FACULTY OF SCIENCE

School of BEES

GEOS9016

Principles of GIS

Session 1, 2018

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Faculty of Science - Course Outline

1. Information about the Course

NB: Some of this information is available on the UNSW Virtual Handbook[1]

Year of Delivery	2018
Course Code	GEOS9016
Course Name	Principles of GIS
Academic Unit	School of BEES
Level of Course	Postgraduate
Units of Credit	6UOC
Session(s) Offered	S1
Assumed Knowledge, Prerequisites or Co-requisites	Familiarity with the Windows operating system.
Hours per Week	3 contact hours
Number of Weeks	12 weeks over 13
Commencement Date	Week 1

Summary of Course Structure (for details see 'Course Schedule')

Component	HPW	Time	Day	Location
Lectures	*1*			
Lecture 1		*17:00-18:00*	*Thursday*	*Mathews Theatre D*
Laboratory	*2*	*18:00-20:00*	*Thursday*	*Biolink G29 and E26 Teaching Lab 3*
TOTAL	3			
Special Details				

2. Staff Involved in the Course

Staff	Role	Name	Contact Details	Consultation Times
Course Convenor		*Assoc Prof Shawn Laffan*	*9385 8093 Shawn.Laffan@unsw.edu.au*	*By appointment*
Course demonstrator		*Arden Burrell, Yi Lu, Lauren Coyle*		*Labs only*

[1] UNSW Virtual Handbook: http://www.handbook.unsw.edu.au/current/index.html

3. Course Details

Course Description[2] (Handbook Entry)	Approximately 80% of all data collected have associated geographic attributes, and there is an increasing need for people with the skills and abilities to manipulate and make sense of that information. This course provides an introduction to, and understanding of, the basic principles, structures, procedures and applications of geographic information systems and science. Topics covered in the course provide a comprehensive overview and practical experience in the analytical treatment of geographical information, including: information sources; data storage, representation and visualisation; projections and coordinate systems; the analysis of spatial data to generate new information; and the dissemination of such digital information through avenues including the internet.
Course Aims[3]	The main objective of this course is to provide students with the principles of how to manage and use GI Systems and Science to deal with real world issues. This is both to aid in the management of those issues, and also to gain a better understanding of those issues.
Student Learning Outcomes[4]	By the end of this course you will be expected to understand how and why it is that geographic data are input, stored and manipulated using a GIS. You will also be expected to understand the advantages and limitations of such approaches, as they are simplifications of reality. You will be able to properly use GIS analyses for a wide variety of applications. In terms of the UNSW Science Faculty Graduate Attributes, you will be expected to develop experience in attributes (1) Research, inquiry and analytical thinking abilities, (2) Capability and motivation for intellectual development, (5) Teamwork, collaborative and management skills and (6) Information literacy

[2] UNSW Virtual Handbook: http://www.handbook.unsw.edu.au
[3] http://learningandteaching.unsw.edu.au/content/LT/course_prog_support/course_outline_template.cfm?ss=2#Template
[4] http://www.scienceeducation.unsw.edu.au/students/graduateattributes.html

Graduate Attributes Developed in this Course[5]		
Science Graduate Attributes[5]	**Select the level of FOCUS** *0 = NO FOCUS* *1 = MINIMAL* *2 = MINOR* *3 = MAJOR*	**Activities / Assessment**
Research, inquiry and analytical thinking abilities	3	*All will be achieved through the assessment*
Capability and motivation for intellectual development	3	*As above*
Ethical, social and professional understanding	1	*As above*
Communication	2	*As above*
Teamwork, collaborative and management skills	3	*As above*
Information literacy	3	*As above, plus in the software training*

Major Topics (Syllabus Outline)	Data models, data structures, types and sources Map projections Spatial interpolation Metadata Topology and geoprocessing Map algebra & fuzzy logic Topographic analysis Map making See the lecture sequence for timings.
Relationship to Other Courses within the Program	It is estimated that 80% of all data collected have some form of spatial location information. Almost any course in BEES, and many courses from outside BEES, will be dealing with spatial phenomena. The approaches we deal with in this course allow you to conduct these analyses in a consistent and repeatable manner, using spatial data.

[5] http://www.scienceeducation.unsw.edu.au/students/graduateattributes.html

4. Rationale and Strategies Underpinning the Course

Teaching Strategies	The primary teaching strategy used in this course will be "chalk and talk", where students do most of the talking. This will be supported by other media. Students are expected to interact in the class, as this provides a better learning environment (as opposed to being talked at for an hour). Lecture and laboratory notes are provided on Moodle as support material, as is a discussion forum. Relevant papers and other documents are accessible through the UNSW library web site.
Rationale for learning and teaching in this course	GI Systems are fundamentally technical in nature, in that one needs to use software to achieve one's aims. However, while this course includes a software training section, its primary focus is not about teaching software. It is about the principles of GI Science (software changes rapidly, principles do not). Consequently, there are three elements that you should use for learning in the course. The textbook provides a broad overview of the subject, and is a good source of initial reference before you use the broader scientific literature. In the case of the software, there are detailed online manuals that should be referred to. These include both command references and tutorials. Finally, there are your colleagues in the course. You are all working on similar problems, and you are encouraged to learn together. The Moodle discussion forum is provided to assist in this process. As with all courses at university, you are expected to do much of the learning yourself. The lectures are used to give you an introduction to the subject area, and the labs are there to reinforce this. A more detailed understanding must be gained outside of class time, normally as part of your assessment tasks. The assessment tasks have been aligned with the expected learning outcomes as closely as possible. You are also strongly encouraged to delve further into the field of GIS and its applications, particularly as they relate to applications you are interested in.
Access to the lecturer	I am available immediately after the lecture, and the labs are devoted to the projects. If you encounter a problem outside of the scheduled contact periods, then what you should do depends on the nature of the problem. **If your problem is conceptual**, then please contact me by email or telephone to arrange a time to discuss it. I often have other meetings or am away from the university, so this will save you long periods of waiting outside offices trying to find me. If possible, please provide a short summary of the area or topic you need help with to allow me to prepare for the meeting. Many of the challenges in this course are technical in nature. In turn, many of these technical problems are common to the entire course. So, **if your problem is technical and related to the software**, then please follow these five steps. 1. **Stop and think**. You will often be able to solve the problem with a little of your own brain power. I have found that walking away from the computer and doing something else for half an hour is a very effective approach. (Let your subconscious mind do some work). 2. **Read the manual**. The manuals we are using have detailed explanations of many of the tasks you might wish to do with a GIS. They should be your next port of call. It will take a bit of time initially while you get used to the mindset of the software developers, but once learnt they are very useful. The software also has an extensive online database of bug reports and solutions, and is available through the web. http://desktop.arcgis.com/en/documentation/ 3. **Ask someone else in the lab** if they have encountered the same problem – they may know the answer (and it is good to talk to people…) 4. **Post a question to the course Moodle discussion board or email the lecturer**. Read the list of postings first, in case someone has already answered the question. The discussion board will be regularly checked (usually twice daily) to post answers and check factual accuracy of other answers. Where they are relevant to the whole course, email queries will be anonymously copied to Moodle. 5. **If your problem has still not been solved, then please contact the lecturer to make an appointment.** Don't stew on the problem forever. The five steps are actually that approach you will need to use in the workforce, so it is a good learning exercise in itself.

5. Course Schedule

Some of this information is available on the Virtual Handbook[6] and the UNSW Timetable[7]. The schedule is also subject to change as the course demands.

Week #	**Week Commencing**	**Lecture (Thursday)**	**Practical** (Thursday)	**Other**	**Assignment and Submission dates**
1	26-Feb-18	Introduction	No lab		
2	5-Mar-18	Data models, data structures, types and sources	Intro to ArcGIS, import data for project		
3	12-Mar-18	Map projections	Map projections		
4	19-Mar-18	Spatial interpolation	Interpolation		Complete software training 1&2 by end of week
5	26-Mar-18	Metadata	Metadata		
break	2-Apr-18				
6	9-Apr-18	Error	Error		DEM report due end week 6
7	23-Apr-18	Map algebra & fuzzy logic	Major project		Complete software training 3 by end of week
8	30-Apr-18	Topology and geoprocessing	Major project		Complete software training 4 by end of week
9	7-May-18	Topographic analysis	Major project		
10	14-May-18	Making a map	Major project		
11	21-May-18	Q&A	Major project		
12	28-May-18	*No lecture*	*No lab*		Major project due Monday of week 12
13	04-Jun-18	Course summary and things you would love to know about the exam			

[6] UNSW Virtual Handbook: http://www.handbook.unsw.edu.au/current/index.html
[7] UNSW Timetable: http://www.timetable.unsw.edu.au/

6. Assessment Tasks and Feedback

Task	Knowledge & abilities assessed	Assessment Criteria	% of total mark	Date of		Feedback		
				Release	Submission	WHO	WHEN	HOW
Software training	Basic GIS principles and software familiarity.	See below	10	Week 1	As per course schedule	Laffan	As per course schedule	Marks
DEM report	See the Student Learning Outcomes section.	See below	10	Week 1	End Week 6	Laffan	One week later	Marks
Major project	See the Student Learning Outcomes section.	See below	50	Week 1	Start week 12	Laffan	Week 13	Marks
Examination	See the Student Learning Outcomes section.		30	Week 13	See exam timetable when released	Laffan	Exam period	Marks

To pass the course, students must achieve a mark of at least 40% for the major report and complete the software training by the end of semester.

7. Additional Resources and Support

Text Books	**Primary reference:** **Delaney, J. and Van Niel, K.P., 2007.** Geographical Information Systems, An Introduction, 2nd edition. Oxford University Press. This will not be used as a standard textbook we follow in the course. It is a reference text to begin a search in the wider literature. **Other references:** **Longley, P.A., Goodchild, M.F., Maguire, D.J. and Rhind, D.W., 2005.** Geographic Information Systems and Science. Wiley. **Burrough, P.A. and McDonnell, R.A., 1998.** Principles of Geographical Information Systems. Oxford University Press. **Krygier, J. and Wood, D., 2005.** Making maps – A visual guide to map design for GIS. The Guilford Press. Copies of these will be in the course reserve section of the library.
Course Manual	Lab instructions and course notes will be made available on the Moodle system.
Readings	These are listed in the lecture notes and on the course web site on Moodle. Others are available, or will be made available, through the library's Leganto platform (see the link on the course Moodle site).
Recommended Journals and Conference Proceedings	See below.
Societies	Surveying & Spatial Sciences Institute (SSSI) http://www.sssi.org.au
Computer Laboratories or Study Spaces	The computer lab (Biolink G29) is available outside of teaching hours by swipe card access. Do not use this labs if there is another class using them. You also have remote access to the software via http://myaccess.unsw.edu.au/

8. Required Equipment, Training and Enabling Skills

Equipment Required	N/A. Computers are available in the labs. A student version of ArcGIS will be made available to you, and it can also be accessed through http://myaccess.unsw.edu.au/
Enabling Skills Training Required to Complete this Course	Additional training modules for the ArcGIS software are available if needed. Check the self-directed ESRI Virtual Campus courses for ArcGIS Desktop at http://training.esri.com Many of these are free for UNSW students.

9. Course Evaluation and Development

Mechanisms of Review	Comments or Changes Resulting from Reviews
CATEI	This course has evolved over fifteen years of delivery at UNSW, and has been developed from a GIS course taught at a university down the highway which itself evolved over a decade. The software training was added in 2010 because GIS software skills were identified as a major limiting factor for students in the course. This was converted from a monolithic course with a single deadline to a series of rolling deadlines in 2018. The overall duration for this component is now also shorter. In 2018, the DEM report has been changed to a more standard report plus metadata, where previously the content was to be entirely in the metadata format.

10. Administrative Matters

<table>
<tr><td>Expectations of Students</td><td colspan="3">Most School of BEES policies can be found at http://www.bees.unsw.edu.au/current-students

You are expected to attend all lectures and laboratories. Failure to submit assignments may be used as grounds to exclude you from the examination.</td></tr>
<tr><td>Assignment Submissions</td><td colspan="3">The project reports are to be submitted via the School assignment box at the BEES Student Office (ground floor, Bioscience building). You must also submit a copy through Moodle. Whichever is first will be used as the submission time. Do not email them to me.

Extension requests need to be discussed with me well in advance of the due date.
Late Submission: The school policy is 10% (of the assignment mark) for each day late – up to a maximum of seven days after which assignment will receive 0. Consideration for relief from this rule can be given only for documented reasons (and the student should submit documentation through Student Central).</td></tr>
<tr><td>Occupational Health and Safety[8]</td><td colspan="3">http://www.bees.unsw.edu.au/ohs</td></tr>
<tr><td>Assessment Procedures[9]</td><td colspan="3">As per UNSW policy. http://my.unsw.edu.au</td></tr>
<tr><td>Equity and Diversity</td><td colspan="3">Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course Convenor prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit (9385 4734 or http://www.studentequity.unsw.edu.au).

Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made. Information on designing courses and course outlines that take into account the needs of students with disabilities can be accessed via http://www.studentequity.unsw.edu.au/disability-services</td></tr>
<tr><td rowspan="2">Grievance Policy[10]</td><td>School Contact</td><td>Faculty Contact</td><td>University Contact</td></tr>
<tr><td>BEES Grievance Officer
A/Prof Scott Mooney
s.mooney@unsw.edu.au</td><td>Dr Chris Tisdell
Associate Dean (Education)
cct@unsw.edu.au
Tel: 9385 6792
or
Dr Gavin Edwards
Associate Dean
(Undergraduate Programs)
g.edwards@unsw.edu.au
Tel: 9385 4652</td><td>Student Conduct and Appeals Officer (SCAO) within the Office of the Pro-Vice-Chancellor (Students) and Registrar.

Telephone 02 9385 8515, email studentcomplaints@unsw.edu.au

University Counselling and Psychological Services[11]
Tel: 9385 5418</td></tr>
</table>

[8] UNSW Occupational Health and Safety: http://www.ohs.unsw.edu.au/
[9] UNSW Assessment Policy: http://www.gs.unsw.edu.au/policy/documents/assessmentpolicy.pdf
[10] UNSW Student Complaint Procedure: https://www.gs.unsw.edu.au/policy/documents/studentcomplaintproc.pdf
[11] University Counselling and Psychological Services

11. UNSW Academic Honesty and Plagiarism

What is Plagiarism?

Plagiarism is the presentation of the thoughts or work of another as one's own.
*Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism.

Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle
† Adapted with kind permission from the University of Melbourne

BEES Academic Honesty and Plagiarism

Please note:

In addition to the UNSW Policy on Academic Honesty and Plagiarism, the School of Biological, Earth and Environmental Sciences (BEES), also considers any work submitted that has been produced outside of a given course in a given year to be plagiarism i.e:

- Work produced for a third party e.g. your place of employment, is considered intellectual property of the third party, and as such if such work is submitted in place of a required course work, it is deemed plagiarism.
- All work submitted for assessment must be created specifically for the given assessment task in the given year. Work produced in previous years or for other assessments is not acceptable.

Marking criteria for the software training

The training includes multiple choice quizzes at the end of each component.

Marks will be assigned proportional to the number of sections completed by their respective due dates. For example, if you have successfully completed three of the four components by their due dates then you will be awarded 3/4=75% of the total marks for that piece of assessment.

If you are not sure how many sections you have completed then you can access it through the course status link at the upper left of the page (the icon looks like a bachelor degree hat).

Any sections not completed by the due date must be completed by the end of semester.

Access to the training will be allocated via an invitation to the UNSW organisation on the my.esri.com system, after which you can self enrol in the course. Completion status will be assessed during one of the labs.

Please do not go back and re-do the quizzes after you have completed them, as that will reset them. Please wait until all the marks have been collated.

The courses to enrol in, and the order in which they are to be completed, are:

1. Getting started with GIS
2. Editing in ArcGIS Desktop
3. Using Raster Data for Site Selection
4. Building Models for GIS Analysis Using ArcGIS

These can be accessed via https://www.esri.com/training/catalog/search/ (once you have your login).

Some additional courses that might be of use, but which are optional and not part of the assessment, are:

1. Basics of Geographic Coordinate Systems
2. Distance Analysis Using ArcGIS

Marking criteria for the DEM report

In terms of Biggs' SOLO taxonomy, a High Distinction will be Relational, a Pass will be Unistructural.

You are to describe the development of your DEM, and provide the DEM with appropriate metadata.

The DEM you are to describe is the one you interpolated in the DEM lab (this is the one using the ANUDEM algorithm, which is in the Topo to Raster tool).

You are also to submit a map using a selection of data for the Smith's Lake study site. There are no marks assigned to the map. It is to be submitted so you receive feedback on map construction well before the final report. *Failure to submit this map will result in a zero mark for this piece of assessment.*

Marks will be awarded for the quality of the writing in the same way as for the major project, and for the completeness and correctness of the metadata. This could cover, for example, accuracy of the DEM, accuracy of the source data and their impact on the DEM's accuracy, tests of logical consistency and the like.

References must be provided where appropriate, and must use the Harvard system of referencing (see the major project criteria).

You are to edit your metadata using the ISO format. DO NOT USE THE FGDC FORMAT.

Further details about formats will be provided nearer the date of submission.

The following are errors made in previous years. You should not make them.

1. People generate metadata for the incorrect file. Pay attention to the list above.
2. Metadata was written for the map document. Do not write metadata for the map document (the mxd file).
3. People did not provide references.
4. People did not adequately describe the lineage (how they generated the data) in the metadata.

Marking criteria for the major report

The approach used in marking is based on Biggs' (2003) Structure of the Observed Learning Outcome (SOLO) taxonomy (table 1). There is also a set of words that describe the grades and marks (table 2). Reading these tables should aid your understanding of what I am looking for in your projects in relation to the specific marking criteria.

Table 1. Biggs' SOLO taxonomy. This is a hierarchical taxonomy, listed from lowest to highest level. Achieving a higher level implies exceeding the lower levels. There is also no direct translation between grades and SOLO levels, as it depends on the level of the course and the nature of the assignment.

Level	*Verb examples*
Prestructural	Misses the point
Unistructural	Identify, do simple procedure
Multistructural	Enumerate, describe, list, combine, do algorithms
Relational	Compare/contrast, explain causes, analyse, relate, apply
Extended abstract	Theorise, generalise, hypothesise, reflect

Table 2. Grade and mark interpretation

Grade	*Mark*	*Description*
High Distinction	85+	Work of exceptional quality showing clear understanding of the subject matter and appreciation of issues; well formulated; arguments sustained; maps and diagrams where relevant; relevant literature referenced; marked evidence of creative ability; solid intellectual work.
Distinction	75-84	Work of very high quality showing strong grasp of subject matter and appreciation of dominant issues, though not necessarily of the finer points; arguments clearly developed; relevant literature referenced; evidence of creative ability; solid intellectual work.
Credit	65-74	Work of solid quality showing competent understanding of subject matter and appreciation of main issues, though possibly with some lapses and inadequacies; arguments clearly developed and supported by references, though possibly with minor red herrings and loose ends; some evidence of creative ability; well prepared and presented.
Pass	50-64	Adequate answers; reasonably relevant and accurate. Sufficient to merit a bare pass to safe pass mark.
Fail	<50	

References

Biggs, J. (2003) *Teaching for Quality Learning at University*, second edition. Society for Research into Higher Education & Open University Press, Buckingham, UK.

In terms of Biggs' SOLO taxonomy, a High Distinction is Extended Abstract, while a Pass is Multistructural. More generally, to achieve a pass you must implement the models as instructed and show that you understand what you have done. To achieve a High Distinction you must have implemented some innovations of your own (gone beyond the instructions). Very well written reports that clearly show an understanding of what has been done, but that contain no innovations, will receive a maximum grade of Distinction.

Throughout your project report you are expected to demonstrate an understanding of:

1. the meaning of your results,
2. the rationale for doing it,
3. potential sources of error and their impact on your conclusions.

I will also be looking for:

1. *Clarity*

   Clear, simple, grammatical language used. All terms are explained.

2. *Argument and structure*

   Is the argument clearly and logically developed through the report? Are the points in the appropriate sequence (do your points build on previous points presented)?

3. *The wider scope*

   Do you place your work in the context of the broader, peer reviewed, literature? You should have no fewer than ten references. More than this number is provided to you in the lab notes so it is a simple target to achieve.

4. *Map composition and diagrams*

   Are they clear and do they display the desired information? Are they used to support your arguments and not purely as decorative material? Do your maps have a scale bar, north pointer and legend? Are appropriate and consistent colour schemes used?

5. *Innovation*

   This is the degree to which you go beyond the instructions given in the lab handouts, for example assessing the sensitivity of the model to parameter variations or implementing better models.

6. *Referencing*

   Appropriate use of the Harvard referencing system. There are several formatting variations with the Harvard system. Have a look at a sample of journals to get an idea, for example the International Journal of Geographical Information Science. I do not mind which one you use so long as it is consistent throughout the report. One exception to this is that you do not list all authors in the main text where there are three or more authors (eg. Use "Border et al., 1999" rather than "Border, Taylor, Waugh, and Ponting, 1999"). Such a long style is awkward and unwieldy when there are more than three authors. However, you must list all authors in the reference list at the end of the document. Please see http://www.lc.unsw.edu.au/onlib/ref.html for a good introduction, albeit their use of inverted commas for book and journal titles is tedious and unnecessary. It is far easier to use a system that does not require them. Please also note that the EndNote bibliography management software is freely available to UNSW Staff and students. See https://www.it.unsw.edu.au/students/software/index.html. Learning how to use this software will make writing assignments much easier, and will solve most of your problems with referencing formats (so long as your database is correct). Most online databases now allow you to export references directly into EndNote, so constructing a database is reasonably simple.

   Be careful when using web sites as a source of information. If they summarise another piece of work, then you should read and cite the original piece of work (the primary reference). This applies to lecture notes – DO NOT USE LECTURE NOTES AS REFERENCES. Use the references provided in them. In general, you should not use web sites unless they are an official publication. Wikipedia is a good example here. It is an excellent resource for locating further information, but it is not a primary reference. The same principle applies to any printed encyclopaedia.

Useful Journals and Conference proceedings

GIS is a rapidly developing field, and so many useful references are available in journals and conference proceedings. Fortunately for you, these are often on the web. Most lectures will have references in the notes.

This is not a complete list, and you should search for other references using databases like Scopus and Web of Science (available through http://www.library.unsw.edu.au). These are particularly useful because they allow you to track citations to papers, and thus see who has been developing an idea (or maybe has debunked it). Please note that ScienceDirect only searches Elsevier journals, and ignores other publishers such as Taylor and Francis and Wiley. The same principle applies to the Wiley Interscience system. Google Scholar indexes articles across the quality spectrum, so care needs to be taken.

Journals

International Journal of Geographic Information Science
Transactions in GIS
Geographical Analysis
Journal of Geographical Systems
Environment and Planning, Series A
Computers and Geosciences
Mathematical Geology
Ecological Modelling
Environmental Modelling and Software
Remote Sensing of Environment
Photogrammetric Engineering and Remote Sensing
International Journal of Remote Sensing
Remote Sensing Reviews
Geocarto International

Conferences with online proceedings

Geocomputation series
http://www.geocomputation.org/
GIScience series
http://www.giscience.org/
MODSIM series
https://www.mssanz.org.au/conferences.html (look for the GIS and environmental modelling sessions)