



**UNSW**  
SYDNEY

Australia's  
Global  
University



## **EDST5303**

Learning, Problem Solving, and the Development of  
Expertise

Semester Two // 2018

## Course Overview

### Staff Contact Details

#### Convenors

Name	Email	Availability	Location	Phone
Slava Kalyuga	s.kalyuga@unsw.edu.au	Thu 15-16 or by appointment	John Goodsell, Room 105	9385 1985

### School Contact Information

School of Education  
Arts and Social Sciences  
Level 1, John Goodsell Building (F20)

**T:** +61 (2) 9385 1977

**E:** education@unsw.edu.au

**W:** education.arts.unsw.edu.au

### Attendance Requirements

#### Additional School of Education attendance requirements

It is expected that any student enrolled in an EDST course with the School of Education will make a commitment to their learning and attend all classes in full where content is delivered in a face-to-face mode except in certain circumstances where absence is due to illness, misadventure or unforeseen circumstances beyond the student's control. A minimum attendance requirement of 80% is required for each course. In certain circumstances, a student may miss up to 20% of a course without formal application and up to 33% of a course with formal documentation (sent via email to course convenor) providing all the requirements detailed below are met. Students not meeting the attendance requirements outlined above will be awarded an Unsatisfactory Fail (UF) for that course regardless of their performance in the assessment tasks or other requirements for the course.

For further information on Education course attendance requirements, please refer to the respective EDST Moodle module(s).

### Academic Information

For essential student information relating to: requests for extension; review of marks; occupational health and safety; examination procedures; special consideration in the event of illness or misadventure; student equity and disability; and other essential academic information, see <https://www.arts.unsw.edu.au/current-students/academic-information/protocols-guidelines/>

## Course Details

### Credit Points 6

### Workload

150 hours including class contact hours, readings, class preparation, assessment, follow up activities, etc.

### Summary of the Course

[The major focus of this course is to examine how human cognitive structures are organised into a coherent architecture enabling you to learn, think, reason and solve problems. The central role played by active learning in this architecture is emphasised. The course examines how expertise develops and how teaching strategies should be matched to individual needs to promote knowledge acquisition. In this course you will be introduced to cognitive load theory and learn about a number of applications of this theory to the classroom and other educational environments.](#)

### At the conclusion of this course the student will be able to

1. Identify and explain the structure and operation of human memory
2. Discuss how knowledge is constructed.
3. Describe and explain how expertise develops and distinguish the differences between experts and novices.
4. Explain the evolutionary basis for knowledge.
5. Discuss the implications of human cognitive architecture for teaching and instructional design.

### Teaching Strategies

EDST5303 places a large emphasis on the role played by memory processes in effective learning and instruction. The teaching in this course is based on an active learning philosophy. Student ??centered activities will form the basis of the course, which will draw on the prior knowledge of the students and allow engagement in relevant and challenging experiences. The seminars are designed to be supportive and friendly, and include meaningful realistic learning tasks, as well as promote independent and collaborative study, and inquiry.

Teaching strategies used during the course will include:

- Small group learning to understand the importance of teamwork in an educational context and to demonstrate the use of group structures as appropriate to address teaching and learning goals;
- Explicit teaching including lectures and a range of learning strategies to foster interest and support learning;
- Structured occasions for reflection on learning to allow students to reflect critically on issues discussed;
- Extensive opportunities for whole group and small group dialogue and discussion, allowing students the opportunity to demonstrate their capacity to communicate.
- These activities will occur in a climate that is supportive and inclusive of all learners.

## Australian Professional Graduate Teaching Standards

Standard	Description
1.1.2	Use teaching strategies based on knowledge of students' physical, social and intellectual development and characteristics to improve student learning.
1.2.3	Expand understanding of how students learn using research and workplace knowledge.
1.5.2	Develop teaching activities that incorporate differentiated strategies to meet the specific learning needs of students across the full range of abilities.

# Assessment

## Assessment Tasks

Assessment task	Weight	Student Learning Outcomes Assessed	AITSL Professional Graduate Teaching Standards Assessed	Due Date
Major essay	50%	2,3,4,5	1.5.2	26/10/2018 05:00 PM
Class presentation	30%	2,3,5	1.1.2	
Class test	20%	1,2	1.1.2,1.2.3,1.5.2	23/08/2018 07:00 PM

Please refer to *Australian Professional Standards for Teachers* on the previous page

## Assessment Details

### Assessment 1: Major essay

**Start date:** Not Applicable

**Details:** Write an essay based on the material covered in the course focusing on its application to specific individual teaching areas. Length: 2500 words Students will receive feedback with 10 business days of submission.

#### Additional details:

The essay should consist of an in-depth discussion of the theoretical and applied issues associated with a selected topic.

Possible essay topics will be discussed further in lectures.

**Turnitin setting:** This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

### Assessment 2: Class presentation

**Start date:** Not Applicable

**Details:** A presentation to the class on a course related topic. Time: 10 minutes Students will receive feedback with 10 business days of submission.

#### Additional details:

Make a 10-minute presentation on an application of the theory covered in this course using a short teaching episode of a topic (chosen by the student).

A concise summary of the presentation should be provided (max 300 words)

### **Assessment 3: Class test**

#### **Start date:**

**Details:** A 20 item multiple choice test on human cognitive architecture. Time: 20 minutes Students will receive feedback with 10 business days of submission.

#### **Additional details:**

In-class multiple-choice test (20 items) on major components and processes of human cognitive architecture (material of Lectures 1-3).

# UNSW SCHOOL OF EDUCATION RUBRIC/FEEDBACK SHEET

## EDST5303

### Assessment Task: Major essay

Specific Criteria	(-)—————>(+)				
<p><b>Understand of the question or issue and the key concepts involved</b></p> <ul style="list-style-type: none"> <li>• understanding of the topic and its relationship to relevant areas of the course</li> <li>• clarity and accuracy in use of key terms and concepts</li> <li>• suitability of the topic</li> </ul>					
<p><b>Depth of analysis and/or critique in response to the task</b></p> <ul style="list-style-type: none"> <li>• depth of analysis</li> <li>• depth of critique of the issue</li> <li>• depth of implications/recommendations for improvement of learning and instruction</li> </ul>					
<p><b>Familiarity with and relevance of professional and/or research literature used to support response</b></p> <ul style="list-style-type: none"> <li>• effectiveness of examples to demonstrate instructional implications</li> <li>• variety of implications demonstrated</li> <li>• range of relevant research literature to support response</li> </ul>					
<p><b>Structure and organization of response</b></p> <ul style="list-style-type: none"> <li>• Level of structure and organisation of response</li> </ul>					
<p><b>Presentation of response according to appropriate academic and linguistic conventions</b></p> <ul style="list-style-type: none"> <li>• clarity, consistency and appropriateness of conventions for quoting, paraphrasing, attributing sources of information, and listing references</li> <li>• appropriateness of overall structure and coherence of response</li> <li>• clarity and consistency in presenting tables and figures</li> <li>• clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length</li> </ul>					
<p><b>General comments/recommendations for next time:</b></p>					

<b>Specific Criteria</b>	(-)—————>(+)

**Lecturer**

**Recommended:        /20 (FL PS CR DN HD)                                weighting : 20%**

NB: this ticks in the various boxes and designed to provide feedback to students; they are not given equal weight in determining the recommended grade. Depending on the nature of the assessment task, lecturers may also contextualize and/or amend these specific criteria. **The recommended grade is tentative only, subject to standardisation processes and approval by the School of Education Learning and Teaching Committee.**

# UNSW SCHOOL OF EDUCATION RUBRIC/FEEDBACK SHEET

## EDST5303

Assessment Task: Class presentation

Specific Criteria	(-)—————>(+)				
Understand of the question or issue and the key concepts involved					
Depth of analysis and/or critique in response to the task					
Familiarity with and relevance of professional and/or research literature used to support response					
Structure and organization of response					
Presentation of response according to appropriate academic and linguistic conventions					
General comments/recommendations for next time:					

Lecturer

Recommended: /20 (FL PS CR DN HD)

weighting : 20%

NB: this ticks in the various boxes and designed to provide feedback to students; they are not given equal weight in determining the recommended grade. Depending on the nature of the assessment task, lecturers may also contextualize and/or amend these specific criteria. **The recommended grade is tentative only, subject to standardisation processes and approval by the School of Education Learning and Teaching Committee.**

# UNSW SCHOOL OF EDUCATION RUBRIC/FEEDBACK SHEET

## EDST5303

Assessment Task: Class test

Specific Criteria	(-)—————>(+)				
Understand of the question or issue and the key concepts involved					
Depth of analysis and/or critique in response to the task					
Familiarity with and relevance of professional and/or research literature used to support response					
Structure and organization of response					
Presentation of response according to appropriate academic and linguistic conventions					
General comments/recommendations for next time:					

Lecturer

Recommended: /20 (FL PS CR DN HD)

weighting : 20%

NB: this ticks in the various boxes and designed to provide feedback to students; they are not given equal weight in determining the recommended grade. Depending on the nature of the assessment task, lecturers may also contextualize and/or amend these specific criteria. **The recommended grade is tentative only, subject to standardisation processes and approval by the School of Education Learning and Teaching Committee.**

## Submission of Assessment Tasks

Students are expected to put their names and student numbers on every page of their assignments.

## Turnitin Submission

If you encounter a problem when attempting to submit your assignment through Turnitin, please telephone External Support on 9385 3331 or email them on [externalteltsupport@unsw.edu.au](mailto:externalteltsupport@unsw.edu.au). Support hours are 8:00am – 10:00pm on weekdays and 9:00am – 5:00pm on weekends (365 days a year). If you are unable to submit your assignment due to a fault with Turnitin you may apply for an extension, but you must retain your ticket number from External Support (along with any other relevant documents) to include as evidence to support your extension application. If you email External Support you will automatically receive a ticket number, but if you telephone you will need to specifically ask for one. Turnitin also provides updates on their system status on Twitter.

Generally, assessment tasks must be submitted electronically via either Turnitin or a Moodle assignment. In instances where this is not possible, it will be stated on your course's Moodle site with alternative submission details.

## Late Assessment Penalties

Students are responsible for the submission of assessment tasks by the required dates and times. Depending on the extent of delay in the submission of an assessment task past the due date and time, one of the following late penalties will apply unless special consideration or a blanket extension due to a technical outage is granted. For the purpose of late penalty calculation, a 'day' is deemed to be each 24-hour period (or part thereof) past the stipulated deadline for submission.

- **Work submitted less than 10 days after the stipulated deadline** is subject to a deduction of 5% of the total awardable mark from the mark that would have been achieved if not for the penalty for every day past the stipulated deadline for submission. That is, a student who submits an assignment with a stipulated deadline of 4:00pm on 13 May 2016 at 4:10pm on 14 May 2016 will incur a deduction of 10%.

### ***Task with a non-percentage mark***

If the task is marked out of 25, then late submission will attract a penalty of a deduction of 1.25 from the mark awarded to the student for every 24-hour period (or part thereof) past the stipulated deadline.

*Example:* A student submits an essay 48 hours and 10 minutes after the stipulated deadline. The total possible mark for the essay is 25. The essay receives a mark of 17. The student's mark is therefore  $17 - [25 (0.05 \times 3)] = 13.25$

### ***Task with a percentage mark***

If the task is marked out of 100%, then late submission will attract a penalty of a deduction of 5% from the mark awarded to the student for every 24-hour period (or part thereof) past the stipulated deadline.

*Example:* A student submits an essay 48 hours and 10 minutes after the stipulated deadline. The essay is marked out of 100%. The essay receives a mark of 68. The student's mark is therefore  $68 - 15 = 53$

- **Work submitted 10 to 19 days after the stipulated deadline** will be assessed and feedback provided but a mark of zero will be recorded. If the work would have received a pass mark but for the lateness and the work is a compulsory course component (hurdle requirement), a student will be deemed to have met that requirement;
- **Work submitted 20 or more days after the stipulated deadline** will not be accepted for assessment and will receive no feedback, mark or grade. If the assessment task is a compulsory component of the course a student will receive an Unsatisfactory Fail (UF) grade as a result of unsatisfactory performance in an essential component of the course.

This information is also available at:

<https://www.arts.unsw.edu.au/current-students/academic-information/protocols-guidelines/>

## Special Consideration Applications

You can apply for special consideration when illness or other circumstances interfere with your assessment performance.

Sickness, misadventure or other circumstances beyond your control may:

- \* Prevent you from completing a course requirement,
- \* Keep you from attending an assessable activity,
- \* Stop you submitting assessable work for a course,
- \* Significantly affect your performance in assessable work, be it a formal end-of-semester examination, a class test, a laboratory test, a seminar presentation or any other form of assessment.

For further details in relation to Special Consideration including "When to Apply", "How to Apply" and "Supporting Documentation" please refer to the Special Consideration website:

<https://student.unsw.edu.au/special-consideration>

## Academic Honesty and Plagiarism

Plagiarism is using the words or ideas of others and presenting them as your own. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement.

UNSW groups plagiarism into the following categories:

**Copying:** using the same or very similar words to the original text or idea without acknowledging the source or using quotation marks. This also applies to images, art and design projects, as well as presentations where someone presents another's ideas or words without credit.

**Inappropriate paraphrasing:** Changing a few words and phrases while mostly retaining the original structure and/or progression of ideas of the original, and information without acknowledgement. This also applies in presentations where someone paraphrases another's ideas or words without credit and to piecing together quotes and paraphrases into a new whole, without appropriate referencing.

**Collusion:** working with others but passing off the work as a person's individual work. Collusion also includes providing your work to another student before the due date, or for the purpose of them plagiarising at any time, paying another person to perform an academic task, stealing or acquiring another person's academic work and copying it, offering to complete another person's work or seeking payment for completing academic work.

**Inappropriate citation:** Citing sources which have not been read, without acknowledging the "secondary" source from which knowledge of them has been obtained.

**Duplication ("self-plagiarism"):** submitting your own work, in whole or in part, where it has previously been prepared or submitted for another assessment or course at UNSW or another university.

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 (<http://www.lc.unsw.edu.au/>). 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 proper referencing of sources in preparing all assessment items.

UNSW Library also has the ELISE tool available to assist you with your study at UNSW. ELISE is designed to introduce new students to studying at UNSW but it can also be a great refresher during your study.

Completing the ELISE tutorial and quiz will enable you to:

- analyse topics, plan responses and organise research for academic writing and other assessment tasks
- effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- use and manage information effectively to accomplish a specific purpose
- better manage your time

- understand your rights and responsibilities as a student at UNSW
- be aware of plagiarism, copyright, UNSW Student Code of Conduct and Acceptable Use of UNSW ICT Resources Policy
- be aware of the standards of behaviour expected of everyone in the UNSW community
- locate services and information about UNSW and UNSW Library

Some of these areas will be familiar to you, others will be new. Gaining a solid understanding of all the related aspects of ELISE will help you make the most of your studies at UNSW.

(<http://subjectguides.library.unsw.edu.au/elise/aboutelise>)

# Course Schedule

[View class timetable](#)

## Timetable

Date	Type	Content
Week 1: 23 July - 29 July	Seminar	Introduction to the course. Information processing approach to human cognition. Human cognitive architecture.
Week 2: 30 July - 5 August	Seminar	Working memory
Week 3: 6 August - 12 August	Seminar	Long-term memory. The role of schema construction and automation in the development of expertise
Week 4: 13 August - 19 August	Seminar	The role of knowledge and expertise in problem solving performance
Week 5: 20 August - 26 August	Seminar	The evolutionary perspective on human cognitive architecture and its consequences for learning and instruction
Week 6: 27 August - 2 September	Seminar	Introduction to cognitive load theory. Instructional alternatives to problem solving
Week 7: 3 September - 9 September	Online Activity	Learning from multimedia
Week 8: 10 September - 16 September	Seminar	Instructional approaches to managing learner cognitive load
Week 9: 17 September - 23 September	Seminar	Expertise reversal effect. Tailoring learning tasks to learner cognitive characteristics and goals
Break: 24 September - 30 September		
Week 10: 1 October - 7 October	Seminar	Recent development and future directions
Week 11: 8 October - 14 October	Presentation	<b>Student presentations</b>
Week 12: 15 October - 21 October	Presentation	<b>Student presentations</b>

## Resources

### Prescribed Resources

#### Required Readings

**Textbook details:** There are no set textbooks for this course, although the following will be frequently referred to:

Clark, R. Nguyen, F., & Sweller, J. (2006). *Efficiency in Learning*, San Francisco: John Wiley & Sons, Inc.

Mayer, R. E. (2008). *Learning and Instruction, 2<sup>nd</sup> edition*. New Jersey: Pearson

Sweller, J., Ayres, P. & Kalyuga, S. (2011). *Cognitive load theory*. New York: Springer.

### Recommended Resources

Specific research articles are recommended for different lectures. Copies of the articles are provided on *Moodle*

### Course Evaluation and Development

UNSW MyExperience feedback will be used to evaluate and improve the course

### Image Credit

Synergies in Sound 2016

### CRICOS

CRICOS Provider Code: 00098G