

University of Wollongong
School of Mathematics and Applied Statistics

Information Sheet for
Information Theory - INFO413/913

Spring, 2006
Wollongong Campus

Subject Coordinator: Graham Williams(Room 15.109)
Email: ghw@uow.edu.au
Phone: (02) 4221 3853
Consultation: Mon 9.30am – 11.30am, Wed 1.30pm – 3.30pm

Subject Prerequisites: Discrete Mathematics (MATH121) or MATH122 or Mathematics 1A Part 2 (MATH188) or MATH142 or MATH162 or MATH110.

This information sheet must be read in conjunction with the general information on educational issues and student matters provided in the document "Policies and Services of the University, Faculty and School" published by the School of Mathematics and Applied Statistics. A copy may be obtained from the subject coordinator or at <http://www.math.uow.edu.au/current/generic.html>.

Topics, Outline & Lecturers

Topic 1: The idea of probability, entropy, inequalities involving entropy and applications
Lecturer: Yan-Xia Lin (Rm 15.144)
Phone: (02) 4221 4336
Email: yanxia@uow.edu.au
Consultation: Mon 9:00am-11:00am
Wed 9:00am-11:00am

Topic 2: Coding and Compression, Gambling and Finance, Applications of Information Theory involving Huffman and Fano codes, data compression, McMillan's and Shannon's Theorems, horse racing and portfolio optimization.
Lecturer: Graham Williams (Rm 15.109)
Phone: (02) 4221 3853
Email: ghw@uow.edu.au
Consultation: Mon 9.30am – 11.30am,
Wed 1.30pm – 3.30pm

Textbook & Reference Books

References:
T.M. Cover and J.A. Thomas, "Elements of Information Theory".

You are not required to purchase reference books. Several copies of all these books are available in the Library. These readings are recommended only and are not intended to be an exhaustive list. You are encouraged to use the Library catalogue and databases to locate additional readings with similar titles and contents.

Notices

INFO413/913 has a WebCT site which can be accessed via SOLS. Handouts and lecture notes will be posted to this site and will mostly be in pdf format. You should visit this site on a regular basis.

Lectures & Tutorials

In this subject, lectures and tutorials will be integrated
Lectures for INFO413 are

Wednesday	3:30pm-5:30am	19.2099
Thursday	9:30am-10:30pm	19.2099

You are required to attend *all lectures* in INFO413. Experience has shown that poor attendance at lectures leads to poor performance in this subject.

Subject Learning Outcomes

After successful completion of this subject, students should be able to

- (i) develop a critical and analytical understanding of information theory, especially by means of precise formulation of central concepts such as information, entropy, and compression of information;
- (ii) develop an understanding and appreciation of how these concepts relate to other disciplinary areas.

Assessment

Your final mark in INFO413/913 will be determined as follows*:

Assignments	–	25%
Presentation	–	5%
Final Exam	–	70%
Total	–	100%

*Attendance at tutorial classes and lectures may be taken into account.

Scaling of marks is **not** a standard procedure in this subject.

Note that you are not required to "pass" each individual component to receive a Pass grade in INFO413. However, you would seriously jeopardize your chances of passing this subject if you do not aim to be successful in every component of the assessment.

Calculators

Please note that single-line-display calculators are permitted in examinations for this subject. They must not have alphanumeric keyboards (or capabilities) and they must not be programmable in any way. If you are not sure whether your calculator is acceptable, have it checked well before any exam.

Final Examination

The final examination in INFO413/913 will be as follows:

Duration: 3 hours and 15 minutes
Value: 70% of final mark.

The examination will be held during the examination period in November, at a time to be advised by the University. As a student enrolled in the University of Wollongong, you are required to be available for the entire examination period in November.

Assignments

Each week, starting in week 1, you will be given an assignment. It will be given out on Thursday and must be handed in at class on the following Thursday. Assignments will be marked during the ensuing week and returned one week after submission in class. The eleven assignments will be equally weighted and together contribute a **total** of 25% towards your final mark in INFO413/913.

- Each assignment will be graded out of an appropriate mark which may differ even though assignments are equally weighted
- You must show working for each question on the assignment.
- Untidy or illegible work will not be assessed, and will be graded as 0.
- Assignments will **not** be accepted outside classes or after the due date—unless you are successful in applying for special consideration (see later).
- Assignments **must** be submitted with the assignment cover sheet provided and you should make sure your receipt is initialed.
- Faxed or emailed assignments will not be accepted. You must submit your assignment in person.
- Assignments are only **part** of the expected weekly workload.
- You should keep a copy of all work submitted.

Every assignment submitted will contribute towards your final assessment. *However, the primary purpose of each assignment is to give you feedback on your progress and understanding of the work.*

If you wish to seek special consideration for a late assignment (because you missed a lecture), you must apply for special consideration via SOLS, submit your documentation to the University Administration and then you should obtain a Special Consideration Form from the School Admin Assistant (Room 15.110). Submit the assignment with the completed form to the Admin Assistant as early as possible. In any case, assignments submitted more than 7 days after the original due date will not be accepted and other arrangements may be necessary. In this instance, contact the subject coordinator immediately.

Presentations

After consultation with the lecturers, each student will be asked to present some of the course material (or related material) in class. Presentations will commence in week 7 and the timetable will be set in week 5. They may be done in pairs and are expected to take around 20 minutes each. Background material for the presentation will be provided two weeks before the actual presentation. The presentation will be worth 5%.

Cheating and Plagiarism

The University does not tolerate cheating nor plagiarism and regards them very seriously. For more information, see the document “Policies and Services of the University, Faculty and School” and the section in the University Undergraduate Handbook entitled “Acknowledgement Practice/Plagiarism”, or visit <http://www.uow.edu.au/handbook/courserules/plagiarism.html>

Consultation

If you are having difficulty with INFO413/913, you are encouraged to seek advice from your lecturers or the subject coordinator. For administrative matters, you should see the subject coordinator.

If you cannot come at the listed consultation times, contact the subject coordinator to arrange an appointment at a mutually convenient time.

**If you are having any difficulty with INFO413/913,
you should seek advice before it is too late.**