two weeks of the term	

Autumn Term – 2nd year	Spring Term – 2nd year
CI9 - T-02 - Quantitative Methods	One Transport option module of your choice
CI9 - T-05 - Transport Demand and its Modelling	Select Special Project topic

Autumn Term – 3rd year	Spring Term – 3rd year
CI9 - S1 – Introduction to Sustainable Development	C19 - S2 - Sustainable Development Case Studies
Continue work on Special Project	Continue work on Special Project

Note that the 3-year part time trajectory is designed to allow students to attend College on just 1 day per week during the teaching terms.

Part-time students taking the course over 2 years

Autumn Term – 1st year	Spring Term – 1st year
CI9 - T-01 - Transport and its Context	Two Transport option modules of your choice
CI9 - T-04 - Transport Economics	Select Special Project topic
Students should attend special sessions during 1 st two weeks of the term	

Autumn Term – 2nd year	Spring Term – 2nd year
CI9 - T-02 - Quantitative Methods	C19 - S2 - Sustainable Development Case Studies
CI9 - T-05 - Transport Demand and its Modelling	Continue work on Special Project
CI9 - S1 – Introduction to Sustainable Development	
Continue work on Special Project	

Note that the 2-year part time trajectory is flexible, but will typically require attendance at College on 2 days per week, for at least some of the teaching terms.

Syllabus for MSc in Transport

CI 9 - T-01 - TRANSPORT AND ITS CONTEXT

Coordinator: WASHINGTON OCHIENG

Description:

The transport system; movement of people and goods; transport modes and infrastructure; characteristics of transport systems. Demand for transport and its interaction with supply: location, passenger and freight demand, needs of special groups, transport costs. Resources and expenditure. Agencies and individuals in Britain and in Europe as a whole having roles related to transport. Policy issues world wide concerning transport. Legislation, regulation and administration. Case studies based on London and its transport.

Objectives:

To provide a coherent statement of transport and institutional background to transport. The course will provide a factual introduction and general orientation.

Lectures and Responsible Teaching Staff:

▣ Lecture 1 - 2	Introduction to transport	<u>WYO</u>
▣ Lecture 3 - 4	Social and historical context	<u>RJN</u>
▣ Lecture 5 - 6	Transport engineering	<u>BGH</u>
▣ Lecture 7 - 8	Logistics	<u>KH</u>
▣ Lecture 9-10	Accessibility	<u>NAT</u>
▣ Lecture 11-12	Intelligent Transport Systems	<u>NH</u>

Tutorials and other Activities:

▣ Activity 1	Weekly seminars Topics and speakers to be confirmed	<u>WYO</u>
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CI 9 - T-02 - QUANTITATIVE METHODS

Coordinator: DANIEL GRAHAM

Description:

Sources and examples of transport data; survey methods; presentation and interpretation of data; systematic and non-systematic variations in data, models for systematic variation; approaches to decision making and design; optimisation; probability and random processes; sampling; standard probability distributions; estimation of population parameters; hypothesis testing; categorical models; continuous models; model specification and fitting; model calibration and validation. Use of computers and relevant software packages.

Objectives:

To introduce to all students concepts and techniques for the acquisition, processing, description and presentation of quantitative information, including elementary descriptive and inferential statistics. The course provides a foundation in essential quantitative methods that will be required in other core course units and for several study project research and report writing.

Lectures and Responsible Teaching Staff:

▣ Lecture 1 - 2	Presentation and interpretation of data	<u>DJG</u>
▣ Lecture 3 - 4	Sources and examples of transport data, survey methods	<u>HT</u>
▣ Lecture 5 - 6	Probability and random processes	<u>BGH</u>
▣ Lecture 7 - 8	Standard probability distributions	<u>BGH</u>
▣ Lecture 9 - 10	Sampling and estimation	<u>BGH</u>
▣ Lecture 11 - 12	Hypothesis testing: philosophy, simple examples	<u>BGH</u>
▣ Lecture 13 - 14	Decision making and optimisation	<u>DJG</u>
▣ Lecture 15 - 16	Introduction to linear regression	<u>DJG</u>
▣ Lecture 17 - 18	Further regression analysis	<u>DJG</u>

Tutorials and other Activities:

▣Activity 1	Data editing and descriptive statistics	<u>DJG</u>
▣Activity 2	Workshop on survey methods	<u>HT</u>
▣Activity 3	Tutorial	<u>BGH</u>
▣Activity 4	Workshop on distributions	<u>BGH</u>
▣Activity 5	Theoretical and empirical distributions	<u>BGH</u>
▣Activity 6	Exercise on probability	<u>BGH</u>
▣Activity 7	Tutorial	<u>DJG</u>
▣Activity 8	Introduction to regression with Excel and SPSS	<u>DJG</u>
▣Activity 9	Further regression analysis	<u>DJG</u>

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

T3 - TRANSPORT ENGINEERING AND OPERATIONS

Coordinator: BENJAMIN HEYDECKER

Description:

This course unit includes description, analysis and modelling of elements that are relevant to transport engineering and operations. This includes basic mechanics of transport operations and implications for safety; flow of traffic on open track; queuing at points of conflict or interruption; basic operational and engineering requirements for railways; intelligent transport systems (ITS); roundabouts and priority junctions; traffic signal control; alignment and layout of highway links and free-flow junctions; public passenger transport infrastructure; road safety engineering; and transport system management including use of street space by different kinds of users and for different purposes.

Objectives:

To set out basic engineering and operational concepts that are relevant to transport, and to consider the road system and more briefly the rail systems, together with the provision of public passenger transport and use of street space, in the light of these concepts.

Lectures and Responsible Teaching Staff:

▣Lecture 1 - 2	Basic mechanics of transport operations and implications for safety	<u>BGH</u>
▣Lecture 3 - 4	Flow of traffic on open track	<u>BGH</u>
▣Lecture 5 - 6	Introduction to queueing	<u>AHFC</u>
▣Lecture 7	Basic operational requirements for railways	<u>TF</u>
▣Lecture 8	Basic engineering requirements for railways	<u>TF</u>
▣Lecture 9-10	Introduction to Intelligent Transport Systems	<u>NH</u>
▣Lecture 11 – 12	Principles of road junction design and control	<u>AHFC</u>
▣Lecture 13 - 14	Principles of public passenger transport infrastructure and operations	<u>NAT</u>
▣Lecture 15 - 16	Principles of geometric design of road links and junctions	<u>AHFC</u>
▣Lecture 17- 18	Road safety engineering	<u>NC</u>
▣Lecture 19-20	Transport systems management	<u>BGH</u>

Tutorials and other Activities:

Activity 1	Exercise on relative risk in travel	BGH
Activity 2	Exercise on public transport	TF
Activity 3	Exercise on traffic flow and control	AHFC
Activity 4	Seminar on urban safety management	CL
Activity 5	Concluding discussion	BGH

The examination format for this course unit is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-04 - TRANSPORT ECONOMICS

Coordinator: FRANCESCA MEDDA

Description:

The module is constituted by two parts. The first part of the module introduces the main microeconomic and public economic concepts which are the foundation for the second part of the module. The second part of the module examines the main concepts of transport economics: travel demand, pricing and supply of transport, cost functions, economic appraisal, and investment in transport.

Assessment will be based on two pieces of written work and a two-hour examination

Objective:

The course aims to give students a solid grasp of transport economic theory and practice at the intermediate level.

Syllabus:

The module textbook is: Transport Economics (3rd edition), 2010, by K. Button. Suggested textbook for the initial part of the module: Microeconomics Analysis (3rd edition), 1992, by H.R. Varian.

In each session of the module, students will receive specific **study notes** that aim to facilitate the students' revision activity and help them to comprehend the material

Lectures and Responsible Teaching Staff:

Lecture 1 – 2	Basic Notions of Microeconomics	<u>FM</u>
Lecture 3 - 4	Fundamentals of Welfare Economics	<u>FM</u>
Lecture 5 – 6	Principles of Public Economics	<u>FM</u>
Lecture 7 – 8	Travel Demand	<u>FM</u>
Lecture 9 -10	Pricing of Transport	<u>FM</u>
Lecture 11 – 12	Supply of Transport	<u>FM</u>
Lecture 13- 14	Cost Functions in Transport	<u>FM</u>
Lecture 15 – 16	External Costs	<u>FM</u>
Lecture 17 – 18	Investment Criteria	<u>FM</u>
Lecture 19 – 20	Public and Private Participation in Transport	<u>FM</u>

Tutorials and other Activities

Activity 1	Seminar of Reading Assignment 1	<u>FM</u>
Activity 2	Seminar of Reading Assignment 2	<u>FM</u>

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI9 - T-05 - TRANSPORT DEMAND AND ITS MODELLING

Coordinator: JOHN POLAK

Description:

Introduction: concepts in transport planning and modelling; generalised costs; the economic basis of travel demand modelling; forecasting the demand for travel; trip distribution and destination choice; calibration; mode choice; route choice and assignment; modelling the timing of travel; economic appraisal in the modelling process; long term models of the relationship between land use and transport; the predictive accuracy of travel demand models; transport modelling software; alternative modelling approaches.

Objectives:

The aim of this course is to develop an understanding of the nature of travel demand and how to model it. This involves examination of the processes underlying travel demand, the four-stage travel demand model, the relationship between the stages, some alternative approaches and related concepts.

Lectures and Responsible Teaching Staff:

▣ Lecture 1 - 2	Introduction to transport planning and modelling	<u>JWP</u>
▣ Lecture 3 - 4	The concept of travel demand and its economic basis	<u>ASi</u>
▣ Lecture 5 - 6	Trip generation and related forecasting processes	<u>ASi</u>
▣ Lecture 7 - 8	Trip distribution and destination choice	<u>ASi</u>
▣ Lecture 9 - 10	Modal choice	<u>ASi</u>
▣ Lecture 11 - 12	Route choice and assignment	<u>JWP</u>
▣ Lecture 13 - 14	Modelling the timing of travel	<u>JWP</u>
▣ Lecture 15 - 16	Evaluation and appraisal	<u>ASi</u>
▣ Lecture 17 - 18	Integrated land-use transport models	<u>ASi</u>
▣ Lecture 19 - 20	Activity based models	<u>ASi</u>

Tutorials and other Activities:

Activity 1	Workshop and exercise on trip generation	<u>ASi</u>
Activity 2	Workshop and exercise on trip distribution	<u>ASi</u>
Activity 3	Workshop and exercise on modal choice	<u>ASi</u>
Activity 4	Workshop and exercise on route choice	<u>JWP</u>
Activity 5	Seminar	<u>To be confirmed</u>
Activity 6	Seminar	<u>To be confirmed</u>

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

T6 - TRANSPORT POLICY

Coordinator: PETER JONES

Description:

This unit considers the nature and process of formulating transport policy. Areas addressed include the interaction between transport policy and other policy areas, and some of the policy implications caused by the unique characteristics of transport.

Objectives:

To develop an understanding of the policy formulation process and transport policy in its wider context.

Lectures and Responsible Teaching Staff:

Lecture 1	Introduction to the course Policy making and governance	PMJ
Lecture 2	A European perspective	CC
Lecture 3	Stakeholder engagement	PMJ
Lecture 4-5	Interactions between transport and other policy areas	PMJ
Lecture 6-7	Macro and micro accessibility policies	PMJ & CH
Lecture 8-9	Environmental policy	HT
Lecture 10-11	Policy making in planning	HT
Lecture 12-13	Land-use transport policy	HT
Lecture 14-15	Problems of car use and policies to reduce usage Summary and conclusions	PMJ

Tutorials and other Activities:

Activity 1	A comparison of governance structures in England with another country (after lecture 1)	PMJ
Activity 2	Essay on a policy topic using peer reviewed sources (after lecture 7)	PMJ

Guest lectures TO BE CONFIRMED

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-07 - HIGHWAY ENGINEERING

Coordinator: ARNAB MAJUMDAR

Description:

Objectives:

Description: The Highway Engineering module is designed to follow the process of locating, designing, constructing and maintaining highways. The first part of the course covers the highway planning process and the principles of route location. The second part of the course introduces the concepts of design speeds, operating speeds and speed limits. Based upon the design speeds, consideration is then given to geometric link design and in particular vertical links and horizontal links. The optimisation of horizontal and vertical alignments is also presented in the second part. This is followed by pavement design, considering the design of both flexible and rigid pavements. This part also considers how such pavements deteriorate and their maintenance. The final part of the course considers alternative methods of surface drainage for highways as well as the earthworks requirement for the construction of highways. The quantitative methods taught in the lectures are practised in tutorials and there is a test in the latter half of the course.

On successfully completing this module, students will:

- Understand the use of different road types in the highway network.
- Design a highway allowing for differing terrains, horizontal and vertical curves.
- Assess alternative pavement designs and understand their maintenance.
- Assess alternative surface drainage schemes and calculate required lengths of drainage channels
- Calculate earthworks quantities needed for highway construction

Lectures and Responsible Teaching Staff:

▣Lecture 1-2	The highway planning process and principles of route location	AM
▣Lecture 3-4	Design speed in the UK and abroad	AM
▣Lecture 5-6	Geometric link design 1	AM
▣Lecture 7-8	Geometric link design 2	AM
▣Lecture 9-10	Pavement Engineering 1	AM
▣Lecture 11-12	Pavement Engineering 2	AM
▣Lecture 13-14	Pavement Management	AM
▣Lecture 15-16	Surface drainage – 1	AM
▣Lecture 17-18	Sub-surface drainage – 2	AM
▣Lecture 19-20	Earthworks for highways	AM

Tutorials and other Activities:

Activity 1	Numerical Exercise on Highway Design 1	<u>AM</u>
Activity 2	Mid-term Test	<u>AM</u>
Activity 3	Numerical Exercise on Highway Design 2	<u>AM</u>

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-08 - ROAD TRAFFIC THEORY AND ITS APPLICATION

Coordinator: ANDY CHOW

Description:

Vehicle-following and fluid models of traffic flow; applications of models of traffic flow. Traffic queues: steady state and time-dependent analysis. Modelling, analysis and design of priority junctions and roundabouts. Signal control at individual junctions; coordinated signal control; priority for public transport in signal control; design of signal-controlled road junctions; principles of urban traffic control and calculation of timing plans. Comprehensive traffic management – objectives, techniques, modelling and evaluation.

Objectives:

To show how current techniques for design of elements of the road system and the management and control of all kinds of traffic on the roads are supported by fundamental understanding, modelling and optimisation techniques.

Requirements and Recommendations:

This unit may normally only be taken concurrently with or after completing modules T11 and should normally be taken only after completing modules T2 and T3. It contains a good deal of numerical and mathematical material.

Lectures and Responsible Teaching Staff:

•Lecture 1	Vehicle-following models of traffic	<u>BGH</u>
•Lecture 2	Fluid models of traffic flow	<u>BGH</u>
•Lecture 3	Applications of models of traffic flow	<u>BGH</u>
•Lecture 4	Steady state analysis of traffic queues	<u>BGH</u>
•Lecture 5-6	Time-dependent analysis of traffic queues	<u>BGH</u>
•Lecture 7-8	Modelling and analysis of priority junctions and roundabouts	<u>BGH</u>
•Lecture 9-10	Signal controlled junctions	<u>AHFC</u>
•Lecture 11-12	Motorway analysis and management	<u>AHFC</u>
•Lecture 13 - 14	Bus priority and operations	<u>AHFC</u>
•Lecture 15 - 16	Urban traffic signal control	<u>AHFC</u>
•Lecture 17 - 18	SCOOT urban traffic control system	<u>NH</u>
•Lecture 19 - 20	Traffic data and performance measures	<u>NH</u>

Tutorials and other Activities:

- | | | |
|---------------------|---------------------------------------------------|-----------------------------|
| ■ Activity 1 | Introduction to exercise on traffic flow | <u>BGH</u> |
| ■ Activity 2 | Introduction to exercise based on ARCADY & PICADY | <u>BGH</u> |
| ■ Activity 3 | Exercise on urban signal design TRANSYT | <u>AHFC</u> |

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-09 - PUBLIC TRANSPORT

Coordinator: TAKU FUJIYAMA

Description:

This course aims to give the basic knowledge, understanding and skills that are necessary for designing public transport systems.

Objectives:

The students will be able to design and manage public transport systems. The students will be aware of wider contexts associated with public transport.

Lectures and Responsible Teaching Staff:

▣Lecture 1 - 2	Introduction, Site Visit	TF
▣Lecture 3 - 4	Transport Planning and Demand Modelling	LW
▣Lecture 5 - 6	Project Objectives and Business Case Development	TF
▣Lecture 7 - 8	Decision Making	NAT
▣Lecture 9 - 10	Operational Resource Planning	TF
▣Lecture 11 - 12	Operational Aspects: Crime and Accessibility	RS/XK
▣Lecture 13 - 14	Infrastructure Planning and Development	TF
▣Lecture 15 - 16	Evaluation	TBA
▣Lecture 17 - 18	Preparation for Presentation	
▣Lecture 19 - 20	Presentation	

Note:

Students will develop a plan of a public transport system throughout the module. Each lecture will give a viewpoint, of which students will take account in the project development. Students will give presentations about their plans in the last lecture.

The evaluation of the module is based on the exam and the presentation. The examination format is a written paper. 5 questions are set of which you are required to answer 3.

The presentation will be group-based. All the members of a student group will have the same mark for the presentation unless there are significant differences in the contributions of the members within the group. Therefore, this module may not be suitable for students who prefer individual study.

CI 9 - T-10 - TRANSPORT SAFETY AND RISK MANAGEMENT

Coordinator: ARNAB MAJUMDAR

Description:

This course aims to provide a sound background to the safety and risk analysis in transport operations, taking into consideration all the major modes of transport. This course will include such aspects of safety as safety regulations, quantitative risk analysis, human reliability analysis and safety culture. A series of workshops in which these aspects are applied in practice will be held. A number of guest speakers from industry will present guest lectures.

Objectives:

Those attending this course will receive detailed theory together with practical, experience of the issues underlying transport safety and risk analysis transferrable across all modes of transport. The course follows the major principles of a safety management system used in transport operations in all modes of transport. In addition, they will listen to special lectures given by industry practitioners in each major mode of transport.

Prerequisites:

This unit requires a fundamental understanding of statistics.

Lectures and Responsible Teaching Staff:

▣Lecture 1 - 2	Introduction to transport safety	<u>AM</u>
▣Lecture 3 - 4	Accident theory	<u>PB</u>
▣Lecture 5 - 6	Reporting and investigation of accidents and incidents	<u>NC</u>
▣Lecture 7 - 8	New methodologies for assessing system safety	<u>AM</u>
▣Lecture 9 - 10	Safety data and its statistical analysis I	<u>NC</u>
▣Lecture 11 - 12	Safety data and its statistical analysis II	<u>AM</u>
▣Lecture 13 - 14	The human's role in transport safety	<u>AM</u>
▣Lecture 15 - 16	Human Reliability Analysis	<u>AM</u>
▣Lecture 17 - 18	Safety culture	<u>NC</u>
▣Lecture 19 - 20	Safety Policy	<u>NC</u>

Tutorials and other Activities:

Activity 1	Guest lecturer 1	<u>AM</u>
Activity 2	Accident investigation	<u>NC</u>
Activity 3	Quantitative risk analysis	<u>AM</u>
Activity 4	Human error case	<u>AM</u>
Activity 5	Guest lecturer 2	<u>NC</u>

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

T11 - QUANTITATIVE TECHNIQUES FOR TRANSPORT ENGINEERING AND PLANNING

Coordinator: BENJAMIN HEYDECKER

Description:

Optimisation and linear programming; sensitivity analysis; simulation modelling and analysis; statistical modelling; estimation of statistical models; validity and hypothesis testing; survey design; analysis of surveys; experimental design; statistical inference techniques.

Objectives:

To show how quantitative modelling and analysis can be used for practical problem solving in transport studies. This course unit supports other analytical option units, including T8 and T14. Case studies will be examined to illustrate transport models and data, methods for analysing and using them, and to investigate their scope and limitations. Application areas that will be discussed include traffic modelling, transport safety, traffic engineering and travel behaviour.

Lectures and Responsible Teaching Staff:

• Lecture 1 - 2	Optimal design and sensitivity analysis	<u>BGH</u>
• Lecture 3 - 4	Techniques of optimisation: linear and convex formulations	<u>BGH</u>
• Lecture 5 - 8	Simulation modelling and analysis	<u>BGH</u>
• Lecture 9 - 10	Principles, estimation and use of statistical models; calibration and validation	<u>BGH</u>
• Lecture 11 - 12	Formulation of models in transport studies	<u>JWP</u>
• Lecture 13 - 14	Approaches to survey sampling and design	<u>JWP</u>
• Lecture 15 - 16	Analysis of survey data	<u>JWP</u>
• Lecture 17 - 18	Model-based inference	<u>JWP</u>
• Lecture 19 - 20	Application of statistical models to transport studies	<u>JWP</u>

Tutorials and other Activities:

Exercise on optimisation	1 after lecture 4	<u>BGH</u>
Workshop on simulation	3 after lecture 8	<u>BGH</u>
Workshop on survey design and analysis	5 after lecture 16	<u>JWP</u>
Exercise on modelling	1 after lecture 20	<u>JWP</u>

Requirement:

Students taking one or both of option units T8 and T14 are normally required to take this course unit either before or concurrently with T8 or T14.

Recommendation:

This course unit should be taken only after completing Core unit T2. It contains a good deal of numerical and mathematical material.

The examination format for this course unit is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-14 - ADVANCED TRANSPORT MODELLING

Coordinator: JOHN POLAK

Description:

Modelling and analysis of the equilibrium between supply and demand for travel, at the network level, combined with various elements of travel demand. Extensions to stochastic, system optimal and dynamic assignment. Analysis of network performance, including the effect and specification of road pricing. Estimation of trip matrices from traffic counts. Economic fundamentals of random utility theory: the fundamentals of the theory, choice axioms, relationships to neoclassical economic theory, Luce's model. Generalised extreme value models: binary, multinomial, hierarchical and cross nested logit models, including McFadden's formulation of the GEV family of models, with discussion their properties, elasticities, estimation and applications, including to SP. Mixed logit and Mixed GEV models: the motivation for and specification of mixed logit models, random parameter and error component formulations, simulation-based estimation, and applications. Appraisal with discrete choice models: consumer surplus, equivalent variation and compensating variation, income effects, approximate welfare measures including logsum and rule of a half, implications of taste heterogeneity, applications and examples. Modelling aggregate demand and supply: the linear model, and its generalisation, aggregate data (cross-sectional, time series, cross-sectional time series, panel data), techniques for different data types (dynamic modelling, methods for panel data), and estimating elasticities. Estimating demand: demand functions and specifications, data types. Estimating supply: production functions (Cobb-Douglas, CES, Translog), cost functions, duality of production and costs.

Objectives:

This unit examines transport modelling in greater depth than was possible in Unit T5, in particular the theory underlying the models. The application of the models is addressed through a large practical exercise.

Prerequisites:

This is a very mathematical unit. It may only be taken concurrently with or after completion of module T11 and after completion of Core Unit T5.

Lectures and Responsible Teaching Staff:

•Lecture 1 - 2	Economic fundamentals of random utility theory	JWP
•Lecture 3 - 4	Estimation of discrete choice models	JWP
•Lecture 5 - 6	Generalised extreme value models	AAS
•Lecture 7 - 8	Mixed logit models	AAS
•Lecture 9 - 10	Network equilibrium I	BGH

▣ Lecture 11 - 12	Network equilibrium II	<u>BGH</u>
▣ Lecture 13 - 14	Combined transport models	<u>BGH</u>
▣ Lecture 15 - 16	Trip matrix estimation	<u>BGH</u>
▣ Lecture 17 - 18	Aggregate supply and demand I	<u>DJG</u>
▣ Lecture 19 - 20	Aggregate supply and demand II	<u>DJG</u>

Tutorials and other Activities:

▣ Activity 1	Seminar on advanced use of OmniTRANS and the Ruby scripting language	<u>ML/JWP</u>
▣ Activity 2	Biogene workshop	<u>JWP</u>
▣ Activity 3	Transport modelling workshop	<u>ML</u>
▣ Activity 4	Student presentations on result from exercise using OmniTRANS	<u>JWP/ML</u>

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-16 - TRANSPORT AND THE ENVIRONMENT

Coordinator: ROBIN NORTH

Description:

The impacts of transport on the environment are of increasing significance to both planning and policy, however numerous challenges exist in adequately characterising and managing these impacts. This course aims to provide an understanding of the complex interrelationships between transport and the environment; to discuss the various environmental impacts caused by the provision and use of transport; to analyse causes and to discuss technology and policy solutions to environmental problems. The course will focus in particular on methods to develop, monitor and evaluate environmental, land use and transport policy and how these affect environmental outcomes.

Objectives:

Students will be able to describe, to measure and to quantify environmental impacts of individual behaviour, of transport policies and of transport projects, they will understand the complex nature of the causes of environmental impacts from transport and will be aware of social and economic implications of possible solutions. This module will prepare the students to undertake a special project with an environmental focus as well as familiarising the students with the environmental planning tools currently in use.

Prerequisites:

Students taking this unit should be taking or have completed modules T3 (Traffic engineering and operations) and T6 (Transport Policy).

Lectures and Responsible Teaching Staff:

▣ Lecture 1-2	Introduction to transport and the environment: Context, mechanisms and sustainability	RJN
▣ Lecture 3 - 4	Air Pollution: Mechanisms, technology solutions, modelling and social costs	RJN
▣ Lecture 5-6	Climate Change: Transport contribution, potential impacts, regulatory framework and policies	HT
▣ Lecture 7 - 8	Traffic noise: units, sources, and impacts	RJN
▣ Lecture 9 - 10	Environmental planning and assessment practices	HT
▣ Lecture 11-12	Measurement of environmental impacts of transport: Emissions, air quality and noise	RJN
▣ Lecture 13 - 14	Modelling of environmental impacts of transport: Emissions, air quality and noise	RJN
▣ Lecture 15 - 16	Challenges in managing the environmental im-	RJN

	pacts of transport: Case study and discussion 1	
▣ Lecture 17	Land use transport relationships: induced travel, UK planning guidance	RJN
▣ Lecture 18	Innovations in transport technologies for reduced environmental impact	RJN
▣ Lecture 19 - 20	Presentation and Discussion of Group Coursework	RJN

Tutorials and other Activities:

▣ Activity 1	Calculation of local impacts of road expansion (Air quality and noise)	RJN
▣ Activity 2	Carbon footprinting of personal travel	HT
		RJN/HT
▣ Activity 3	Sustainable transport plan: Group project	RJN/HT
▣ Activity 4	Sustainable transport plan: Group project	RJN/HT
▣ Activity 5	Presentation of Group Project	RJN/HT

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-17 - INTELLIGENT TRANSPORT SYSTEMS

Coordinator: JOHN POLAK

Description:

The use of information and communications technology in transport is the basis for Intelligent Transport Systems (ITS). Such systems are now in widespread use and there is an increasing demand for transport professionals to be fully conversant with their design, operation and evaluation. This course is designed to give students an in-depth understanding of ITS issues. The course covers structured approaches to design, an introduction to key technologies in sensing, communications and data management and techniques for evaluation and appraisal of system performance. These are illustrated by means of selected case studies which focus on practical issues associated with successful implementations and potential causes of failure. The outcome will be a capability to appreciate where ITS offer effective solutions to transport issues and the knowledge and tools to lead technical teams through the system life cycle from feasibility to operation.

Objectives:

Within the core module students will have been introduced to some of the basic concepts of Intelligent Transport Systems. The objective of this module is to explore ITS in more detail. The detailed objectives are:

- To develop an understanding of system engineering processes
- To describe the concepts of system architecture and their evolution
- Understand the capability of key technologies
- Understand impact of technology on different modes and movement.
- Understand how to evaluate technologies, applications and services

Outcome

Students who follow this module will develop a clear understanding of the role of ITS and understand policy conflicts and where technology solutions have succeeded and failed. They will develop the ability to assess how technology solutions can be used to deliver a transport policy or address a transport problem. The course will provide the basis to carry out a ITS focussed special project

Lectures and Responsible Teaching Staff:

▣ Lecture 1 - 2	Context of ITS in Transport – transport issues – safety, environment, efficiency	<u>JWP</u>
▣ Lecture 3 - 4	System Engineering, User requirements, Security and Privacy	<u>NH</u>
▣ Lecture 5 - 6	Architecture and Standards	<u>RN</u>
▣ Lecture 7 - 8	Core Technologies: Communications	<u>JWP</u>
▣ Lecture 9 - 10	Core Technologies: Positioning	<u>WYO</u>

▣ Lecture 11 - 12	Core Technologies: Sensors	<u>NH</u>
▣ Lecture 13 - 14	Evaluation and Business Case Development	<u>JWP</u>
▣ Lecture 15 - 16	Case Study 1: Information Services - Passenger information, web, mobile, signs, operations management, co-operative systems	<u>RN</u>
▣ Lecture 17 - 18	Case Study 2: Location based services - Navigation, positioning, mapping, mobile comms	<u>WYO</u>
▣ Lecture 19 - 20	Case Study 3: Traffic Management services - Real time data, data management, signalling enforcement, sensors managed Motorways/congestion charge/SCOOT+dynamic UTC	<u>NH</u>

Tutorials and other Activities:

▣ Activity 1	Essay on Telematics Applications	<u>JWP</u>
▣ Activity 2	Seminar on the VPMS and MESSAGE systems	<u>RN</u>
▣ Activity 3	Seminar by Transport for London on the iBUS system	
▣ Activity 4	ITS Design Exercise	<u>JWP/WYO/RN</u>
▣ Activity 5	Presentation of Design Exercise	<u>JWP/WYO/RN</u>
▣ Activity 6	Introduction to GIS Hardware and Software for Transport Applications	<u>WYO</u>

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-19 - DESIGN OF ACCESSIBLE TRANSPORT SYSTEMS

Coordinator: CATHERINE HOLLOWAY

Description:

Making transport systems accessible is now a requirement of the UN Convention for the Rights of Persons' with disabilities so this is not only an issue for the UK, but one that affects how the UK can support emerging nations in this area of development. This course unit aims to give a sound background to the philosophy, implementation and evaluation of accessible transport systems. The course includes lecture components covering general principles, tools for assessing, legislation, planning and management. These are complemented by a series of workshop study sessions in which these issues are applied. These sessions will be conducted in laboratory conditions and involve practical applications. These sessions are interspersed with a number of speakers who are experts on a number of accessibility improvement projects and will support the group projects. Students will use the obtained knowledge in the project in which students evaluate the accessibility of an area and give a presentation on it.

Learning Outcomes

After completing the module students will be able to:

- Explain the importance of accessible transport systems from the perspective of persons' who are disabled
- Quantify the health and social justice benefits of an accessibility intervention
- Assess the accessibility of infrastructure projects from the legal, individual and societal perspectives and apply solutions to make accessible
- Notice, understand and explain to a variety of stakeholders the impact of inaccessible parts of the built environment have on different sections of society
- Skills to map and measure accessibility
- Understand and explain of the complexities of measuring accessibility and be able to offer improvements to the measurement of accessibility

Course Structure

Lectures and Responsible Teaching Staff:

▣ Lecture 1	Measure accessibility	<u>CH</u>
▣ Lecture 2	Accessibility guidelines and evidence	<u>CH</u>
▣ Lecture 3 - 4	Understanding accessibility: visual impairments & lighting	<u>NC/CH</u>
▣ Lecture 5 - 6	Understanding accessibility: Mobility impairments	<u>CH</u>
▣ Lecture 7 - 8	Understanding accessibility: Effects of ageing	<u>XK/TC</u>
▣ Lecture 9 - 10	Case Study: Share Space	<u>CH</u>

▣Lecture 11	How to effectively involve all stakeholders	CH
▣Lecture 12	Quantifying the benefit of accessibility schemes	CH
▣Lecture 13 - 14	Street Audits: Methods, advantages and limitations	CH
▣Lecture 15 - 16	Case study: Bogota, Columbia	NAT
▣Lecture 17 - 18	Case study: London Underground	CH
▣Lecture 19 - 20	Presentations of group accessibility project	CH

Tutorials and other Activities:

- Activity 1 Workshop: Collecting and visualising GPS data**
- Activity 2 Workshop: Conducting a street audit**
- Activity 3 Group accessibility project site visit**
- Activity 4 Group accessibility project site visit with people with disabilities**
- Activity 5 Guest speaker: Global perspectives of accessibility**
- Activity 6 Guest speaker: Transport for London**

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-20 - FREIGHT TRANSPORT

Coordinator: KE HAN

Description:

The impact of recent trends in logistics and supply chain management on freight transport will be described. Strategic, tactical and operational levels of freight transport planning will be presented. Routeing and scheduling methods used in tour and load planning will be taught. The developing field of mobile communications in freight transport will be covered. The problems of and solutions for freight transport in cities (city logistics) will be described. The specialist fields of port logistics, construction logistics and hazardous material transport will be looked at in greater depth. The course will conclude by presenting freight flow modelling techniques as used in national, regional and urban planning.

Objectives:

The module aims to provide a thorough understanding of freight transport. All modes as well as inter- and multi-modal transport will be covered.

Lectures and Responsible Teaching Staff:

▣Lecture 1	Freight transport introduction	KH
▣Lecture 2 - 4	Infrastructure and modes	KH
▣Lecture 5 - 6	Logistics concepts	KH
▣Lecture 7	Outsourcing	KH
▣Lecture 8 - 9	Strategic, tactical and operational freight transport planning	KH
▣Lecture 10 - 11	Routeing and scheduling	KH
▣Lecture 12	Construction logistics	KH
▣Lecture 13	Mobile communication and positioning	KH
▣Lecture 14	City logistics	KH
▣Lecture 15 - 17	Port logistics	KH
▣Lecture 18	Hazardous materials	KH
▣Lecture 19	Freight flow modelling	KH
▣Lecture 20	Conclusions	KH

Tutorials and other Activities:

Activity 1	Shortest path problems	KH
Activity 2	Vehicle routing problems	KH
Activity 3	Scheduling problems	KH
Seminar 1	City Logistics	TfL
Seminar 2	Coursework Presentations	KH

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

CI 9 - T-23 - AIR TRAFFIC MANAGEMENT

Coordinator: WASHINGTON OCHIENG

Description:

The rapid increase in air traffic is creating congestion in the air traffic network with undesirable impacts, such as flight delays, increased levels of risk to safety, environmental pollution and noise. New technologies, procedures and organisational structures are being seen as the only credible intervention mechanisms, and have begun to be implemented. The challenge clearly is that such mechanisms should have the positive effect of increasing capacity but not compromise safety and the environment. Given the complexity of the issues involved and potential impacts if unresolved, training on the fundamentals is necessary to generate the human resource required to deal with the situation. This module begins with two introductory lectures on Air Traffic Management (ATM). The next set of lectures focus on the functional elements of ATM (ground and airborne). The components of current ATM systems as well as future ATM systems are outlined in the next two lectures. The remaining lectures focus on the constraints to the operation of ATM systems including: airspace capacity; operational airspace safety; environment and economics. It is not the aim of this module to cover the economics and environmental aspects of ATM in detail, only relevant high level issues will be covered.

Objectives:

To introduce the main concepts, technologies and issues involved in ATM, including the main regulatory and professional bodies, safety, environmental impacts and economics. At the end of the module, students are expected to understand the fundamentals of ATM, including its functional elements, technologies, the main organisations involved, and the main drivers of the constraints to the ATM system, with a particular emphasis on airspace capacity.

Lectures and Responsible Teaching Staff:

▣ Lecture 1 - 2	Introduction to ATM	<u>WYO</u>
▣ Lecture 3 - 4	The functional elements of the ATM system	<u>WYO</u>
▣ Lecture 5	Current ATM Systems	<u>WYO</u>
▣ Lecture 6	Future ATM Systems	<u>WYO</u>
▣ Lecture 7 - 10	Constraints to the ATM system – airspace capacity	<u>AM</u>
▣ Lecture 11 - 14	Constraints to the ATM system – operational airspace safety	<u>AM</u>
▣ Lecture 15 - 18	Constraints to the ATM system – the environment	<u>RJN</u>
▣ Lecture 19 - 20	Constraints to the ATM system – economics	<u>AWE</u>

Tutorials and other Activities:

■Activity 1	General essay on ATC/ATM and future developments	<u>AM</u>
■Activity 2	Visit to a NATS ATM Facility	<u>AM</u>
■Activity 3	Seminar on aviation safety	<u>AM</u>
■Activity 4	Workshop on aviation and the environment	<u>RJN</u>
■Activity 5	The application of fast time simulation to capacity estimation	<u>AM</u>

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

PLEASE NOTE THAT YOU WILL BE RESPONSIBLE FOR YOUR PART OF THE COST OF THE TRIP TO NATS

T CI 9 - T-24: PORTS AND MARITIME TRANSPORT

Coordinator: PANAGIOTIS ANGELOUDIS¹

Contributor: KHALID BICHOU^{1,2}

Description:

Ports and maritime transport constitute key links in global supply chains. The main characteristics of seaborne trade will be reviewed. After a detailed look at maritime dry and liquid bulk transport, attention will be directed to maritime container and inter-modal transport. The focus then shifts to the life cycle of ships, ship building, ship ownership, ship operation and ship insurance, and finally ship breaking. Deep sea shipping will be contrasted with short sea shipping and lolo (load-on-load-off) operation with ro-ro (roll-on-roll-off) operation. Ports, their ownership, management and operation, efficiency and economics will be covered. Particular attention will be given to the design and operation of container terminals, including inland container depots and terminal automation. Ports are nodes in competing supply chains serving distinct or overlapping hinterlands, so the key aspects of port choice will be reviewed. Finally, the national and international regulation of ports and shipping, supply chain security, and the environmental impact of ports and ships will be covered.

Objectives:

The module aims to provide a thorough understanding of ports and maritime transport in the context of global supply chains.

Lectures and Responsible Teaching Staff:

Part I: Maritime Transport

Lecture: 1 - 2	Introduction, world seaborne trade	<u>PA</u>
Lecture: 3 - 4	Types of maritime transport (Container, LNG, Bulk)	<u>PA</u>
Lecture: 5 – 6	Principles of maritime economics I	<u>PA</u>
Lecture: 7 – 8	Principles of maritime economics II	
Lecture: 9 – 10	Ship building, ownership, operation and scrapping	<u>PA</u>

Part II: Port Design and Operations

Lecture: 11 -12	Container terminals, equipment, automation	<u>KB</u>
Lecture: 13 – 14	Port planning and development	<u>KB</u>
Lecture: 15 - 16	Port performance and efficiency	<u>KB</u>
Lecture: 17 - 18	Port logistics and supply chains	<u>KB</u>
Lecture: 19 - 20	Port safety and security	<u>KB</u>

Seminars:

¹ Department of Civil & Environmental Engineering, Imperial College

² Independent Consultant

The Driest Port in the World	Robert Cochrane
LNG supply chains	Andy Flower / Hamed Nikhalat
Inland container depots in developing countries	Sheila Farrell
Environmental impact of port operations	Thalis Zis

Examination:

There will be one two-hour paper where the students must answer three questions from five (in common with other exam papers on the course).

Coursework:

Students will write an essay on a topic chosen from a list of topics. There will be a sheet of numerical exercise in support of numerical methods presented in lectures.

Course materials:

Core reading for the module will be:

- Stopford, M (2009) *Maritime Economics*, 3rd edition
- Bichou, K (2011), *Port Operations, Planning and Logistics*
- UNCTAD (2012) *Review of Maritime Transport*, available online
- Department for Transport (2008) *Logistics Perspective: End-to-end journey case studies*
- World Bank Port Reform Toolkit (2010, 2nd edition), available online

CI 9 - T-26 - URBAN STREET PLANNING AND DESIGN

Coordinator: PETER JONES

Description:

Street planning and design in the UK urban areas is undergoing a radical transformation, with the growing recognition that urban streets have become too traffic-dominated and that they need to facilitate a variety of other functions. This makes street planning and design a much broader and more complex process, and requires more trade-offs among competing pressures. Crucially, this broader view of streets is now endorsed by the Department of Transport and Communities and Local Government, as well as many professional bodies.

These issues are relevant in many other countries too. The New Urbanism movement in the US is challenging traditional methods of urban street planning and design and within Europe and the UK is now seen as a leader in this area. Interest has also been expressed in Australia and New Zealand, and one of the core books on the reading list has been translated into Chinese.

Objectives:

The objective of this module is to provide students with an understanding of this new environment, both at the levels of principle and practice. It ranges from strategic planning to detailed design issues, both in relation to existing urban street networks and the construction of new communities. It also addresses more controversial issues such as the role of shared space designs on different kinds of urban streets.

Lectures and Responsible Teaching Staff:

▣ Lecture 1	Urban street planning in its historical context	PMJ
▣ Lecture 2	Urban streets today: perspective and challenges	PMJ
▣ Lecture 3	Road and street hierarchies	PMJ
▣ Lecture 4	Street users and their design requirements	PMJ
▣ Lecture 5	Design concepts – balancing competing demands	PMJ
▣ Lecture 6	The pedestrian environment	PMJ
▣ Lecture 7	Catering for groups with restricted mobility	PMJ
▣ Lecture 8	Freight movement and servicing activities	PMJ
▣ Lecture 9	Cycling and motorcycling – the neglected modes	PMJ
▣ Lecture 10	Buses and trams	TF
▣ Lecture 11	Addressing road safety problems	PMJ
▣ Lecture 12	Crime and personal security	PMJ

▣ Lecture 13	Designing residential streets	PMJ
▣ Lecture 14	Designing busy street	PMJ
▣ Lecture 15	The shared space controversy	PMJ
▣ Lecture 16	Street design appraisal	PMJ
▣ Lecture 17-18	Assessing street performance – I & II	PMJ
▣ Lecture 19-20	Stakeholder engagement – I & II	PMJ

Tutorials and other Activities:

▣ Activity 1	Three seminars with outside speakers (DfT, TfL and consultant)	PMJ
▣ Activity 2	Site visit to a street reconstruction scheme	PMJ
▣ Activity 3	General essay on street design issues	PMJ
▣ Activity 4	Group design exercise	PMJ

The examination format for the above module is a written paper. 5 questions are set of which you are required to answer 3.

T27 - ROADS AND UNDERGROUND INFRASTRUCTURE: DESIGN, CONSTRUCTION AND MAINTENANCE

Coordinator: Raul Fuentes

Description:

This course aims to provide a sound background to the decision making, design and implementation of major transport structures. This course will cover standards, codes of practice, design, and construction methodologies in road designs, underground construction, deep excavations and tunnels. Geotechnical issues will be addressed. Attention will also be given to monitoring and maintenance for each of these infrastructure elements.

Objectives / learning outcomes:

- Appreciation of the different standards and codes of practice for each of the subjects covered in the course.
- Understand the importance of the link between design and construction and be able to include constructability considerations at the design stage.
- Awareness of the implications of the design in Health and Safety during construction.
- Knowledge and ability to design the different structures in their temporary and final conditions using state-of-the-art analytical methods.
- Appreciation of the concept of whole life cycle of structures and the influence of the decisions made at design stage on the future performance of the structure.
- Understanding and knowledge of the importance of monitoring systems during construction and for verification and maintenance purposes.
- Appreciation and knowledge of the most common maintenance techniques for each structure and how this can be influenced at design stage.

Prerequisites:

This unit requires a fundamental understanding of soil mechanics and mathematics.

Lecture schedule:

- ▣ **Lecture 1** Roads – Standards & codes of practice / Road geometry & drainage [RF](#)
- ▣ **Lecture 2** Roads – Pavement design & Geotechnics / Monitoring / Maintenance [RF](#)
- ▣ **Lecture 3** Embankments & Cuttings - Standards & codes of practice / Types & uses / Construction methodologies & detailing [RF](#)
- ▣ **Lecture 4** Embankments & Cuttings – Analysis methods & ground movements / Monitoring systems / Maintenance [RF](#)
- ▣ **Lecture 5** Deep excavations - Standards & codes of practice / Types & uses [RF](#)
- ▣ **Lecture 6** Deep excavations - Construction methodologies & detailing [RF](#)

- ▣ **Lecture 7** Deep excavations – Analysis methods & ground movements [RF](#)
- ▣ **Lecture 8** Deep excavations – Design of retaining structure [RF](#)
- ▣ **Lecture 9** Deep excavations - Design of temporary works [RF](#)
- ▣ **Lecture 10** Deep excavations – Tutorial [RF](#)

- ▣ **Lecture 11** Deep excavations - Monitoring systems [RF](#)

- ▣ **Lecture 12** Deep excavations - Maintenance / Operation / Coursework discussion [RF](#)
- ▣ **Lecture 13** Tunnels - Standards & codes of practice / Types & uses [RF](#)
- ▣ **Lecture 14** Tunnels - Construction methodologies & detailing [RF](#)
- ▣ **Lecture 15** Tunnels – Analysis methods & ground movements [RF](#)
- ▣ **Lecture 16** Tunnels – Design of lining [RF](#)
- ▣ **Lecture 17** Tunnels - Design of temporary works [RF](#)
- ▣ **Lecture 18** Tunnels - Tutorial [RF](#)
- ▣ **Lecture 19** Tunnels - Monitoring systems [RF](#)
- ▣ **Lecture 20** Tunnels - Maintenance / Operation / Coursework discussion [RF](#)

Student activity breakdown:

- ▣ **Activity 1** Pre-lecture reading as recommended.
- ▣ **Activity 2** Class multiple-choice tests (6-7no. randomly distributed depending on progress).
- ▣ **Activity 3** Road design calculation.
- ▣ **Activity 4** Excavation design calculation.
- ▣ **Activity 5** Tunnel design calculation.

Assessment: 15% from class multiple-choice tests + 85% from coursework
NB There is no written examination for this course unit.

Syllabus for MSc Module in Business Management

CI9-B1 Microeconomics Theory

Module leader:	Dr Daniel Graham
Other contributors:	Mr Jacek Pawlak
Module status:	Core for H2B3, H2U7, H2U2, H2A4, H2B5, H2A8, H2B1
Pre- or co-requisites:	CI9-B2, CI9-B3, CI9-B4
Term:	Autumn
Contact hours:	30
ECTS units:	4-6 (depending on core MSc programme)

Description

This unit provides a theoretical foundation in the principles of microeconomics. Students will gain an understanding of how economic theory can be used to analyse the functioning of markets and make judgments about the allocation of resources. They will be able to graphically and quantitatively describe the core theoretical principles of microeconomics and communicate them to others.

Requirements

Students need no prior knowledge of economics but should have a basic background in mathematics including calculus.

Course organisation

There will be 16 hours of lectures delivered over 11 weeks in two hour blocks. Weeks 10 and 11 of the course will provide revision sessions to aid understanding of the material and help prepare for the exam. Beginning in the 2nd week, we will have tutorials after each two-hour lecture to review and practice problems and to set coursework. If you have questions about specific problems, please be prepared to ask them at the tutorial.

Course materials

Handouts and other course material will be made available via Blackboard.

Coursework

Two pieces of coursework will be assigned.

1. The first will be set on Friday 28/10/11 to be submitted on Monday 07/11/11.
2. The second will be set on Friday 25/11/11 to be submitted on Monday 05/12/11.

Exam

There is a joint CI9-B1/B2 exam paper which will be held at the beginning of the second term. You will be asked to answer two questions on microeconomics.

Outline of the lectures

- | | | |
|-----------|------------------------|-------------------------------------------------------------|
| 1 | Lecture 1 -2 | Introductory concepts (Chp 1) |
| 2 | Lecture 3 - 4 | The theory of consumer behaviour (Chp 2, 3 & 4) |
| 3 | Lecture 5 -6 | The demand for goods (Chp 5 & 6) |
| 4 | Lecture 7 - 8 | Welfare and consumer's surplus (Chp 14) |
| 5 | Free week | <i>No lecture or tutorial this week</i> |
| 6 | Lecture 9 - 10 | Elasticities (Chp 15) |
| 7 | Lecture 11 -12 | The theory of the firm (Chp 18 & 19) |
| 8 | Lecture 13 - 14 | Costs, supply and competition (Chp 20, 21, 22, 23) |
| 9 | Lecture 15 - 16 | Market failure: externalities and public goods (Chp 34, 36) |
| 10 | Revision 1 | |
| 11 | Revision 2 | |

Required text:

Intermediate Microeconomics: A Modern Approach, 7th Edition, by Hal R. Varian (W.W. Norton and Company: London)

Other useful sources:

Chiang AC and Wainright K – Fundamental methods of mathematical economics.
 Stroud KA – Engineering mathematics.
 Stroud KA – Advanced engineering mathematics.

CI9-B2-Principles of Accounting

Course leader:	Dr Libon FUNG (Birkbeck)
Other contributors:	None
Module status:	Core for H2B3, H2U7, H2U2, H2A4, H2B5, H2A8, H2B1
Pre- or co-requisites:	CI9-B1, CI9-B3, CI9-B4
Term:	Autumn Term
Contact hours:	30
ECTS units:	4-6 (depending on core MSc programme)

Aims

This course aims to provide the principles and practice of financial and management accounting. It intends to enable students to:

- understand information contained in the published financial statements of companies and other organizations;
- prepare accounting statements; and
- develop knowledge and understanding of the application of different management accounting techniques.

Subject Specific Objectives

By the end of the course, students will be able to:

- state the uses and users of accounting information;
- explain and apply accounting concepts, principles and conventions;
- record basic accounting transactions and prepare annual financial statements;
- analyse, interpret and communicate the information contained in basic financial statements, and explain the limitations of such statements;
- explain the role of management accounting within an organisation and the needs for management information;
- understand the principles of costing and apply them in straightforward scenarios;
- understand the basic principles of performance management; and
- understand the basic principles of budgeting and apply them

Intellectual

- to integrate subject matter studied on related modules and to demonstrate the multi-disciplinary aspect of practical financial and management problems

Practical

- to be more proficient in researching materials on the internet and Library database.

Personal and Social

- through group work and class discussion, students will learn to appreciate public speaking, presentation, and interpersonal skills.

The syllabus includes: introduction to financial accounting; accounting concepts; double-entry bookkeeping; preparation of balance sheets and profit and loss accounts; principal sources of finance for companies; accounting ratios; limitations of

conventional financial statements; costing for planning; decision making and control; accounting for materials; labour and overheads; absorption costing; marginal costing and break even

analysis; budgetary control; standard costing and variance analysis; cash budgeting and management of working capital; and investment appraisal, including payback period, return on investment and discounted cash flow.

Students are required to prepare answers to numerical exercises, which are reviewed in weekly seminars/workshops, and to prepare material for discussion topics.

Textbook

'Accounting: An Introduction' by Peter Atrill and Eddie McLaney [Prentice-Hall, 5th edition, 2010].

Structure

Pre-lecture study time; 2-hour lecture and 1-hour tutorial/support class

Course Outline

Date	Lecture	Reading
15 Oct	L1: Introduction to Accounting and Recording of Financial Data	Chapters 1, 4 & 5 and Appendix A
22 Oct	L2: Preparation for the Financial Statements I	Chapters 2 & 3
29 Oct	L3: Preparation for the Financial Statements II	Chapter 6
5 Nov	L4: Interpretation of Financial Statements I	Chapter 7
12 Nov	L5: Interpretation of Financial Statements II	Chapter 7 & 11
19 Nov	L6: Fundamental of Management Accounting and Cost Accounting	Chapter 8, 9 & 10
26 Nov	L7: Making Decisions I – Breakeven Analysis	Chapter 8, 9 & 10
3 Dec	L8: Making Decisions II – Capital Investment Appraisals	Chapter 14
10 Dec	L9: Planning for the Future	Chapter 12
17 Dec	L10: Budgets for Control	Chapter 13

Assessment

B2 – Principles of Accounting	
Examination:	Half of one two-hour paper undertaken in January
Rubric:	Section A: Answer one question from two Section B: Answer one question from two
Weighting	70%
Coursework:	Normally group based
Weighting	30%

CI9-B3-Project Management

Course leader:	Ms Alison Ahearn
Other contributors:	Bill McElroy, Scott Le Vine (Imperial)
Module status:	Core for H2B3, H2U7, H2U2, H2A4, H2B5, H2A8, H2B1
Pre- or co-requisites:	CI9-B1, CI9-B2, CI9-B4
Term:	Spring Term
Contact hours:	30
ECTS units:	4-6 (depending on core MSc programme)

Bill McElroy is Head of Programme Management & Turner & Townsend Infrastructure

This module has been designed to give students not only theoretical knowledge but also foster skills and ethos. The module has a strong emphasis on practical, collaborative work and the ability to communicate verbally and in writing.

Why study Project Management?

Project management is central to the understanding of civil engineering practice, and affects every sub-discipline of engineering. A serious problem in project management in the UK is the adversarial culture between parties to the same project. Therefore, much attention has been paid in recent years to the need to teach engineers a more collaborative way of managing projects.

Project management knowledge, skills and ethos are required for managing large infrastructure projects just as they are needed for one-off construction projects. This module is intended to introduce you to project management and the use of case studies for transferring knowledge from past experiences to new situations.

You will receive 12 hours of lectures in an intensive mode over two Fridays and then form groups to use project-based learning to further your ability to research, problem-solve and communicate project management.

Mode of delivery:

12 hours of classroom lectures (intensively over two Fridays)
Students will be assigned to groups for group work.

12 hours of project-based learning in groups (doing a coursework project about "project management")

1 x 3hour "Crit" session assessment afternoon: all student groups present and receive feedback on the same afternoon, taking turns to present to a panel of experts and to their fellow students.

Examination question in the summer exams

The majority of the marks available for the B3 Project Management module will be assigned to the project coursework, with a small number of marks allocated to the examination question.

STUDENTS ARE WARNED THAT your active participation and contribution to the group project is required, as your examination question will require you to be able to express an opinion about your experience with the project management coursework.

At the end of this module, students should:

- (1) Be able to discuss key elements of civil engineering project management in terms of both theoretical principles, the use of case studies and from experience in a multidisciplinary team.
- (2) Have convened a team of peers to address an assigned project task, and worked rapidly through the stages of forming the team, norming the team, thinking through the assigned task, researching the assigned topic, brainstorming ideas as to the issues/problems, forming a consensus view of the answer, writing up and presenting/defending the solution orally in front of peers and experts.
- (3) Be able to identify to themselves the knowledge they have acquired and used about project management, the skills they have employed and the ethos of project management that they will take into their professional practice after graduation.

Assessment:

Group oral presentation (approx 15minutes per group, plus 10 minutes Q&A) (Group mark awarded)

Group written project report, with identifiable contributions from individual students (Group mark and individual marks awarded)

CI9-B4–Business Environments and Construction Law

Course leader:	Ms Alison Ahearn
Other contributors:	Professor Dot Griffiths (Deputy Principal - Imperial Business School)
Module status:	Core for H2B3, H2U7, H2U2, H2A4, H2B5, H2A8, H2B1
Pre- or co-requisites:	CI9-B1, CI9-B2, CI9-B3
Term:	Spring Term
Contact hours:	30
ECTS units:	4-6 (depending on core MSc programme)

Description

This unit is intended to provide students with an appreciation of the complexity of construction project management and how it differs from infrastructure management. The unit deals with the management of people in the business environment and with the traditional use of construction law as a management tool (or weapon) in the UK construction/civil engineering industry. The course focuses on interactions of humans and companies in a construction project setting, and is intended to show the characteristics that make UK construction project management different from its European counterparts and different from other areas of management.

Objectives

Students should be able to discuss the two dominant approaches to construction management in England: the law-led model and the people-management approach.

Requirements and Recommendations

The course is introductory: there is no assumed knowledge of specialist theory. However, students who are not familiar with the English legal system are recommended to do some general background reading from the internet, to become familiar with some of the language used for discussing law and law-making. Visit www.parliament.uk and click on “how Parliament works”. Within that section, note the information on ‘making laws’. Students who are environmental or transport specialists will benefit from doing some general reading or thinking about ‘construction projects’: the complexity of creating the Olympics-related structures, transport, environmental control and future legacy would be a good example to consider (either Beijing or London Olympics projects).

Lectures and Responsible Teaching Staff

[Alison Ahearn](#) is a lawyer with a special interest in Construction Law and engineering project management (particularly construction management). Her lectures are intended to show how contract law has been the dominant management tool for civil engineering in the UK for the last hundred years and how that strategy has been changing since the mid-1990s. [Professor Dot Griffiths](#) of the Business School then lectures on Human Resource Management, continuing the theme of modernising construction management through understanding the management of the people working on any project for any company.

Coursework is done by classroom presentations during term, using group work.

ATTENDANCE AT THE COURSEWORK SESSIONS IS COMPULSORY. Failure to attend and participate will result in a zero coursework mark.

Lecture Schedule

Lectures will be presented by Prof Griffiths and then by Alison Ahearn. An exam tutorial (to assist you in preparing for the C19-B4 module exam questions) will be held by Alison Ahearn near the end of term. Students benefit by bringing their questions and queries to that tutorial.

Tutorials and other Activities

The lectures are mixed with interactive work or discussion work, so that the only formal “tutorials” are revision tutorials at the end of term to aid students in their preparation for the examination.

Required text

The course focuses on material delivered in the classroom and fosters student discussion. There is no single required text. Many legal resources are available on the internet for free and students are encouraged to use these. The discussions in the classroom are central to students’ understanding and students are expected to take notes in class.

For general insight, students may visit the website for Constructing Excellence <http://www.constructingexcellence.org.uk/>

Syllabus for MSc Module in Sustainable Development

C19 - SD-1-2 Sustainable Development

Course leader:	Dr James Keirstead
Other contributors:	Prof. David Fisk, Prof. Chris Cheeseman, staff of the Departments of Civil and Environmental Engineering, Environmental Science and Technology, and visiting lecturers.
Module status:	Elective
Pre- or co-requisites:	-
Term:	Autumn and Spring
Contact hours:	120
ECTS units:	19-24 (depending on core MSc programme)

Module description

This module equips students with the skills to incorporate the concepts of sustainable development in all the stages of an engineering project's development. They gain a good working knowledge of the background to the concept of sustainable development and learn to contribute with confidence to a debate on the issues raised by an engineering project or management plan.

The module is designed to complement core material in the four clusters of MSc courses offered in the Department: structural, geotechnical, environmental or transport topics. While each of these clusters contain some material relevant to sustainable development issues, this module will look more deeply at the topic in a holistic and cross-cutting approach, which reflects its interdisciplinary nature. This is a very challenging course, and probably quite unlike any other course in engineering that the student will have taken before. Because of its time demands it is not recommended for students who anticipate difficulties with aspects of their core subject. In addition to the core course entry requirements, applicants must submit a 500-word essay on which entrance to this module is decided; details may be found on the Application Information section of the Department website. In the essay (as with the programme itself) applicants must be prepared to demonstrate that they can discuss and write fluently about different political, economic and social real world issues.

The module is suitable for those who wish to direct their career towards issues of development and redevelopment, especially in the provision of infrastructure, and its renovation and renewal. It will give them the practical tools necessary to apply the principles of engineering for sustainable development in real world contexts. Its scope includes not only sustainable development in the developed world, but in developing economies, and the perspectives of key players.

Course Contents

The basic curriculum will consist of three units, with the first two run concurrently in the first term:

- *The concept of sustainable development*

This unit covers the history and origins of the concept. It will look at the economic, social and environmental drivers for sustainable development and fac-

tors that militate against its achievement, through the use of systems analysis and cognitive mapping techniques. An engineering approach to sustainable development based on the so-called 'triple bottom line' (or 'three capitals') approach is emphasized.

- *Sustainable development and engineering innovation*

This unit covers the role of innovation in maintaining a sustainable development path. It looks at the problems of managing the concept within real engineering projects, how to use local and national sustainable development indicators, the use of integrated life cycle analysis, and the modification of value engineering with concepts such as real options analysis. At the end of this unit students will be required to draft their own design manual for sustainable development that applies the methods discussed in the first term for an enterprise of their choice. The ERM prize for Engineering for Sustainable Development is awarded each year for the best design guide.

- *Applying the principles*

This unit consists of a series of in-depth studies given by staff in the Department and external advisers focusing on cross-cutting urban and infrastructure issues including: enabling sustainable cities, water supply and management, waste management, transport infrastructure, energy, air pollution, sustainable construction, sustainable development in developing countries. The emphasis is on 'wicked problems' that are hard to solve by technology alone.

Special project

Students wishing to pursue their interest in engineering for sustainable development through an individual research project may do so through an approved topic within their core subject. This must demonstrate the principles of the "triple bottom line" design approach and the ability to conceive an engineering project, or product, in temporal as well as spatial terms.

Lecturing Staff

Initials	Name	Affiliation
<u>ALA</u>	Ms Alison Ahearn	Imperial College London
<u>DA</u>	Prof Dennis Anderson	Imperial College London
<u>PA</u>	Dr Panagiotis Angeloudis	Imperial College London
<u>JA</u>	Mr John Ashton	LEAD International
<u>SB</u>	Dr Simon Barnes	Imperial College London
<u>SIB</u>	Mr Simon Barnes	Society of Motor Manufacturers and Traders
<u>DB</u>	Prof David Bayliss	Halcrow and Imperial College London
<u>DKB</u>	Dr Derrick Boampong	University College London
<u>NB</u>	Prof Nigel Brandon	Imperial College London
<u>CC</u>	Ms Clemence Cavoli	University College London
<u>CC</u>	Dr Chris Cheesman	Imperial College London
<u>AHFC</u>	Dr Andy Chow	University College London
<u>NC</u>	Dr Nicola Christie	University College London
<u>AWE</u>	Prof Andrew Evans	Imperial College London
<u>RF</u>	Dr Raul Fuentes	University College London
<u>TF</u>	Dr Taku Fujiyama	University College London
<u>EG</u>	Mr Eddie Goddard	Transport for London
<u>DJG</u>	Prof Daniel Graham	Imperial College London
<u>DGr</u>	Prof Dot Griffiths	Imperial College London
<u>DAG</u>	Dr David Goode	Greater London Authority
<u>DVG</u>	Prof David Gann	Imperial College London
<u>KH</u>	Dr Ke Han	Imperial College London
<u>BGH</u>	Prof Benjamin Heydecker	University College London
<u>RH</u>	Mr Robin Hirsch	Imperial College London
<u>CH</u>	Dr Catherine Holloway	University College London
<u>PMJ</u>	Prof Peter Jones	University College London
<u>XK</u>	Xenia Karekla	University College London
<u>PK</u>	Prof Paul Klumpers	Imperial College London
<u>ML</u>	Mr Miles Logie	Visiting Lecturer, Imperial College London
<u>BM</u>	Mr Bill McElroy	Nichols Group
<u>AM</u>	Dr Arnab Majumdar	Imperial College London
<u>FM</u>	Dr Francesca Medda	University College London

<u>MM</u>	Dr Marco Mongiello	Imperial College London
<u>DM</u>	Dr David Moorcroft	BP
<u>RM</u>	Dr Richard Murphy	Imperial College London
<u>RN</u>	Dr Robin North	Imperial College London
<u>WYO</u>	Prof Washington Ochieng	Imperial College London
<u>NP</u>	Mr Neil Paulley	Transport Research Laboratory
<u>JWP</u>	Prof John Polak	Imperial College London
<u>PR</u>	Prof Paul Rutter	Imperial College London
<u>RS</u>	Réka Solymosi	University College London
<u>ASi</u>	Dr Aruna Sivakumar	Imperial College London
<u>JS</u>	Dr Jamie Standing	Imperial College London
<u>HT</u>	Dr Helena Titheridge	University College London
<u>NAT</u>	Prof Nick Tyler	University College London
<u>AW</u>	Dr Ahmer Wadee	Imperial College London
<u>JW</u>	Dr Jay Walder	Transport for London
<u>LW</u>	Dr Luis (Pilo) Willumsen	Visiting Prof University College London

Timetables for the Autumn Term