ac12003

Argumentation & Computers

tools for arguing and critical thinking

COURSE GUIDE

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University of Dundee

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CONTENTS

PEOPLE

Professor Chris Reed has overall responsibility for the course, and will be taking most of the lectures from week three onwards. The best way of contacting him from week three onwards is by email to chris@computing.dundee.ac.uk. He aims to respond to urgent course email within 48 hours of receipt.

Professor Vicki Hanson takes responsibility for the first two weeks of the course, and is happy to help out via email, vlh@computing.dundee.ac.uk.

The module also engages trained tutors to work in smaller groups and one-to-one sessions during tutorials and practicals.

OVERVIEW

arguing

Some people are just naturally good at arguing. We've all met them, sitting in the pub holding forth on almost any subject, taking on all comers - and invariably winning.

Sometimes these people go on to make a career from arguing – as politicians, journalists, advertisers, lobbyists or campaigners.

But being able to argue – and argue well – is a useful technique in all walks of life. From arguing why your product beats your competitors' to arguing why you should get a pay rise, the techniques are the same.

These **techniques for arguing** are not only useful for pub encounters and professional communication – they are also form a valuable weapon in your armoury for tackling university work. Discussing the relative influences of classical poets on contemporary writers – Comparing methodological techniques for social psychology – Justifying design choices in software engineering – Critiquing a paper on cell metabolic pathways – ... Though the subject matter varies, the basic tools are the same.

The module uses a mixture of lectures, tutorials and computer tools to help develop and hone your techniques for arguing in both written and spoken forms

OVERVIEW

critical thinking

Thinking critically is the flipside to arguing – being able to dissect other people's arguments, spotting flaws, identifying limitations and uncovering errors.

Being able to think critically, to weigh and assess the views of others, to make up your own mind – these are the things that distinguish us from sheep! or, as Jeremy Bentham put it:

There is no notion, actual or imaginable, that a man cannot be brought to entertain, if only he is satisfied that it is being generally or extensively entertained by others.

There is an enormous range of others besides Bentham who have advocated critical thinking: Aristotle, Noam Chomsky, Richard Dawkins, George Orwell, Karl Popper, Bertrand Russell, Carl Sagan, Jonathon Swift ... and all of them have made a habit of putting the theory into practice.

The module focuses on real world arguments both contemporary (such as the genetically modified food debate) and classic (such as the rhetoric of Martin Luther King) to show how critical thinking can be applied in practice.

OVERVIEW

problem solving

Being able to spot holes in other people's arguments is great – but not much use if you can't figure out an alternative that you can then put forward.

Problem solving is about trying to formulate your own solutions to complex problems. Sometimes the problems require logical thinking, sometimes lateral thinking, and sometimes spatial reasoning. Real world problem solving usually involves all three.

Employers often use problem solving tasks such as the one below (apparently used by Microsoft) in interviews to sift applicants.

> *U2 have a concert in 17 minutes' time on the other side of a small bridge that can only take 1 or 2 people at a time. It is dark and they have only one torch between them. Any party that crosses the bridge must take the torch – and the torch must be walked back and forth (no throwing!) Each band member walks at a different speed – Bono takes 1 minute to cross, Edge takes 2 mins, Adam takes 5 mins and Larry takes 10 min. A pair must walk at the slower man's pace. How can they cross in time?*

But problem solving is more than just about doing well on employer's psychometric tests. It's about the creative ability to formulate new solutions, new designs, and new theories that don't just benefit their creators, but also the wider community.

GLOSSARY

Every module treats its components a little differently. On this module, you will encounter:

Lectures. These are held

- on Mondays at 10am in Dalhousie 3G05, and
- on Tuesdays at 9am in Dalhouse 2F13

from **Monday, January 16, 2012** to **Tuesday, March 27, 2012**. Lectures are compulsory, for reasons we shall discuss.

Practicals. These are held most weeks in the Queen Mother Building labs. They run 10am – noon on Tuesdays. Occasionally we will use Practical sessions to run a lecture in-lab.

PiGLeTs (aka. “Peer Group Learning Tutorials”). There a several of these sessions which are run in place of a lecture (in the same room as the lecture would have been). You will have the opportunity to work in small groups, with a tutor, on a specific problem. These tutorials are assessed.

Coursework. There is only one other piece of assesed coursework beyond the PiGLeTs, and this is submitted via email.

TAKING NOTES

Lectures can and should be stimulating and enjoyable. In this module, lectures are 50-55 minutes long, and usually involve a break of some sort.

For a large part of the course, we do not use overhead projection. This means that as a rule, you will be **required** to make notes during lectures. These notes will then form the basis for your revision.

This may be your first encounter with note-taking, and it can be quite a challenge at first. As you get practice, you will be able to listen and write simultaneously - and this is a vitally important skill. Initially, there are a few tricks that might help:

- look out for repetition - if a lecturer says something two or more times, it's probably important
- make use of intros and summaries - there's an old rule for presentations which runs: "Tell 'em what you'll tell 'em, then tell 'em, then tell 'em what you told 'em". Use this information to structure your notes.
- spot lists, e.g., "there are two main reasons for this. First..." - and at that point, make a note of the claim, then leave space for two numbered paragraphs.

There are many more tips available online at http://www.dundee.ac.uk/advancedundee/D/d020s.htm

When students take notes, lectures necessarily move more slowly - but make sure that the pace is good for you. If you missed information or could do with another explanation, you should always ask (you'll probably be doing many of your colleagues a favour any way!)

Some students like to use printouts of slides from other courses as revision material. For this module, this same material can be found in the reading. To help you in this task, the reading is quite specific: typically a chapter or so each week. *You are expected to read this material before each lecture*, as part of your independent study. At the end of the course, this material can then be used to supplement your notes in revision.

If you miss a lecture, make sure you do the reading, and then borrow a colleague's notes to make sure you've got everything from the lecture you missed.

Finally, you can use the lecture syllabi in the week-to-week guide (pages 10-20) to make sure that your notes cover everything, and that nothing's been missed. You may also find the syllabi useful in structuring your notes after a lecture.

It is recommended that you spend 20-30 minutes before a lecture reading the specified pages, and then 10-15 minutes after a lecture checking through your notes, and comparing them with the appropriate syllabus.

OUTCOMES

The module aims to improve everyone's skills of problem solving, reasoning, critical thinking and arguing. But there is also a baseline: everyone who passes the module will be able to,

- Describe, use and justify a variety of problem-solving techniques including:
  - inference
  - action sequences and classification
  - contradiction
  - subgoals

- Describe and identify basic structures of argument including premises (linked and convergent), conclusions, refutations, and enthymemes and to be able to diagram them using Araucaria or OVA.

- To identify and critique the use of fallacies and schemes in arguments

- To be able to describe and employ basic techniques of rhetorical organisation and persuasion to good effect in both written and spoken argument

- To understand different standards of evaluation and to be able to apply them in practice

- To perform close critical analysis of larger texts from the real world

SCHEDULE

AC12003 Argumentation & Computers runs during the second semester, i.e. from **Monday, January 16, 2012** to **Friday, March 30, 2012**, with the exam after the Easter break.

The module is organised into three units:

- the **problem solving** unit runs weeks one through week two
- the **critical analysis** unit runs weeks three through seven
- the **argument construction** unit runs weeks seven through eleven

WEEK-BY-WEEK GUIDE: WEEK ONE

Monday, January 16, 2012 to Friday, January 20, 2012

The work this week forms part of the **problem solving** unit

Lecture 1: Problem Solving I
Vicki Hanson

Lecture 2: Problem Solving II
Vicki Hanson

There is no practical session this week but on Tuesday you should make a start on the work for the first tutorial, next week.

WEEK-BY-WEEK GUIDE: WEEK TWO

Monday, January 23, 2012 to Friday, January 27, 2012

The work this week forms part of the **problem solving** unit

Lecture 3: Problem Solving III

Vicki Hanson

PiGLeT 1: Problem Solving Tutorial

Vicki Hanson

This is an assessed tutorial and counts towards your coursework mark.

There is no practical this week.

WEEK-BY-WEEK GUIDE: WEEK THREE

Monday, January 30, 2012 to Friday, February 3, 2012

The work this week forms part of the **critical analysis** unit

Lecture 4: Welcome to Argumentation

Chris Reed

Reading: *Critical Thinking*/Facione

Aims – Structure – Lecture, PiGLeTs & Practicals – Tutorial Groups – – CT – Argument - Premises – Conclusions – Linked – Convergent – Enthymemes - Subarguments

Lecture 5: Further Argument Structure

Chris Reed

Disagreeing – Refuting – Rebutting – Undercutting – Diagramming with Araucaria

Practical 1: Diagramming with Araucaria

Reading. The lectures this week cover argument structure, that can be found in any critical thinking textbook (the library has many). Some particularly good examples include:

- Groarke Ch.4
- Brink-Budgen Ch.2
- Hoaglund Chs. 5 & 6
- Johnson Ch. 1

WEEK-BY-WEEK GUIDE: WEEK FOUR

Monday, February 6, 2012 to Friday, February 10, 2012

The work this week forms part of the **critical analysis** unit

Lecture 6: Complex Argument

Chris Reed

Reading: Johnson Ch.10, Fisher Ch.3 or Hoaglund Ch.8

Different points of view – Bias – Slanting – Case study

Lecture 7: Argumentation Schemes

Chris Reed

Reading: Walton Ch.3

Cause to effect – Analogy – Position to Know – Popularity – Waste – Critical Questions

Practical 2: Further Diagramming

WEEK-BY-WEEK GUIDE: WEEK FIVE

Monday, February 13, 2012 to Friday, February 17, 2012

The lectures this week form part of the **critical analysis** unit

Lecture 8: Identification

Chris Reed
Reading: Hoaglund Ch.5 or Brink-Budgen Ch.1
Cues & Clues - Explanations

Lecture 9: Evaluation

Chris Reed
Reading: Johnson, Ch.2
Critical Questions – Deduction & Validity – Induction – Abduction

Practical 3: Further Diagramming

WEEK-BY-WEEK GUIDE: WEEK SIX

Monday, February 20, 2012 to Friday, February 24, 2012

Week six is set aside for independent study.

In particular, you are expected to

- spend about 8 hours working on the preparation for the tutorial next week.
- Spend about 1 hour completing coursework CW1

In addition, you should search for an appropriate text for the last tutorial in week 11.

SUBMIT COURSEWORK ASSESSMENT THIS WEEK. DEADLINE FOR CW1 is 12:00 Friday, February 24, 2012

WEEK-BY-WEEK GUIDE: WEEK SEVEN

Monday, February 27, 2012 to Friday, March 2, 2012

The lectures this week form part of the **argument construction** unit

PiGLeT 2: Diagramming your solved problem

Lecture 10: Dialogue, Dialectic & Debate

Chris Reed

Dialectic – Logic of Dialogue – Structure of Debate

Practical 4: Dialectic

WEEK-BY-WEEK GUIDE: WEEK EIGHT

Monday, March 5, 2012 to Friday, March 9, 2012

The lectures this week form part of the **argument construction** unit

Lecture 11: Rhetorical Devices for Winning

Chris Reed
Reading: Gilbert Chs. 3-10
Creative & Attached – Defensive & Offensive – Defeat – Listening

Lecture 12:
Fallacies - Rhetorical Devices of Losing

Chris Reed
Reading: Johnson, Ch.9
The Gang of 18

Practical 4: Fallacy Hunt

Your tutor group should decide by the end of this week which text you are going to use for the final tutorial in week ten.

WEEK-BY-WEEK GUIDE: WEEK NINE

Monday, March 12, 2012 to Friday, March 16, 2012

The lectures this week form part of the **argument construction** unit

Lecture 13: The Real World

The ARG:dundee Team

AurauDB corpus – domains of argument

Lecture 14: The Argument Web

The ARG:dundee Team

AIFdb – Arvina – OVA – and other interfaces to the Argument Web

Practical 6: The Argument Web

WEEK-BY-WEEK GUIDE: WEEK TEN

Monday, March 19, 2012 to Friday, March 23, 2012

The lectures this week form part of the **argument construction** unit

Lecture 15: The Future of the Argument Web

Chris Reed

Lecture 16: Putting It All Together

Chris Reed

A Rhetorical Case Study for Close Analysis

Practical 7: Close Analysis

WEEK-BY-WEEK GUIDE: WEEK ELEVEN

Monday, March 26, 2012 to Friday, March 30, 2012

The lectures this week form part of the **argument construction** unit

PiGLeT 3: Close Analysis

Revision Lecture

Chris Reed & Vicki Hanson

All assessed components must be in this week if they are to be considered at all (late coursework is normally capped at a maximum of 40%)

READING

The module covers information explained well in a number of textbooks. The reading for each lecture is taken from the following sources:

Brink-Budgen, R. *Critical Thinking for Students*, 1999 available on NetLibrary through the library catalogue

Fisher, A. *The Logic of Real Arguments*, CUP, 1988.

Gilbert, M.A. *How to Win an Argument*, Wiley, 1996

Groarke, L., Tindale, C.W. & Fisher, L. *Good Reasoning Matters* 2e, OUP 1997.

Hoaglund, J. *Critical Thinking*, Vale Press.

Johnson, R. *A Logic Book,* Belmont 2002

Walton, D. *Argumentation Schemes for Presumptive Reasoning*, LEA 1997.

You do not have to purchase, and will not be expected to purchase, a course textbook for this module. If you want a thorough reference book, Johnson is good; otherwise browse the critical thinking textbooks in the library and find one that suits you.

PRACTICAL WORKSHEETS: PRACTICAL 1

Diagramming With Araucaria

Make sure you can log on in the labs, access Araucaria and access the files for the practicals.

This practical uses files available in

http://www.computing.dundee.ac.uk/staff/creed/teaching/ac12003/practical1/

Q1. Download the first file, q1.txt, to your machine, and load it in to Araucaria. Analyse the argument, thinking carefully about how convergent arguments function. Diagram your analysis.

Q2. Next, analyse and diagram q2.txt, thinking carefully about how linked arguments function.

Q3. Next, analyse and diagram q3.txt, thinking carefully about how some arguments, called enthymemes, can have one or more components left implicit.

Q4. Again, analyse and diagram q4.txt, putting together the parts you've been working with in the first three questions.

Q5. The last file for analysis, q5.txt, involves both refutation and an enthymeme. Analyse and diagram as before.

Make sure you show all five of your analyses to a tutor in the practical session to check you've got them right.

PRACTICAL WORKSHEETS: PRACTICAL 2

Further diagramming

This practical uses files available in

http://www.computing.dundee.ac.uk/
staff/creed/teaching/ac12003/practical2/

Q1. Download the file q1.txt. Perform a careful and close analysis, diagramming your analysis using Araucaria. Compare your answer to someone else's. Are they the same? If not, how do they differ? Show your answer(s) to the tutor.

PRACTICAL WORKSHEETS: PRACTICAL 3

Further diagramming

This practical uses files available in

http://www.computing.dundee.ac.uk/
staff/creed/teaching/ac12003/practical3/

Q1. Download the file q1.txt. Run Araucaria and load the walton.scm schemeset. Identify premises and conclusions, and diagram them along with the most appropriate argumentation scheme.

Q2. The second file q2.txt is rather more complex and also involves argumentation schemes. Again, analyse and diagram.

PRACTICAL WORKSHEETS: PRACTICAL 4

Dialectic

Details of this practical will be issued at the lecture on dialectic and debate.

PRACTICAL WORKSHEETS: PRACTICAL 5

Fallacy hunt

The aim of this practical is to find real examples of fallacies in online writing. Using the fallacies your have encountered in Lecture 14, search online resources such as newspapers, discussion boards, newsgroups, etc. to find good examples of people using the fallacies.

For each example you find, mark up using Araucaria, and remember to use the File – Properties dialog to record the URL address of where you found the argument.

Show your first one or two analyses to the tutor to check you are on the right track.

If you find as many as six examples, you should pat yourself on the back.

Twelve examples is exemplary.

If you manage to find one example for each of the “gang of 18” fallacies, you should let Chris know of your achievement. Zip up your 18 AML files, and email them to him at chris@computing.dundee.ac.uk

PRACTICAL WORKSHEETS: PRACTICAL 6

The Argument Web

The tools for the Argument Web are at the cutting edge of web technology and are changing rapidly. You will be briefed about the latest developments in the lecture, and will be asked to contribute to the datasets which are being used to seed the World Wide Argument Web.

PRACTICAL WORKSHEETS: PRACTICAL 7

Close Analysis

This practical is available for you to work towards PiGLeT 3 in week 11. The tutors will be on hand to offer advice about constructing extended argument analyses using Araucaria.

ASSESSMENT

There are three types of assessment in this module: PiGLeTs (tutorials), submitted coursework, and the examination. The breakdown is thus:

Exam		50%
Continuous Assessment	PiGLeT 1 solution presentation week 3	10%
	PiGLeT 2 diagramming week 7	10%
	PiGLeT 3 close analysis week 11	10%
	Coursework 1 formal analysis week 6	20%
Total		100%

If you miss a PiGLeT, you should write up and hand in the PiGLeT report before the end of the semester. Other than in exceptional circumstances, the mark for the report will be capped at 40%, since the group work and presentation is an integral part of the assessment.

If you hand in the assignment late, but before the end of the semester, it too will normally be capped at 40%.

PIGLET 1: SOLUTION PRESENTATION

Assessed tutorial on Thursday, February 2, 2012

Using the problem solving techniques you have encountered in lectures and reading, you should BOTH formulate a solution to the following problem AND explain carefully the techniques you used.

Write up your solution, including justification, and bring a brief written report (no more than 1000 words) and hand it to your tutor at the beginning of the tutorial.

You should then be prepared to present your solution verbally in 5 minutes to your tutor and the rest of the group.

You will be assessed on the basis of this presentation.

The problem will be made available at the tutorial session.

PIGLET 2: DIAGRAMMING

Assessed tutorial on Monday, February 27, 2012

The aim of this piece of work is to take a piece of reasoning and see how it can be be adapted and strengthened and turned in to an argument for the solution.

The starting point is the problem solution you developed for the last tutorial. Using the techniques you have encountered in the lectures, arrange the parts of your solution and their justifications into an argument tree. Use *Araucaria* to diagram that tree.

Now take a more critical look at what you've produced so far. Deal with each of the following points in turn:

- Are there many missing premises? If so, insert them explicitly in your tree.
- Are there premises without conclusions that are weak? If so, pick others, or find arguments to support them.
- Are there alternatives? If so identify them as refutations for your conclusions. Develop counter-arguments for those refutations, and diagram those too.
- Does it make sense to use any of the argumentation schemes you've encountered? If so, include those in your tree as well. Once there, think about the critical questions they pose, and add in counters to possible objections if appropriate.

Now look at your improved argument and go through the list again, looking for more opportunities for making missing premises explicit, strengthening weak conclusions, and using schemes.

The aim is to produce a water-tight argument that you should produce as written text and as a diagram, both of which you should print, and hand in at the start of the tutorial, before presenting your solution.

PIGLET 3: CRITICAL ANALYSIS

Assessed tutorial on Monday, March 26, 2012

Identify an interesting current topic (such as GM food, third world debt, abortion, etc.). Find one or more argumentative articles online or in a newspaper. Try to find a text with which, broadly, you agree. Ideally the article should be about 150-450 words. Good sources include:

- The Guardian and other newspapers, particularly the editorials
- The Economist / New Scientist (again, particularly editorial and commentary)

EACH TUTORIAL GROUP SHOULD SELECT A SINGLE TEXT, so everyone in the group is analysing the SAME material.

Using the techniques you have encountered in class, perform a close analysis of the text. Identify premises, conclusions, clue words, links, assumptions, enthymemes, schemes, and fallacies. Evaluate the quality of the reasoning at each step. Identify as many holes and weaknesses as you can.

Again, write up your notes in both text and argument diagram form. Bring both to the tutorial, hand them to you tutor, and be prepared to present your findings briefly.

COURSEWORK 1: DIAGRAMMING

To be submitted by email by
12:00 Friday, February 24, 2012

Download the coursework text file from

http://www.computing.dundee.ac.uk/
staff/creed/teaching/ac12003/cw1.txt

> Fall is the best time to visit America's great cities, beaches and mountains. The foliage is breathtaking, the weater is cooler and the crowds are gone. So you can really relax and enjoy yourself.
>
> cw1.txt

Using Araucaria, diagram the text, and save it as an AML file. Copy or attach that AML file into an email message and email it

To: chris@computing.dundee.ac.uk
Subject: AC12003CW1

Email with this subject is processed automatically. If you send the email with the wrong Subject line, your coursework is liable to end up in the wrong mailbox and may not get marked.

You might like to CC the message to yourself, so that you have a “record of posting”.

Please note that the deadline FOR RECEIPT of email is 12:00 (noon) exactly; after that email will not be processed automatically, and your coursework may not get marked.

EXAM

There will be an exam after Easter worth 50% of your total mark for ac12003.

The exam has THREE questions; you should answer all three.

The first question is on problem solving and is worth 20% of the exam mark.

The second and third questions will be on argumentation and critical thinking and will each be worth 40% of the exam mark.

The revision lecture on Tuesday, March 27, 2012 will help you prepare for the examination.