



## Institute of Transport and Logistics Studies

144 Burren Street, Newtown, Sydney

Directions and map: <http://sydney.edu.au/business/itls/about/directions>

**Note:** ITLS is not on the main campus

**Please see the ITLS website for other important details about units at ITLS:**

[http://sydney.edu.au/business/itls/courses/transport\\_and\\_logistics](http://sydney.edu.au/business/itls/courses/transport_and_logistics)

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### **ITLS student enquiries office:**

Email: [business.itlsinfo@sydney.edu.au](mailto:business.itlsinfo@sydney.edu.au)

Office: Room 312B, Level 3, ITLS, 144 Burren Street, Newtown

**Assessment collection / viewing:** Monday to Friday 12pm to 1.30pm ONLY

### **Timetable:**

Please note that the timetable provided in this outline is subject to change. You should check your timetable on MyUni for final dates and to see which group you have been assigned to, see: <http://myuni.usyd.edu.au/>



## TPTM6180

### Geographical Information Systems

### Semester Two, 2011

## Unit of Study Outline

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**Consultation times:** Mondays 12:30 – 14:00 or by appointment.

Please use email as your first method of communication.

**Staff: Richard Ellison/Adrian Ellison**

**Phone:** 02 9351 0186

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**Office:** Room B203 , Level 2, Building C37B, ITLS, 144 Burren Street, Newtown

**Consultation:** By appointment via email

Please use email as your first method of communication. Additionally, should you have questions pertaining to course content you will be directed to ask these questions via the discussion board on the course Blackboard site.

#### Classes:

Time(s): 9am to 5pm.

Venue(s): 144 Burren Street in LT2 (first class only) and CR2 (remaining classes).

This unit involves a **substantial practical component using GIS software**, and you will also be using this software in all the assessment tasks. Due to restrictions on lab size, you will be split into two tutorial groups (A & B) and instructed on when your lab times will be. **This will happen in the first class – it is therefore essential you attend this class.**

GROUP	A&B	A	B	A	B	A	B	A	B	A& B
Day	1	2	2	3	3	4	4	5	5	6
Date	Fri 5-Aug	Thurs 18-Aug	Fri 19-Aug	Tues 30-Aug	Fri 2-Sep	Thurs 15-Sep	Fri 16-Sep	Thurs 13-Oct	Fri 14-Oct	Thurs 26-Oct
Time	9-5	9-5	9-5	9-5	9-5	9-5	9-5	9-5	9-5	9-5
Venue	LT2	CR2	CR2	CR2	CR2	CR2	CR2	CR2	CR2	CR2

\*These dates and final exam date TBC - please note that the timetable above is subject to change. You should check your timetable on MyUni for final dates, see: <http://myuni.usyd.edu.au/>

## 1. Unit of study information

### 1.1. School handbook description

This unit introduces students to Geographical Information Systems (GIS), which have revolutionised the ability to support different types of transportation, logistics and planning analyses. The course begins by introducing students to the fundamentals of GIS, the spatial model, how data are organised and how spatial queries work. We then focus on spatial data sources, with a particular focus on GPS, including practical application and use within a GIS system. The course then moves to a hands-on focus in which students will use the powerful TransCAD GIS software to analyse a number of problems (e.g., planning a routing and delivery system, locating a new warehouse, establishing potential demand for a new bus service). Students will also gain knowledge of how open-source GIS software (e.g., Google Maps, Google Streets) can be used to analyse spatial problems. By the end of the course, students will be able to conduct and evaluate a GIS case study in terms of implementation of a data model, the use of appropriate GIS tools and techniques, benefits and barriers of the implemented system, and how the system could be improved. This unit will appeal to all students interested in the spatial impact of decisions.

### 1.2. Pre-requisite units

There are no pre-requisite units for TPTM6180.

### 1.3. Assumed knowledge and/or skills

This unit makes no prior assumptions of knowledge of GIS. However, as you will be spending most of the semester working with GIS software, it is assumed you are familiar and enjoy working with computer software.

### 1.4. Workload requirement

It is expected that you will spend approximately 150 hours on this unit (including lectures, preparing assessment) and produce approximately 9,000 words or equivalent of work. This time should be made up of reading research, working on exercises and problems and participating in classes. In periods where you need to complete assignments or prepare for examinations, the required workload may be greater.

## 2. Learning aims and outcomes

### 2.1. Aims of the unit

The ability to efficiently and effectively collect, manage, display and query spatially-referenced data is fundamental to the disciplines of transportation management and logistics. Meeting these requirements has been revolutionised by the development of computer-based technologies and associated methodologies known as Geographical Information Systems (GIS). The aims of this unit are to introduce students to the theory and practice of GIS, with specific focus on applications in the transport planning and logistics areas. No prior knowledge of GIS is assumed. Successful completion of the course will see students gain skills that are not only useful for other courses but in high demand by employers.

## 2.2. Learning outcomes

The following describes the learning goals that this Unit of Study aims to achieve and details how the achievement of these goals will be assessed. **For further information on each assessment please refer to Section 3.** The design of the unit recognizes that students have different learning approaches; this is reflected in the learning objectives and assessment design.

Specifically the course seeks to develop **personal and intellectual autonomy** through the completion of individualised research assignments; promote **research and inquiry** through both individual and group assignments and by teaching knowledge seeking skills; develop **ethical, social and professional understanding** by working in teams; and cultivate **communication** skills via course emphasis on data presentation and through the completion of the research projects. The specific learning outcomes put forward by this Unit of Study are as follows:

1. Demonstrate a commitment to lifelong learning through continuous reflection on personal and professional experiences, self-evaluation and self-improvement.
2. Demonstrate a capacity to work independently including the ability to plan and achieve goals.
3. Identify, define and analyse problems and recommend creative solutions within real-world constraints.
4. Develop coherent arguments when recommending solutions and critically evaluating theories in major fields of study.
5. Work with people from diverse backgrounds with inclusiveness, open-mindedness and integrity.
6. Confidently and coherently communicate, orally and in writing, to a professional standard in major fields of study.
7. Employ technologies effectively in communicating information relevant to practice in major fields of study.

On completion of this unit of study, students should be able to:

1. Understand the concepts and vocabulary of GIS as it relates to transport & logistics.
2. Develop and apply research skills appropriate to the requirements of the unit and discipline.
3. Understand how the concepts of related disciplines are applied in the development of GIS problems.
4. Understand and apply the concepts learnt to GIS-based problems and support their solutions with logical argument.
5. Communicate an understanding of the unit's concepts and their application in written and verbal/ presentation media.
6. Develop individual intellectual enquiry and application skills.
7. Demonstrate the realisation of these outcomes by achieving an adequate overall standard in the assessment process.

### 2.3. Links between learning outcomes and learning and teaching methods

The following learning and teaching activities will be undertaken during this course.

#### Face-to-face

**Computer Lab Demonstrations:** This course is largely hands-on and most of the face-to-face learning will occur in the computer lab. You will learn how to use the GIS software and apply it to real-world problems. Active participation is required.

#### Print

**Hard copies** of important handouts are provided at lectures or downloaded from the unit's Blackboard site and printed yourself.

**A hard copy of assessments** should be kept, even after submitting them online.

#### Online

**Blackboard** (<http://blackboard.econ.usyd.edu.au>) provides the main online learning support. It is essential that you log in at least three times per week to keep abreast of unit-wide announcements and use the resources to supplement your learning.

**Powerpoint presentations** for each lecture will be available prior to the day of lecture for you to download from Blackboard (<http://blackboard.econ.usyd.edu.au>). **You will be expected to print and bring this material to class.** You may use the printer in CR2 to do this rather than have to use your own personal computer. Please note however that due to the limited number of printers available in that room, attempting to print five minutes before class starts may result in you being late for class.

**An online discussion forum** will be available over the semester to all students on the Blackboard site (<http://blackboard.econ.usyd.edu.au>). This can be used to clarify questions relating to the assessments as well as any other general queries that you may have. Please check the FAQ list prior to posting a new question as duplicate questions will simply be ignored or removed. Appropriate online behaviour in such discussions is expected at all times.

**All assignments** should be submitted online by the due date.

**Feedback and Results** on each assessment are available through Blackboard and email when all marks have been finalised. The average for each assessment and a brief summary of common errors and suggested improvement options will be posted online at the same time.

### 2.4. Links between learning outcomes and assessment

Assessments and their relationship/s with learning and teaching outcomes in this unit include the following.

1. Individual GIS Homework Exercises designed to evaluate the learning outcomes 1, 2, 3, 6.
2. A group-based task designed to evaluate all learning outcomes.
3. A final examination designed to evaluate learning outcomes 1, 2, and 6.

Specific details are provided in Section 3.

### 3. Assessment

Assessment items	Relevant unit Learning outcome/s	Length	Weight	Due Date*
1. GIS Homework Exercises (Individual)	1, 2, 3, 6	2,500 words equiv.	25%	9 September 2011
2. GIS Major Project	All	3,500 words	35%	21 October 2011
3. Project Presentation	5, 6, 7	15-20 minutes	15%	26 October 2011
4. Final Exam	1, 2, 6	Two hours	25%	TBA
Academic honesty module **		N/A	0%	15 August 2011

\* The due date is also the closing date. This means that assessment items will not be accepted after the due date except by prior agreement.

\*\* Students must complete the academic honesty module in Blackboard with a mark above 80% by the final day of exams, or an Absent Fail (AF) grade will be given for the entire unit. Students can complete the module multiple times until this grade is achieved. Students who completed the module with a score of 80% or above last semester do not need to do it again.

All assignments must be submitted electronically via Blackboard. Assignments submitted electronically via Turnitin do not require cover sheets. Ensure that your student ID number (SID) is in the top right hand corner of each page for individual assignments and the Group name or number plus SID of all members is in the top right hand corner for group assignments. Full information about how to prepare assignments for electronic submission can be found in the Turnitin Student Guide:

[http://blackboard.econ.usyd.edu.au/webapps/portal/frameset.jsp?tab\\_tab\\_group\\_id= 20\\_1](http://blackboard.econ.usyd.edu.au/webapps/portal/frameset.jsp?tab_tab_group_id= 20_1)

Should submission problems occur, students should contact Business School eLearning Support first on 9036 6433 or [business.elearning@sydney.edu.au](mailto:business.elearning@sydney.edu.au) or the Unit Coordinator as soon as possible.

#### 3.1. Detailed assessment information

##### GIS Homework Exercises (25% of final Mark)

##### Rationale:

Students need to gain a basic understanding of GIS techniques and how to use the TransCAD software to prepare for the major assignment.

##### Details:

Students will complete a series of tutorial exercises individually using the TransCAD GIS software to develop basic skills and understanding for application in the larger project. You will be required to undertake approximately 25 hours of working on the assignment questions outside of class times. Further instructions can be found on Blackboard.

##### Submission Details:

Assignments must be submitted electronically via Blackboard by the due time/date. Should submission problems occur, students should contact the unit coordinator as soon as possible. See [http://sydney.edu.au/business/learning/staff/unit\\_coordinators/unit\\_of\\_study\\_outline/2.4\\_assessment\\_details](http://sydney.edu.au/business/learning/staff/unit_coordinators/unit_of_study_outline/2.4_assessment_details)

**GIS Major Project (35% of final Mark)****Rationale:**

The power of GIS is through its use as a spatial decision support system for real-life problems. Students will apply the skills learnt in the previous assignment together with what they learn subsequently in class to a vehicle routing and scheduling problem, common in the field of transport and logistics.

**Details:**

Working in groups of three or four, students will work on a location and vehicle routing problem in Sydney, which will involve the use of TransCAD. The submission will be a group report. You will also need to provide evidence of team-work in the form of meeting minutes, and log-books submitted with the report.

**Submission Details:**

Assignments must be submitted electronically via Blackboard by the due time/date and by hard copy by the due date. Submission is not valid unless both copies are identical and both received by the due date. Should submission problems occur, students should contact the unit coordinator as soon as possible. See

[http://sydney.edu.au/business/learning/staff/unit\\_coordinators/unit\\_of\\_study\\_outline/2.4\\_assessment\\_details](http://sydney.edu.au/business/learning/staff/unit_coordinators/unit_of_study_outline/2.4_assessment_details)

The referencing and style guide that should be used in all assessments in this unit is Harvard.

**GIS Major Project Presentation (15% of final Mark)****Rationale:**

Effective oral communication of findings and recommendations to the client is a crucial skill.

**Details:**

In their project groups, students will present their project work to fellow students and teaching staff in a 15 minute seminar. The assessment will involve an individual component (speaking style, ability to answer questions etc) and a group component (organisation, quality of overheads etc).

**Final Exam (25% of final Mark)****Rationale & Details:**

The final examination is designed to comprehensively assess understanding of both the principles and practice of GIS learnt throughout the course and completion of the project-based assessment. Students will be allowed two A4 sheets of paper in the examination with whatever you want written on them.

**3.2. Referencing style and style guide**

For this unit the referencing style is the Harvard Referencing Style. Students should download and adhere to the 'How to write a paper at the Institute of Transport and Logistics Studies' report available at [http://sydney.edu.au/business/itls/courses/transport\\_and\\_logistics/student\\_resources](http://sydney.edu.au/business/itls/courses/transport_and_logistics/student_resources).

### 3.3 Feedback on assessment

Timely feedback is intended to help you to improve your learning during the unit. Students will receive the following feedback during the course of the Semester:

- All marks will be posted into the Blackboard GradeCentre within 3 weeks of submission. Marks will not be given over the phone.
- Assignments will be returned electronically with the marking criterion sheet. The marking criterion sheet will be the primary way in which feedback is communicated on the assignment.
- A summary of class-wide errors and appropriate improvement action for each criterion is provided on Blackboard wherever possible.
- We will go through each piece of assessment in class, once that assessment has been returned.
- If you would like further feedback on the assessment task, you are encouraged to ask during tutorials or consultation hours. This can be done in pairs or groups if you have similar issues to discuss.
- Your peers during discussion or activities timetabled during class and through online discussion board activities.
- Yourself as you compare and reflect on your thought and solutions with the formal feedback given.

### 3.4. Academic honesty, plagiarism, legitimate cooperation and groupwork

Commencing students should complete the academic honesty module available via Blackboard before their first assessment submission. Students should refer to Business School and University policies on academic dishonesty and plagiarism

([sydney.edu.au/business/currentstudents/student\\_information/student\\_administration\\_manual](http://sydney.edu.au/business/currentstudents/student_information/student_administration_manual)), copyright ([sydney.edu.au/senate/policies/Intellectual\\_Property\\_Rule.pdf](http://sydney.edu.au/senate/policies/Intellectual_Property_Rule.pdf)) and the 'All your own work website' ([sydney.edu.au/student\\_affairs/plagiarism\\_index.shtml](http://sydney.edu.au/student_affairs/plagiarism_index.shtml)) for information about legitimate cooperation, group work, how to reference correctly and how to avoid plagiarism.

Academic honesty is important to protect students' right to receive due credit for work submitted for assessment. It is clearly unfair for students to submit work for assessment that dishonestly represents the work of others as their own and gain marks and degrees, which are not based on their own efforts and abilities. Deliberate breaches of academic honesty constitute academic misconduct. These breaches include: plagiarism, fabrication of data, recycling previously submitted material, engaging someone else to complete an assessment on one's behalf and misconduct during supervised assessments.

The penalties for academic misconduct may include: a mark of zero on the assessment; a fail grade in the unit of study, additional assessment (including an unseen exam), and reference of the matter to the University Registrar.

All assessments will be checked for plagiarism. Where plagiarism is suspected, the assessment will be fully checked and monitored using manual process, Google checks and also electronic plagiarism detectors. In order to do this, the Business School may reproduce the assessment, provide a copy to another member of the Business School, and/or communicate a copy of this assignment to a plagiarism checking service (which may then retain a copy of the assignment on its database for the purpose of future plagiarism checking).

Academic dishonesty involves more than just copying material. Cooperation and helping other students may at times trigger academic dishonesty proceedings if it appears you have worked too closely with another student.

In this unit,

1. Assessment tasks 1 and 4 are individual assessments.
2. Assessment tasks 2 and 3 are group assessments.

Individual assignments must be written and prepared alone. You may consult with other students about ideas and possible research sources but the analysis and writing of the assignment must be done alone. Group assignments should be prepared within the group. Students should contribute fully to the group and take part in all group activities, contributing ideas, analysis and writing to the final product. While students within the group should assist each other freely, students should not carry this level of cooperation outside the group. One group may cooperate and help another group about ideas and possible research sources but the analysis and writing of the assignment must be done by the group alone.

## 4. Texts and other resources

There is no specific text required for this subject. The required reading material will be posted on Blackboard in advance of each lecture session.

## 5. University and Business School policies and support

### 5.1. Business School policies

Business School policies are contained in the Administration Manual for Students:  
[sydney.edu.au/business/currentstudents/student\\_information/student\\_administration\\_manual](http://sydney.edu.au/business/currentstudents/student_information/student_administration_manual).

It is crucial that you take the time to consult this manual early in your studies in order to familiarise yourself with policies and procedures relating to critical issues such as the Business School's policy on special consideration (including requirements and timelines. e.g. lodging applications five working days after a missed assessment), appeals (lodge within 15 working days of the decision) and other policies such as enrolment, credit etc. Assistance is available from the Business School's Student Information Office ([sydney.edu.au/business/student\\_information\\_office](http://sydney.edu.au/business/student_information_office)).

### 5.2. University policies

- **University policies:** [sydney.edu.au/policy](http://sydney.edu.au/policy)
- **Assistance** is available from the University's Student Centre:  
[sydney.edu.au/current\\_students/student\\_administration](http://sydney.edu.au/current_students/student_administration)
- **The code of conduct** is an important policy which outlines the University's expectations about treating all staff employees and students with respect, dignity, impartiality, courtesy and sensitivity and refrain from acts of discrimination, harassment or bullying:  
[sydney.edu.au/ab/policies/Student\\_code\\_conduct.pdf](http://sydney.edu.au/ab/policies/Student_code_conduct.pdf)

### 5.3. Student resources and services

Links to other student services and resources are included on Blackboard and on the learning and teaching section of the Business School website: [sydney.edu.au/business/learning](http://sydney.edu.au/business/learning)

## 6. Continual improvement of the Unit

### 6.1 Past Feedback

Student feedback is highly valued and taken very seriously. Based on the evaluations completed last year, there are some structural changes to the course, which will hopefully improve the learning experience.

### 6.2 Improvements made for 2011

- Student representatives will be elected on Day 1 to liaise regularly with the teaching staff throughout the semester in an effort to improve communications and address any issues promptly that arise.
- The major project is a large, complex piece of work, which many students found daunting in terms of time-management. The project will be broken into two smaller phases with due dates for each to ensure a more consistent workload over the semester rather than students leaving things to the end. In addition the preparation of a separate individual report (which added immensely to the workload and caused confusion) will be scrapped and instead students will complete a peer assessment to gauge levels of contribution within the group.
- Evening and weeked access to the software has been a serious issue and source of frustration for this class. Licensing restrictions mean it cannot be installed on personal computers. We have expanded the locations at which it is available to include the faculty labs at H69.

### 6.3. How feedback will be collected

Please note that students are, at all times, encouraged to provide their teaching staff with feedback on course material, lecture notes, assessment items, or anything relevant to their learning and enjoyment of this course. Teaching staff sincerely appreciate suggestions on how the course may be improved, as well as comments on what is working well. Students will also have the opportunity to provide feedback via the Unit of Study Evaluation process.

## Topic schedule

Day	Date (A/B)	Time	Topics Covered	Out-of-class preparation	Format
1	5 Aug	9-5	<ul style="list-style-type: none"> <li>• Welcomes, course outline and aims</li> <li>• Introduction to GIS</li> <li>• Spatial data and databases</li> </ul>	None	Lecture Lecture Lecture
2	18/19 Aug	9-5	<ul style="list-style-type: none"> <li>• GIS Spatial analysis</li> <li>• Introduction to TransCAD</li> <li>• GIS spatial analysis exercises</li> </ul>	Practice with TransCAD demo software	Lecture Lab Lab
3	30 Aug/2 Sep	9-5	<ul style="list-style-type: none"> <li>• Data acquisition and data entry.</li> <li>• GPS data collection and processing.</li> </ul>	Read lecture notes on GPS; continue to work on assignment 1	Lecture Lab
	<b>9 Sept</b>		<b>Assignment 1 due 17:00</b>		<b>Assignment</b>
4	15/16 Sep	9-5	<ul style="list-style-type: none"> <li>• GIS vehicle routing and logistics</li> <li>• GIS routing and logistics tutorial exercises</li> </ul>	Read lecture notes on routing and logistics	Lecture Lab
5	13/14 Oct	9-5	<ul style="list-style-type: none"> <li>• Major project workshop day designed to work on major project with tutor support.</li> </ul>	Continue to work on assignment 2	Lab
	<b>21 Oct</b>		<b>Assignment 2 due 17:00</b>		<b>Assignment</b>
6	26 Oct	9-5	<b>Assignment 3 – In Class Presentations</b> Course Review and Exam Preparation	Prepare presentations and questions for review session	<b>Assignment</b> Lecture
	<b>TBA</b>		<b>Final Examination</b>		<b>Assignment</b>