School of Education

EDST6713
Science Double Method 1

Semester 1

Contents

IMPORTANT :
For student policies and procedures relating to assessment, attendance and student support, please see website, https://education.arts.unsw.edu.au/students/courses/course-outlines/

The School of Education acknowledges the Bidjigal and Gadigal people as the traditional custodians of the lands upon which we learn and teach.

1. LOCATION

Faculty of Arts and Social Sciences
School of Education
EDST6713 Science Double Method 1 (12 units of credit)
Semester 1 2016

2. STAFF CONTACT DETAILS

Course Coordinator: Judith Morgan
Email: ja.morgan@unsw.edu.au
Availability: Monday 7.00 – 7.15 pm

Tutor: Rana Kaddour
Email: r.kaddour@unsw.edu.au
Availability: Thursday 7.00 – 7.15 pm

Tutor: Jennifer Ming
Email: j.ming@unsw.edu.au
Availability: Thursday 7.00 – 7.15 pm

3. COURSE DETAILS

Course Name	Science Double Method 1
Credit Points	12 units of credit (uoc)
Workload	Includes 300 hours including class contact hours, readings, class preparation, assessment, follow up activities, etc.
Schedule	
Lectures	Mon 16-17:30 CLB 4, Thu 16:00 -17:00 (w1-4, 5-10,N4, CLB 3)
Tutorials	Mon 17:30-19:00, Thu 17:00-19:00 (w1-4,5-10,N4, MorvB G5)
	Mon 17:30-19:00, Thu 17:00-19:00 (w1-4, 5-10,N4, MorvB LG30)
	Mon 17:30-19:00 (Mat 312), Thu 17:00-19:00 (w1-4, 5-10,N4, (J Good LG 19)

Summary of Course
This course is designed to develop in preservice teachers, appropriate pedagogies for teaching Science, as well as offering an insight into the nature and practice of Science. Preservice teachers will develop skills in planning and teaching lessons, contextualising science, managing practical work in science classrooms and integrating ICT resources into lessons. Important issues such as student prior learning, assessment, student differences and safety are also considered. Preservice teachers will critically evaluate the features of effective classroom practice. The course focuses on the requirements and philosophy of the NSW Science syllabuses.

Aims of the Course
This course aims to:
- develop appropriate pedagogies for teaching Science to Years 7-12 students and thus an understanding of what compromises effective classroom practice
- develop reflective teachers who can create safe, caring and challenging learning environments.

Important Information

As students already have or will soon have a Science degree, it is assumed that students have a well-developed knowledge of the Science content covered in NSW schools up to the end of stage 5, as well as knowledge of the Science content for at least one Stage 6 course. Science content will not be taught in this course.

This course relies heavily on the use of Moodle, so students will be required to bring a laptop to tutorials, or to negotiate to share one with group members. Students will be allocated to groups in Moodle and will be expected to use the internet to source a range of materials for lesson and unit planning. Students will use ICT tools to collaborate in groups to design teaching resources that will be uploaded to Moodle for sharing with the whole group, so that by the end of the course students will have access to a wide range of teacher developed resources.

Students are required to upload their photo to their Moodle profile.

The main ways in which the course has changed since last time as a result of student feedback:
More tutorial time will be devoted to modelling the teaching of Science by the tutors.

Important information
Assessment: Please note that all students must pass all assignments to pass the course, and they must pass the course to go on placement for PE 1.

Attendance: Students are expected to give priority to university study commitments. Unless specific and formal permission has been granted, attendance at less than 80% of classes in a course may result in failure.

Student Learning Outcomes

Outcome		Assessment/s
1	Demonstrate knowledge and understanding of the NSW Board of Studies Science Syllabuses for stages 4/5 and stage 6 and various Department of Education policies	1, 2, 3, 4, 5
2	Demonstrate knowledge and understanding of the Nature of Science and the History of Science and how they contribute to pedagogical content knowledge	1, 2, 3, 4, 5
3	Plan and implement coherent, goal oriented lessons and effective learning and teaching lesson sequences that are designed to engage all students and address learning outcomes	1, 2, 3, 4,5
4	Demonstrate the essential link between outcomes, assessment, teaching strategies and lesson planning	1, 2, 3, 4, 5
5	Demonstrate knowledge and understanding of learning outcomes and classroom practice related to teaching ICT in Stages 4/5 and 6	2, 3, 4, 5
6	Use the internet and a range of Web 2.0 tools to deliver curriculum and to engage students, and discuss strategies to foster responsible and ethical use of ICTs	2, 3, 4, 5
7	Discuss a range of engaging classroom strategies that recognise students' different approaches to learning	2, 3, 4, 5
8	Develop appropriate and engaging resources for the Science classroom that take into account students' skills, interests and prior achievements and that respect the diverse linguistic, cultural, religious and socioeconomic backgrounds of students.	2, 3, 4, 5
9	Investigate and discuss a variety of strategies to develop rapport with students, a positive classroom learning environment and approaches to managing challenging behaviour	2, 3, 4, 5
10	Describe strategies that support students' wellbeing and safety in the	3, 4, 5

	Science setting, and curriculum and legislative requirements related to safety in Science.	
11	Demonstrate a capacity to reflect critically on and improve teaching practice.	1, 2, 3, 4, 5
12	Recognise a range of professional organisations that can contribute to the on-going professional development of Science teachers, and develop a personal learning network	2, 5

Program Learning Outcomes (AITSL Professional Graduate Teaching Standards)

Standard		Assessment/s
1.2	Demonstrate knowledge and understanding of research into how students learn and the implications for teaching.	1, 2, 3, 4, 5
1.3	Demonstrate knowledge of teaching strategies that are responsive to the learning strengths and needs of students from diverse linguistics, cultural, religious and socioeconomic backgrounds.	1, 2, 3, 4, 5
2.1	Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area.	1, 2, 3, 4, 5
2.2	Organise content into an effective learning and teaching sequence.	2, 3, 4, 5
2.3	Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans.	2, 3, 4, 5
2.4	Demonstrate broad knowledge of, understanding of and respect for Aboriginal and Torres strait Islander histories, cultures and languages	2, 4, 5
2.5	Know and understand literacy and numeracy teaching strategies and their application in teaching areas	2, 3, 4, 5
2.6	Implement teaching strategies for using ICT to expand curriculum learning opportunities for students.	2, 3, 4, 5
3.1	Set learning goals that provide achievable challenges for students of varying characteristics.	2, 3, 4, 5
3.2	Plan lesson sequences using knowledge of student learning, content and effective teaching strategies.	2, 3, 4, 5
3.3	Include a range of teaching strategies.	2, 3, 4, 5
3.4	Demonstrate knowledge of a range of resources including ICT that engage students in their learning.	2, 3, 4, 5
3.5	Demonstrate a range of verbal and non-verbal communication strategies to support student engagement.	2, 3, 4, 5
3.6	Demonstrate broad knowledge of strategies that can be used to evaluate teaching programs to improve student learning.	1, 2, 3, 4, 5
4.2	Demonstrate the capacity to organise classroom activities and provide clear directions.	2, 3, 4, 5
4.4	Describe strategies that support students' wellbeing and safety working within school and/or system, curriculum and legislative requirements.	3, 4, 5
6.3	Seek and apply constructive feedback from supervisors and teachers to improve teaching practices.	1, 2, 3, 4, 5

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National Priority Area Elaborations

	Priority area		Assessment/s
A.	Aboriginal and Torres Strait Islander Education	1, 2, 3, 4, 5, 6, 7, 8, 9,10, 11, 12	2, 4, 5
B.	Classroom Management	1, 2, 3, 4, 5, 6, 7, 8, 9,10	3
C.	Information and Communication Technologies	1, 2, 3, 4, 5, 6, 7, 8, 9,10, 11, 12, 13, 14	2, 5
D.	Literacy and Numeracy	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	1, 2, 3, 4, 5
E.	Students with Special Educational Needs	1, 2, 3, 4, 5, 6, 7, 8, 9	X
F.	Teaching Students from Non-English Speaking Backgrounds	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	X

4. RATIONALE FOR THE INCLUSION OF CONTENT AND TEACHING APPROACH

Lectures, tutorials and assignments will cover a variety of approaches to teaching and learning in the Science classroom. Emphasis will be placed on the relationship between the nature and practice of Science, the role and value of science in society and science pedagogy. A particular focus will be on strategies that can promote student engagement with Science.

Student-centred activities will form the basis of the course. These activities will draw on the prior knowledge of the students and will allow them to engage in relevant and challenging experiences that mirror those they will be expected to design for the secondary students they will later teach.

5. TEACHING STRATEGIES

- Explicit teaching, including lectures, to foster an understanding of students' different approaches to learning and the use of a range of teaching strategies to foster interest and support learning
- Small group cooperative 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
- Structured occasions for reflection on learning to allow students to reflect critically on and improve teaching practice
- Extensive opportunities for whole group and small group dialogue and discussion, allowing students the opportunity to demonstrate their capacity to communicate and liaise with the diverse members of an education community, and to demonstrate their knowledge and understanding of method content.
- Online learning from readings on the Moodle website and online discussions
- Peer teaching - students will work in a group of three to deliver a 9 minute lesson related to lecture content (Nanoteaching on Mondays)

- Peer teaching - students will prepare and develop a thirty minute practical lesson to their peers (Microteaching on Thursdays)
- In tutorials, students will be expected to work in small groups to develop diverse products such as narratives, contexts, sections of units of work, lesson plans, teaching resources, and assessment tasks. Each group will be expected to upload and share their work in progress to Moodle by 6.45pm on each tutorial evening. This work will be monitored by the tutors, and contribute to the total grade for each student. Students who are absent on the day, but who still wish to submit their tutorial work can email it to their tutor the next day only. A debriefing session will be conducted at 6:45 during each tutorial.

These activities will occur in a classroom climate that is supportive and inclusive of all learners.

Nanoteaching will occur during Monday tutorials in weeks 2 to 10. Each student will be required to present a 5 minute lesson drawn from the focus areas of the history of Science, the nature and practice of Science, a "big idea" in Science, etc. Students will be informed about the focus area each week. The presentations are not to be lectures but should be seen as a segment from a Science lesson, pitched at Year 7 - 10 level.

Peers will play the role of the class. A brief class discussion on each lesson segment will take place at the end of each presentation to provide feedback.

These presentations do not form part of the formal assessment for the course. They are designed to develop teaching skills and provide constructive feedback. They provide an opportunity for students to practise and demonstrate the Graduate Teacher Standards.

6. COURSE CONTENT AND STRUCTURE

WEEK	MONDAY 4.00 – 7.00 pm	THURSDAY 4.00 – 7.00 pm
1 (29 Feb – 4 Mar)	**Lecture: Morgan** • Introduction to course structure and requirements • Where to find information and resources • Discussion of assigned reading related to - Why do Science? - The nature of Science - What is Science Literacy? -The role of the Nature and Practice of Science in Science teaching **Tutorial: Morgan, Kaddour** What should be the nature of Science teaching in contemporary schools? **Literacy and Numeracy** D1, 2, 3	**Lecture: Ming** • Overview and philosophy of Stage 6 syllabuses, including: - Contextualised topics - Incorporation of PFAs related to the history and nature and practice of Science - Inclusion of skills **Tutorial: Ming, Kaddour** Deconstruction of one Stage 6 syllabus **Literacy and Numeracy** D1, 2, 3
2 (7 - 11 March)	**Lecture: Morgan** • Discussion of assigned reading related to -The role of the History of Science in Science teaching - Developing contexts – making Science relevant **Nanoteaching:** Narratives from the History of Science **Tutorial: Morgan, Kaddour**	**Lecture: Ming** • Mapping skills to Stage 6 teaching and learning activities • Lesson planning in Stage 6 using a provided template **Microteaching Stage 4/5** **Tutorial: Ming, Kaddour** Matching skills to syllabus content in Stage 6 to developing a lesson plan using a provided template

	Developing contexts to incorporate the Nature of Science, the History of Science and the Working Scientifically skills **ICT** C1,2,3,4,5,6,7,8,9,10,12,14 **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	
3 (14-18 March)	**Lecture: Morgan** • Curating Science Method's digital resources • ICT and Web 2.0 Tools for science classrooms; other digital resources **Nanoteaching:** Narratives from the History of Science **Tutorial: Morgan, Kaddour** Developing a repertoire of teaching strategies for Science teaching using ICT **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	**Off-site: Matraville High School** **Lecture: Kaddour** • Orientation to a high school laboratory **Microteaching Stage 4/5** **Tutorial: Ming, Kaddour** Familiarisation with a high school laboratory
4 (21 - 24 March)	**Lecture: Morgan** • Deconstructing the Stage 4/5 Syllabus: structure & requirements • Engaging students with a range of teaching strategies for Science, including literacy and numeracy strategies; catering for diverse learners **Nanoteaching:** Narratives from the History of Science **Tutorial: Morgan, Kaddour** Developing a repertoire of teaching strategies for Science teaching for diverse learners **ICT** C1,2,3,4,5,6,7,8,9,10,12,14 **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	**Off-site: Matraville High School** **Lecture: Ming, Kaddour** Modelling of one practical Science Stage 4/5 lesson by each tutor **Microteaching Stage 4/5** • Lesson Planning for Stage 6 Practical Work using a provided template **Literacy and Numeracy** D1, 2, 3, 5, 6 8
28 March – 3 April	**Mid-Semester Break**	
5 (4 – 8 April)	**Lecture: Morgan** • Practical Work and the Working Scientifically Outcomes, including the incorporation of literacy and numeracy strategies • Safety in the Science Laboratory **Nanoteaching:** Narratives from the History of Science **Tutorial: Morgan, Kaddour** Developing a repertoire of teaching strategies for Science teaching – practical work **Literacy and Numeracy** D1, 2, 3, 5, 6 8	**Off-site: Matraville High School** **Lecture: Ming** • Lesson Planning for Stage 6 Practical Work using a provided template **Microteaching Stage 4/5** **Tutorial: Ming, Kaddour** Lesson Planning for Stage 6 Practical Work using a provided template **Literacy and Numeracy** D1, 2, 3, 5, 6 8

6 (11 - 15 April) (School Holidays)	• Using the syllabus to plan Stage 4/5 lessons **Nanoteaching:** Narratives from the History of Science **Tutorial: Morgan, Kaddour** Planning Stage 4/5 lessons **Classroom Management** B1, 5, 7, 10 **ICT** C1,2,3,4,5,6,7,8,9,10,12,14 **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	**Lecture: Ming** • Lesson Planning for Stage 6 Practical Work using a provided template **Microteaching Stage 4/5** **Tutorial: Ming, Kaddour** Lesson Planning for Stage 6 Practical Work using a provided template
7 (18 - 22 April) (School Holidays)	**Lecture: Morgan** • Planning Units of Work: Teaching Strategies **Nanoteaching:** Narratives illustrating ATSI Science **Tutorial: Morgan, Kaddour** Using the syllabus to plan Stage 4/5 lessons **ATSI Education** A3, 5, 8 **Classroom Management** B1, 5, 7, 10 **ICT** C1,2,3,4,5,6,7,8,9,10,12,14 **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	**Lecture: Ming** • The components of a Stage 6 Unit of work; grouping content, lesson design, use of a provided Stage 6 template **Microteaching Stage 4/5:** **Tutorial: Ming, Kaddour** Developing a Stage 6 Unit of work
8 (25 – 29 April)	**Public Holiday**	**Off-site: Matraville High School** **Lecture: Ming** • Developing a Stage 6 unit of work: explicit teaching, resourcing, linking skills **Microteaching Stage 4/5:** **Tutorial: Ming, Kaddour** Developing a Stage 6 Unit of work
9 (2 – 6 May)	**Lecture: Morgan** • Planning Units of Work: using the Stage 4/5 Syllabus **Nanoteaching:** Big Ideas in Science **Tutorial: Morgan, Kaddour** Developing a Unit of work for Stage 4/5 **ATSI Education** A3, 5, 8 **Classroom Management** B1, 5, 7, 10 **ICT** C1,2,3,4,5,6,7,8,9,10,12,14 **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	**Off-site: Matraville High School** **Lecture: Ming** Use of data loggers **Microteaching Stage 4/5:** **Tutorial: Ming, Kaddour** Using data loggers
10 (9 - 13 May)	**Lecture: Morgan** • Strategies to improve literacy in Stage 4/5 **Nanoteaching:** Big Ideas in Science **Tutorial: Morgan, Kaddour** Strategies to improve literacy in Stage	**Off-site: Matraville High School** **Lecture: Ming** Strategies to improve literacy in Stage 6 **Microteaching Stage 4/5** **Tutorial: Ming, Kaddour** Strategies to improve literacy in Stage 6

		Priority Area **Priority Area** **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	**Priority Area** **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19
11 (16- 20 May)		**Lecture: Morgan** • Preparing for Professional Experience • Planning Units of Work using the Stage 4/5 Syllabus **Nanoteaching:** Big Ideas in Science **Tutorial: Morgan, Kaddour** Developing a Unit of work for Stage 4/5 **ATSI Education** A3, 5, 8 **Classroom Management** B1, 5, 7, 10 **ICT** C1,2,3,4,5,6,7,8,9,10,12,14 **Literacy and Numeracy** D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	**Lecture: Kaddour** Strategies to improve numeracy in Stage 6 **Tutorial: Ming, Kaddour** Strategies to improve numeracy in Stage 6 Completion of CATEI reports
		Professional Experience	
12 (20 - 24 June)		**Lecture: Morgan** • Feedback and Reflection on PE1 (Stage 4/5): highs and lows; areas you improved the most; areas you still need to work on; useful strategies; inspiring use of ICT and other contemporary teaching resources. **Tutorial: Morgan, Kaddour** Planning for next Professional Experience – Stage 5	**Lecture: Ming** • Feedback and Reflection on PE1 (Stage 6): highs and lows; areas you improved the most; areas you still need to work on; useful strategies; inspiring use of ICT and other contemporary teaching resources **Tutorial: Ming, Kaddour** Planning for next Professional Experience – Stage 6

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7. ASSESSMENT

Assessment Task	Length	Weight	Learning Outcomes Assessed	Graduate Attributes Assessed	National Elaborations	Due Date Friday of
Task 1 Stage 6 Lesson Plan	2000 words	20%	1,2,3,4,5,6,7,8, 910,11	1.2, 1.3, 2.1, 2.2, 2.3, 2.5, 2.6, 3.1, 3.2, 3.4, 3.5, 4.2, 4.4	D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	8 April 2016 5:00 PM (Week 5)
Task 2 ICT Portfolio	2000 words	20%	1,2,3,4,5,6,7,8, 11	1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.2, 6.3	A 3, 5, 8 C1, 2, 3, 4, 5, 6, 7, 8, 9,10, 12, 14 D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	22 April 2016 5:00 PM (Week 7)
Task 3 Microteaching	N/A	S/N	1,2,3,4,5,6,7, 8, 9,10,11	1.2, 1.3, 2.1, 2.2, 2.3, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.2, 4.4, 6.3	B1, 5, 7, 10 D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	Weeks 2 - 10
Task 4 Unit of Work	3000 words	30%	1,2,3,4,5,6,7, 8,910,11	1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.4, 3.5, 4.2, 4.4	A 3, 5, 8 D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	20 May 2016 5:00 PM (Week 11)
Task 5 Critical Reflection and Contributions to forums	3000 words	30%	1,2,3, 4, 5, 6, 7,8, 9,11,12	1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.2, 4,4 6.3	A 3, 5, 8 C1, 2, 3, 4, 5, 6, 7, 8, 9,10, 12, 14 D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19	Week 1 - 10

N.B: All Assessment Tasks are to be submitted via Moodle by 5pm on the due date. The assignment boxes in Goodsell are not to be used.

Students are required to follow their lecturer's instructions when submitting their work for assessment. All assessment will be submitted online via Moodle by 5pm. Student no longer need to use a cover sheet. Students are also required to keep all drafts, original data and other evidence of the authenticity of the work for at least one year after examination. If an assessment is mislaid the student is responsible for providing a further copy. Please see the Student Policies and Procedures for information regarding submission, extensions, special consideration, late penalties and hurdle requirements etc.

Task 1 - Stage 6 Lesson Plan

You are to produce an 80 minute lesson plan based on a Stage 6 syllabus of your choosing.

You should use the lesson plan template you have been provided with in lectures to develop your lesson plan. The lesson should integrate the syllabus content with some skills.

The lesson plan should include:

- a written rationale in which you justify your choice of content, instructional strategies, grouping arrangements, etc.
- an overview of the main ideas presented
- the expected student outcomes and content statements covered
- a brief description of where the lesson fits into the topic from which it is derived
- a description of the steps in the lesson and the time taken for each step
- a full description of all activities
- one worksheet, for use either during the lesson or as homework

NB. ALL OUTCOMES AND CONTENT STATEMENTS MUST BE WRITTEN AS FULL STATEMENTS, ACCOMPANIED BY THEIR IDENTIFYING NUMBER

The assessment task is to be converted to a PDF with the student name in the title of the file and submitted via Moodle.

Task 2 - ICT PORTFOLIO

You are to produce a portfolio of ICT based activities. The activities should be as follows:
- **five** activities that make use of Web 2.0 tools or Web Apps

<center>**AND**</center>

- **five** activities that are based on the use of an online simulation of a scientific principle

<center>**AND**</center>

- **two** activities that are based on websites that focus on Aboriginal and Torres Strait Islander Science

<center>**AND**</center>

- **five** content based websites

<center>**AND**</center>

- **one** activity designed to improve students skills in the use of spreadsheets and graphs

The activities should be linked to the any of the Science syllabuses, and should relate to a specific activity (not generic) that can be performed in a Science lesson, to address a syllabus content statement and/or outcome.

For **each** ICT you should include:
- an identification of the course and/or stage you would use the ICT with
- a brief discussion on the potential for student engagement
- links to the syllabus, including outcomes **and** content statements
- an illustrated description of each how you would use each activity in a specific lesson
- screenshot(s) to illustrate the use of the ICT
- hyperlinks for simulations, websites and Web 2.0 tools or Apps

The Web 2.0 tools or Apps you present should be freely available to any student without cost.

You **MUST** present your portfolio as using a Web 2.0 tool or App. You should NOT use Prezi or Evernote. The assessment task is to be submitted as a hyperlink in Moodle. If your work is not public, you should provide the lecturer with a password. Marks will be deducted if the marker encounters difficulty in accessing your site.
NB. ALL OUTCOMES AND CONTENT STATEMENTS MUST BE WRITTEN AS FULL STATEMENTS, ACCOMPANIED BY THEIR IDENTIFYING NUMBER

HURDLE REQUIREMENT – TASK 3 MICROTEACHING

Microteaching is the planning, presentation and evaluation of a lesson over a shortened period of time (a 20 minute mini-lesson). It is a critical aspect of method as it provides students with the opportunity to demonstrate key competencies that must be achieved before student teachers are permitted to undertake Professional Experience 1, at the same time observing other student teachers and engaging in peer review. It is recommended that students read widely on effective classroom strategies and practise aspects of their mini-lesson with a small group of peers prior to assessment.

The assessment process will consist of the following two components:

1. A detailed **lesson plan using the prescribed template**, including a statement of expected learning outcomes
2. A 20 minute mini-lesson, derived from the full lesson plan.

Initial Lesson Plan: You are to prepare a lesson plan from Stage 4 or 5, for a 20 minute lesson that includes a practical demonstration by the teacher. You must use the template provided to you in lectures. While students may participate in a teacher-led activity for a short time, the main focus of the lesson should be on the delivery by the teacher of some science content or skills.

The final lesson plan should be submitted to the tutor on the day the lesson is presented, and should include:

- an overview of the main ideas presented
- the expected student outcomes and content statements covered
- a brief description of where the lesson fits into the topic from which it is derived
- a description of the steps in the lesson and the time taken for each step
- either an aspect of literacy or an aspect of numeracy
- a full description of practical or other activities

A 20 minute mini-lesson: This will be assessed according to the attached criteria, and will be graded as **Satisfactory or Unsatisfactory.** Any student whose first microteaching episode is judged as unsatisfactory will be given a further (one only) opportunity to gain a satisfactory grade.

NOTE: If a student is assessed as unsatisfactory in microteaching s/he will automatically fail Method 1 overall, and not be permitted to undertake Professional Experience or any further method work in that teaching area until the key concerns have been resolved.

NB. ALL OUTCOMES AND CONTENT STATEMENTS MUST BE WRITTEN AS FULL STATEMENTS, ACCOMPANIED BY THEIR IDENTIFYING NUMBER

Task 4 UNIT OF WORK FOR STAGE 4 or 5 SCIENCE

You are to design a unit of work that focuses on a concept or topic suitable for a stage 4 or 5 Science class. Your unit of work should have an appropriate and engaging context. You must present an outline for a unit to be taught over a 6 week teaching period, of 3 x 80 minute periods per week, i.e. 18 eighty minute lessons.

The unit outline should be in a standard format that will be explained and investigated during lectures and tutorials. You will receive a **template** for the unit outline which you must use.

- The introductory page of your unit must clearly outline the context of the unit and a rationale for it. It should also state the syllabus outcomes for the unit as a whole, including Knowledge and Understanding, Values and Attitudes and Working Scientifically Skills. It should describe the prior learning students must have to begin this unit and discussion of how this prior knowledge could be assessed.

- The rationale of about 300 words, should:
  - state succinctly what you want the students to learn and why it is important
  - describe and justify your chosen context and why you expect it will be able to engage student interest
  - justify your choice of content and teaching strategies and relate them to the needs and abilities of this class

- Your unit of work must have an embedded context and employ a logically sequenced series of lesson outlines, utilising a variety of teaching strategies. There should be potential for student engagement with the material taught.

- The outline for each lesson must include the syllabus content statements derived from the syllabus outcomes. The teaching strategies you select must target these syllabus content statements.

- The unit of work must include lessons that target the following:
      The Nature of Science
      The History of Science
      Incorporation of ICT, both as a teaching strategy and as a student skill

- The unit of work must include lessons that target the following:
  - Literacy
  - Numeracy
  - One or more Cross-curriculum priorities as described by the syllabus
  - Three or more General capabilities as described by the syllabus
  - One or more Values and Attitudes outcomes

- So that the marker can determine the link between teaching strategies and the syllabus, all syllabus references should be written as complete statements

The assessment task is to be converted to a PDF with the student name in the title of the file and submitted via Moodle.

NB. ALL OUTCOMES AND CONTENT STATEMENTS MUST BE WRITTEN AS FULL STATEMENTS, ACCOMPANIED BY THEIR IDENTIFYING NUMBER

Task 5 CRITICAL REFLECTION AND CONTRIBUTIONS TO CLASS FORUMS

While working on tasks during tutorials, students will be assigned to groups in Moodle, and will be required to contribute to class wikis and forums designed to allow collaboration and sharing of resources amongst students. Students will be graded on the quality and frequency of their contributions to these wikis and forums.

There will be some assessable discussions initiated by lecturers. Students must make an initial contribution to each of these discussions. Students are encouraged to start their own discussion threads related to the content of lectures in Moodle, and these will also be graded. Students are further expected to post reflective replies to the postings of other students.

The forums will cover a number of the key concepts from lectures and tutorials, including:

- the nature of learning
- management of the learning process
- the skills and experiences you could bring to your Science lessons
- the diverse social, cultural, ethnic and religious backgrounds of students, and the effects of these factors on learning
- strategies to meet the learning needs of ATSI students
- students' varied approaches to learning
- how students' skills, interests and prior achievements affect learning
- strategies for addressing individual student needs
- creating an environment of respect and rapport
- establishing a climate where learning is valued and students' ideas are respected
- analysis and reflection on teaching practice
- critical evaluation of microteaching

NB. This task should be submitted to the appropriate Moodle forum.

HURDLE REQUIREMENT - CREATING A CONTEMPORARY CLASSROOM - HANDS ON WITH DIGITAL TECHNOLOGIES

Active participation in 2 x 1.5 hour sessions taken by a specialist in technology enabled learning and teaching to help prepare student teachers to understand and use digital technologies in their contemporary classrooms, and assessed by Method lecturers.

These technologies will include:

Session 1

- Presentation tools and classroom equipment including interactive whiteboards;
- Online sites, tools and communities including blogs, wikis, iTunesU, icourses etc;

Session 2

- Web based enquiry learning resources, including webquests;
- One– to-one technologies including ipads, netbooks and notebooks and the technologies which support shared learning on individual devices; and
- Resources to create contemporary lessons see: Flipped classroom

Resources

The Flipped Classroom, http://www.teacherstandards.aitsl.edu.au/Illustrations/ViewIOP/IOP00173/index.html

TPACK (created by Dr. Matthew Koehler and Dr. Punya Mishra http://www.tpack.org/), Technological Pedagogical Content Knowledge (TPACK) is a framework that identifies the knowledge teachers need to teach effectively with technology.

S A M R (created by Dr. Ruben R. Puentedura); provides a framework to answer the question of what types of technology use would have greater or lesser effects upon student learning.

Rural & Distance Education NSW: A local resource presenting both frameworks, http://rde.nsw.edu.au/tpack-samr

Teaching Teachers for the Future - What is TPACK? http://www.ttf.edu.au/what-is-tpack/what-is-tpack.html

Reflections of pre-service teachers, http://www.ttf.edu.au/psts-talk.html; this series of video clips shows the reflections of several pre-service teachers each of whom trialled one of the twelve Teaching Teachers for the Future (TTF) Australian Curriculum resource packages with a practicum class. At the end of their lesson the pre-service teachers were invited to reflect on the experience of working with the resource package and adapting it to their class situation. They were also asked to reflect on their understanding of TPACK.

Student teachers are encouraged to set up their own blog (It is free) at Edublog , http://edublogs.org/ to create and share resources and lessons they create.

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Return of Assessment Tasks

Feedback for Assessment Tasks will be delivered via a feedback sheet in Moodle.

Feedback

Assessment Task	Feedback Mechanism	Feedback Date
Task 1 Stage 6 Lesson Plan	Feedback sheet via Moodle	Week 8
Task 2 ICT Portfolio	Feedback sheet via Moodle	Week 10
Task 3 Microteaching	Written feedback sheet	Two weeks after delivery of Microteaching lesson
Task 4 Unit of Work	Feedback sheet via Moodle	Three weeks after end of semester
Task 5 Critical Reflection and Contributions to forums	Feedback sheet via Moodle	Three weeks after end of semester

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8. RESOURCES
Textbook details

Each student is required to obtain from the Board of Studies website the following Board of Studies documents: Stage 4/5 Science Syllabus, one Stage 6 Science syllabus (i.e., Physics, Chemistry, Biology or Earth and Environmental Science) and the Stage 4/5 and 6 Support Documents.

It is not necessary to purchase High School Science text books for this course. Textbooks will not usually be used during tutorials.

Optional Senior Textbooks
Chidrawi G, Robson, M., Hollis. S. (2008) Biology in Focus
Smith, R (2004) Conquering Chemistry 4th Edition
Xiao L. Wu, Farr, R. (2009) Physics in Focus

Optional Junior Textbooks
Jenny Zhang, Diane Alford, David McGowan, Craig Tilley (2013) Oxford Insight Science 9 &10 (oBook version)
Additional readings
- Anstey, M. & Bull, G. (2006) T*eaching and learning multiliteracies: Changing times, changing literacies.* Curriculum Press, Melbourne.
- Attwood, B. (2005), *Telling the truth about Aboriginal history.* All and Unwin, Crows Nest.
- Bryson, B. (2004) A Short History of Nearly Everything, Black Swan, London
- Finger, G., Russell, G., Jamieson-Proctor, R. & Russell, N. (2006) *Transforming Learning with ICT Making IT Happen.* Pearson Australia
- Gibbons, P (2002) *Scaffolding language, scaffolding learning: Teaching second language learners in the mainstream classroom.* Portsmouth, Heinemann
- Hazzard, J. (2004) The Art of Teaching Science: Inquiry and Innovation in Middle School and High School
- Henderson, R. (2012). *Teaching Literacies. Pedagogies and Diversity in the Middle Years*, Oxford University Press, Australia
- Hyde, M., Carpenter, L. & Conway, R. (2010). *Diversity and Inclusion in Australian Schools.* Oxford University Press, Australia
- Martin, K. (2008). The intersection of Aboriginal knowledges, Aboriginal literacies and new learning pedagogy for Aboriginal students. In Healy, A (Ed.) *Multiliteracies and diversity in education: New pedagogies for expanding landscapes* pp 59-81. Oxford University Press, Melbourne.
- Price, K (2012), *Aboriginal and Torres Strait Islander Education: An Introduction for the Teaching Profession.* Cambridge University Press

Recommended websites
NSW Board of Studies
http://www.boardofstudies.nsw.edu.au/

Science Teachers Association of NSW
http://www.stansw.asn.au

Moodle – Getting Started for Teachers http://docs.moodle.org/en/Getting_started_for_teachers

Moodle – Teacher Documentation
http://docs.moodle.org/en/Teacher_documentation

Student Name:
Task 1 - Stage 6 Lesson Plan

SPECIFIC CRITERIA	(-)			➤	(+)
Understanding of the question or issue and the key concepts involved					
• understanding of the lesson planning process, the requirements of a Stage 6 syllabus					
• understanding of the rationale for selection and organisation of content and skills					
• clarity and accuracy in use of key terms and concepts in Science teaching					
Depth of analysis and/or critique in response to the task					
• depth of knowledge of the NSW syllabus documents and other relevant curriculum documents					
• rationale justifies choice of content, instructional strategies, grouping arrangements, etc.					
• appropriate selection of syllabus outcomes and content					
• links between the lesson plan and the rest of the unit of work evident					
• appropriate sequencing, timing and pace					
• appropriate choice of teaching strategies					
• lesson includes either an aspect of literacy or an aspect of numeracy					
• suitable worksheet included					
Familiarity with and relevance of professional and/or research literature used to support response					
• reference specifically to material, research and ideas in professional literature					
Structure and organisation of the response					
• appropriateness of overall structure of response					
• clarity and coherence of organisation; logical sequence					
• use of appropriate format					
Presentation of response according to appropriate academic and linguistic conventions					
• clarity, consistency and appropriateness of conventions for quoting, citing, paraphrasing, attributing sources of information, and listing references (APA style)					
• clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length					

GENERAL COMMENTS

Lecturer   **Date**

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

NB: The ticks in the various boxes are 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.**

Student Name:
Task 2 – ICT Portfolio

SPECIFIC CRITERIA	(-)			➤	(+)

Understanding of the question or issue and the key concepts involved
• understanding of the task, including
  - a reflective discussion of the potential for student engagement
  - links to the syllabus, including outcomes and content statements
  - illustrated descriptions of each how the activity could be used,
  - screenshot(s) to illustrate the use of the ICT
  - hyperlinks for animations, websites and Web 2.0 tools or Apps
• clarity and accuracy in use of key terms and concepts in Science teaching					

Depth of analysis and/or critique in response to the task • ability to plan and assess for effective learning by designing lesson sequences using knowledge of the NSW syllabus documents or other curriculum requirements of the Education Act					
Familiarity with and relevance of professional and/or research literature used to support response • reference specifically to material, research and ideas presented in Science method lectures and from the Professional Experience lectures.					
Structure and organisation of the response • clarity and coherence of organisation; logical sequence • material presented in an engaging way • appropriate use of a Web 2.0 tool or App					
Presentation of response according to appropriate academic and linguistic conventions • clarity, consistency and appropriateness of conventions for quoting, citing, paraphrasing, attributing sources of information, and listing references (APA style) • clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length					

GENERAL COMMENTS

Lecturer   **Date**
Recommended: **/20**   (FL PS CR DN HD)   **Weighting:**   **20%**

NB: The ticks in the various boxes are 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.**

STUDENT TEACHER	
Name:	Date:

Details			
Method		Topic/level	

Standards	Comments
A. Teachers know their subject content and how to teach that content to their students (AITSL Standard 2) • Was the lesson or unit of work relevant to the needs of the students and based on the appropriate syllabus document requirements? (1.3.1, 2.3.1) • Was knowledge of relevant concepts, topics and themes demonstrated, including ATSI perspectives? (2.1.1, 2.4.1) • Were relevant linguistic structures and features and literacy /numeracy knowledge and skills integrated into the lesson? (2.5.1) • Was a clear and coherent sequence of activities undertaken to engage and support the learning of all students within a class or cohort? (2.2.1, 3.2.1) • Were the teaching resources and materials suitable for the aims of the lesson? (2.1.1) • Were tasks required of students modelled and scaffolded? (2.1.1, 3.3.1)	
B. Teachers plan for and implement effective teaching and learning (AITSL Standard 3) • Were challenging yet realistic and achievable goals in teaching and learning activities planned? Were these explicitly articulated in the lesson plan/to students? (3.1.1) • Were instructions, explanations and questioning techniques effective? (3.3.1) • Were verbal and non-verbal communication strategies used effectively in the classroom to support student understanding of content and encourage participation and engagement of students? (3.5.1) • Was students' understanding continually monitored and students' achievement of the learning outcomes noted? (3.6.1)	
C. Teachers create and maintain supportive and safe learning environments (AITSL Standard 4) • Was rapport with the learners established and responsiveness to their needs in the class demonstrated? (4.1.1) • Were activities well organised and direction clear? (4.2.2) • Was respect and appreciation of others demonstrated through active listening, being accessible to all students and exhibiting a caring attitude? (4.1.1, 4.4.1, 1.1.1)	

Comments:

Lecturer: **Date:**   **Satisfactory /Unsatisfactory (circle)**

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Student Name:

Task 4 – Unit of Work for Stage 4 or 5 Science

SPECIFIC CRITERIA	(-) —————————➤ (+)				
Understanding of the question or issue and the key concepts involved					
• understanding of the task, including both a rationale and a unit of work including the nature and history of science, working scientifically skills, appropriate ICTs, cross-curriculum priorities , general capabilities, clarity and accuracy in use of key terms and concepts in lesson and unit planning					
Depth of analysis and/or critique in response to the task					
• ability to plan and assess for effective learning by designing lesson sequences using knowledge of the NSW syllabus documents or other curriculum requirements of the Education Act, including: ○ An appropriate and engaging context and a justification the chosen context, linked to a list of syllabus outcomes covered by the unit as a whole, including Knowledge and Understanding, Values and Attitudes and Working Scientifically skills ○ appropriate content and teaching strategies targeting Knowledge and Understanding outcomes ○ appropriate content and teaching strategies targeting Working Scientifically Skill outcomes ○ appropriate content and teaching strategies targeting Values and Attitudes outcomes ○ appropriate content and teaching strategies targeting the Nature of Science ○ appropriate content and teaching strategies targeting the History of Science ○ appropriate content and teaching strategies targeting Incorporation of ICT, both as a teaching strategy and as a student skills ○ appropriate content and teaching strategies targeting literacy ○ appropriate content and teaching strategies targeting numeracy ○ appropriate content and teaching strategies targeting Cross Curriculum priorities ○ appropriate content and teaching strategies targeting General Capabilities • design of a unit outline ○ which demonstrates an ability to differentiate the curriculum to cater for diverse learning approaches and needs whilst ensuring student engagement with the material taught ○ which uses teaching strategies related to the needs and abilities of the class • demonstration of knowledge of, and respect for, the diverse social, ethnic, cultural and religious backgrounds of students and the effects of these factors on learning, including a description of the prior learning students must have to begin this unit and discussion of how this prior learning could be assessed					
Familiarity with and relevance of professional and/or research literature used to support response					
• range and appropriacy of references to the professional literature					
Structure and organisation of the response					
• appropriateness of overall structure of response					
• clarity and coherence of organization; logical sequence					
• use of appropriate format					
Presentation of response according to appropriate academic and linguistic conventions					
• contributions are complete and of a standard suitable for use with secondary school students					
• clarity, consistency and appropriateness of conventions for quoting, citing, paraphrasing, attributing sources of information, and listing references (APA style)					
• clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length					
GENERAL COMMENTS					

Lecturer   **Date**

Recommended: **/20**   **(FL PS CR DN HD)**   **Weighting:**   **30%**

NB: The ticks in the various boxes are 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.**

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Student Name:
Task 5 – Critical Reflection

SPECIFIC CRITERIA	(-)			➤	(+)
Understanding of the question or issue and the key concepts involved					
• understanding of the task by clearly identifying and responding to the main issues raised in the forum and their relationship to relevant areas of theory, research and practice					
Depth of analysis and/or critique in response to the task					
• Depth of analysis in initial response to forum posts by lecturers.					
• Sustained and meaningful post to initiate discussion.					
• Sustained and meaningful posts to contribute to discussions initiated by other students					
Familiarity with and relevance of professional and/or research literature used to support response					
• Responses include reference specifically to material, research and ideas presented in Science method lectures and from the Professional Experience lectures.					
Structure and organization of the response					
• ongoing engagement with forum, class wikis/discussions in Moodle maintained throughout the course					
• Engagement with forum, class wikis/discussions in Moodle maintained in a timely manner					
Presentation of response according to appropriate academic and linguistic conventions					
• contributions are complete and of a standard suitable for use with secondary school students					
• clarity, consistency and appropriateness of conventions for quoting, citing, paraphrasing, attributing sources of information, and listing references (APA style)					
• clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length					
GENERAL COMMENTS					

Lecturer   **Date**
Recommended: **/20**   **(FL PS CR DN HD)**   **Weighting:**   **30%**

NB: The ticks in the various boxes are 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.**

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