



**UNSW**  
SYDNEY

**Arts & Social Sciences**

School of Education

EDST6713

Science Double Method 1

Semester 1, 2018

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### **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 Bedegal 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, 2018

## 2. STAFF CONTACT DETAILS

Course Coordinator: Judith Morgan  
Email: [ja.morgan@unsw.edu.au](mailto:ja.morgan@unsw.edu.au)  
Availability: Monday 7.00 – 7.15 pm

Tutor: Rana Kaddour  
Email: [r.kaddour@unsw.edu.au](mailto:r.kaddour@unsw.edu.au)  
Availability: Monday 7.00 – 7.15 pm

Tutor: Jennifer Min  
Email: [j.ming@unsw.edu.au](mailto:j.ming@unsw.edu.au)  
Availability: Thursday 7.30 – 7.45 pm

Tutor: Oriano Miano  
Email: [o.miano@unsw.edu.au](mailto:o.miano@unsw.edu.au)  
Availability: Thursday 7.30 – 7.45 pm

## 3. COURSE DETAILS

<b>Course Name</b>	Science Double Method 1
<b>Credit Points</b>	12 units of credit (uoc)
<b>Workload</b>	Includes 300 hours including class contact hours, readings, class preparation, assessment, follow up activities, etc.
<b>Schedule</b>	<a href="http://classutil.unsw.edu.au/EDST_S1.html">http://classutil.unsw.edu.au/EDST_S1.html</a>

### *Summary of Course*

This teacher education course is designed to develop 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.

### *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:

- Task 5 Critical Reflection forum will consist of a blog which critically analyses student progress towards completion of assessment tasks

### *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*

<i>Outcome</i>		
1	Identify foundational aspects and structure of the NSW Board of Studies Science Syllabus and the depth of subject knowledge required to implement the syllabus	1,2,3,4,5
2	Evaluate how student characteristics affect learning and evaluate implications for teaching students with different characteristics and from diverse backgrounds	1, 2,4
3	Use a range of strategies to plan and teach effective lessons to engage all students, address relevant syllabus outcomes and ensure a safe learning environment	1, 2, 3, 4,5
4	Plan teaching strategies which effectively communicate the Nature and practice of Science, the role and value of science in society and the History of Science, and how these strategies contribute to pedagogical content knowledge	4, 5
5	Design and evaluate formative assessment strategies and use assessment information to improve learning	1, 3, 4, 5
6	Select appropriate resources, including ICT, to engage students and expand learning opportunities	1, 2, 3, 5
7	Describe strategies that support students' wellbeing and safety in the Science setting, and curriculum and legislative requirements related to safety in Science.	1, 3, 5
8	Practise the ethical and professional values expected of teachers	3, 4, 5

### *AITSL Professional Graduate Teaching Standards*

<i>Standard</i>		
1.1	Demonstrate knowledge and understanding of physical, social and intellectual development and characteristics of students and how these may affect learning	2
1.2	Demonstrate knowledge and understanding of research into how students learn and the implications for teaching	1, 2, 3
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
1.4	Demonstrate broad knowledge and understanding of the impact of culture, cultural identity and linguistic background on the education of students from Aboriginal and Torres Strait Islander backgrounds	2
1.5	Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities	1, 2
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
2.2	Organise content into an effective learning and teaching sequence	1, 2, 3
2.3	Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans	2
2.4	Demonstrate broad knowledge of, understanding of and respect for Aboriginal and Torres strait Islander histories, cultures and languages	2
2.5	Know and understand literacy and numeracy teaching strategies and their application in teaching areas	1, 2
2.6	Implement teaching strategies for using ICT to expand curriculum learning	1, 2

	opportunities for students	
3.1	Set learning goals that provide achievable challenges for students of varying characteristics	1, 2
3.2	Plan lesson sequences using knowledge of student learning, content and effective teaching strategies	1, 2, 3
3.3	Include a range of teaching strategies	1, 2
3.4	Demonstrate knowledge of a range of resources including ICT that engage students in their learning	1, 2
3.5	Demonstrate a range of verbal and non-verbal communication strategies to support student engagement	3
3.6	Demonstrate broad knowledge of strategies that can be used to evaluate teaching programs to improve student learning	2
4.1	Identify strategies to support inclusive student participation and engagement in classroom activities	1, 2, 3
4.2	Demonstrate the capacity to organise classroom activities and provide clear directions	3
4.3	Demonstrate knowledge of practical approaches to manage challenging behaviour	3
4.5	Demonstrate an understanding of relevant issues and the strategies available to support the safe, responsible and ethical use of ICT in learning and teaching	2
5.1	Demonstrate understanding of assessment strategies, including informal and formal, diagnostic, formative and summative approaches to assess student learning	1, 2
5.3	Demonstrate understanding of assessment moderation and its application to support consistent and comparable judgements of student learning	(Sem. 2)
5.4	Demonstrate the capacity to interpret student assessment data to evaluate student learning and modify teaching practice	(Sem. 2)
6.2	Understand the relevant and appropriate sources of professional learning for teachers	(Sem. 2)
6.3	Seek and apply constructive feedback from supervisors and teachers to improve teaching practices	1, 2, 3
7.1	Understand and apply the key principles described in codes of ethics and conduct for the teaching profession	1, 2, 3

*National Priority Area Elaborations*

Priority area	
A. Aboriginal and Torres Strait Islander Education	1, 2, 3, 4, 5, 6, 7, 8, 9,10, 11, 12
B. Classroom Management	1, 2, 3, 4, 5, 6, 7, 8, 9,10
C. Information and Communication Technologies	1, 2, 3, 4, 5, 6, 7, 8, 9,10, 11, 12, 13, 14
D. Literacy and Numeracy	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19

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E. Students with Special Educational Needs	1, 2, 3, 4, 5, 6, 7, 8, 9
F. Teaching Students from Non-English Speaking Backgrounds	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

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#### **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 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 develop teamwork in an educational context and to demonstrate the use of group structures 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
- Microteaching: students will prepare and deliver a twenty-minute demonstration lesson to their peers
- In tutorials, students will work in small groups to develop diverse products such as contexts, sections of units of work, lesson plans, teaching resources, and assessment tasks. Each group will upload and share their work in progress to Moodle by 6.45pm on Monday's tutorial and 7.15pm on Thursday's tutorial evening. This work will be monitored, and will contribute to the total grade for each student. A debriefing session will be conducted after work submission during each tutorial.
- In Weeks 9 & 10, students will be broken up into tutorial subgroups based on their preferred senior subject.

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

## 6. COURSE CONTENT AND STRUCTURE

WEEK	MONDAY 4.00 – 7.00 pm	THURSDAY 4.30 – 7.30 pm
1 26 Feb – 2 Mar	<p><b>Lecture:</b></p> <ul style="list-style-type: none"> <li>• Introduction to course structure and requirements</li> <li>• Where to find information and resources</li> <li>• Discussion of assigned reading related to               <ul style="list-style-type: none"> <li>- Why do Science?</li> <li>- The nature of Science</li> <li>- What is Science Literacy?</li> <li>-The role of the Nature and Practice of Science in Science teaching</li> </ul> </li> </ul> <p><b>Tutorial:</b> What should be the nature of Science teaching in contemporary schools?</p> <p><b>Literacy and Numeracy</b> D1, 2, 3</p>	<p><b>Lecture:</b></p> <ul style="list-style-type: none"> <li>• Discussion of assigned reading related to               <ul style="list-style-type: none"> <li>-The role of the History of Science in Science teaching</li> <li>- Developing contexts – making Science relevant</li> </ul> </li> </ul> <p><b>Tutorial:</b> Developing contexts to incorporate the Nature of Science, the History of Science and the Working Scientifically skills</p> <p><b>ICT</b> C1,2,3,4,5,6,7,8,9,10,12,14</p> <p><b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>



<p>2 4 Mar – 9 Mar</p>	<p><b>Lecture:</b> • Deconstructing the Stage 4/5 Syllabus: structure &amp; requirements <b>Tutorial:</b> Analysing the syllabus and associated documents <b>ICT</b> C1,2,3,4,5,6,7,8,9,10,12,14 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>	<p><b>Lecture:</b> • Teaching strategies for Science <b>Tutorial:</b> Developing a repertoire of teaching strategies for Science teaching; catering for diverse learners <b>Classroom Management</b> B1, 5, 7, 10 <b>ICT</b> C1,2,3,4,5,6,7,8,9,10,12,14 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>
<p>3 12 Mar – 16 Mar</p>	<p><b>Lecture:</b> • Incorporating ICT into Science lessons <b>Microteaching</b> <b>Tutorial:</b> Planning Stage 4/5 lessons using ICT <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>	<p><b>Lecture:</b> • Using the syllabus to plan Stage 4/5 lessons <b>Microteaching</b> <b>Tutorial:</b> Planning Stage 4/5 lessons <b>Classroom Management</b> B1, 5, 7, 10 <b>ICT</b> C1,2,3,4,5,6,7,8,9,10,12,14 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>
<p>4 19 Mar – 23 Mar</p>	<p><b>Lecture:</b> • Practical Work and the Working Scientifically Outcomes, including the incorporation of literacy and numeracy strategies <b>Microteaching</b> <b>Tutorial:</b> Developing a repertoire of teaching strategies for Science teaching – practical work <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6 8</p>	<p><b>Lecture:</b> • Safety in the Science Laboratory <b>Microteaching</b> <b>Tutorial:</b> Developing a repertoire of teaching strategies for Science teaching – practical work <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6 8</p>
<p>5 26 Mar – 30 Mar</p>	<p><b>Off-site: Matraville High School</b> <b>Lecture:</b> • Orientation to a high school laboratory <b>Microteaching</b> <b>Tutorial:</b> Familiarisation with a high school laboratory <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6 8</p>	<p><b>Off-site: Matraville High School</b> <b>Lecture:</b> • Modelling of one practical Science Stage 4/5 lesson by each tutor <b>Microteaching</b> <b>Tutorial:</b> Conducting practical work in a high school laboratory <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6 8</p>
<b>Mid-semester break</b>		
<p>6 9 Apr – 13 Apr</p>	<p><b>Off-site: Matraville High School</b> <b>Lecture:</b> • Strategies for managing practical work <b>Microteaching</b> <b>Tutorial:</b> Conducting practical work in a high school laboratory <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6 8</p>	<p><b>Off-site: Matraville High School</b> <b>Lecture:</b> • Use of data loggers <b>Microteaching</b> <b>Tutorial:</b> Using data loggers <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>

<p>7 16 Apr – 20 Apr</p>	<p><b>Lecture:</b> • Planning Units of Work: using the Stage 4/5 Syllabus <b>Microteaching</b> <b>Tutorial:</b> Developing a Unit of work for Stage 4/5 <b>Classroom Management</b> B1, 5, 7, 10 <b>ICT</b> C1,2,3,4,5,6,7,8,9,10,12,14 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>	<p><b>Lecture:</b> • Planning Units of Work: using the Stage 4/5 Syllabus <b>Microteaching</b> <b>Tutorial:</b> Developing a Unit of work for Stage 4/5 <b>Classroom Management</b> B1, 5, 7, 10 <b>ICT</b> C1,2,3,4,5,6,7,8,9,10,12,14 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>
<p>8 23 Apr – 27 Apr  ANZAC Day 25<sup>th</sup> April</p>	<p><b>Lecture:</b> • Strategies to improve numeracy in Stage 4/5 <b>Microteaching</b> <b>Tutorial:</b> Strategies to improve numeracy in Stage 4/5 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>	<p><b>Lecture:</b> • Strategies to improve literacy in Stage 4/5 <b>Microteaching</b> <b>Tutorial:</b> Strategies to improve literacy in Stage 4/5 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>
<p>9 30 Apr – 4 May</p>	<p><b>Lecture:</b> • Overview and philosophy of Stage 6 syllabuses, including: - Inquiry questions - Inclusion of skills - Need for contextualisation <b>Microteaching</b> <b>Tutorial:</b> Deconstruction of one Stage 6 syllabus <b>Literacy and Numeracy</b> D1, 2, 3</p>	<p><b>Lecture:</b> • Lesson planning in Stage 6 <b>Microteaching</b> <b>Tutorial:</b> Planning lessons in Stage 6 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>
<p>10 7 May – 11 May</p>	<p><b>Lecture:</b> • Lesson Planning for Stage 6 Practical Work <b>Tutorial:</b> Lesson Planning for Stage 6 Practical Work <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19 <b>Classroom Management</b> B1, 5, 7, 10</p>	<p><b>Lecture:</b> • Preparing for Professional Experience • Completion of CATEI reports <b>Tutorial:</b> Organisational strategies <b>Classroom Management</b> B1, 5, 7, 10 <b>ICT</b> C1,2,3,4,5,6,7,8,9,10,12,14 <b>Literacy and Numeracy</b> D1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 15, 17, 18, 19</p>
<p><b>Professional Experience</b>  <b>4<sup>th</sup> June – 29<sup>th</sup> June 2018</b></p>		

## 7. ASSESSMENT

Assessment Task	Length	Weight	Student Learning Outcomes Assessed	AITSL Standards	National Priority Area Elaborations	Due Date Friday of
<b>Task 1</b> Lesson Plan	2000 words	20%	1, 3, 4, 5, 6, 7, 8	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	A 3, 5, 8 B1, 5, 7, 10 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 4 23 March
<b>Task 2</b> ICT Portfolio	3500 words	30%	1, 2, 3, 4, 6	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	Week 6 13 April
<b>Task 3</b> Microteaching	N/A	S/N	1, 2, 3, 4, 5, 6, 7, 8	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 - 9
<b>Task 4</b> Unit of Work	3500 words	30%	1, 2, 3, 4, 5, 6, 7, 8	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	Week 11 18 May
<b>Task 5</b> Critical Reflection and Contributions to forums	2000 words equiv.	20%	1, 2, 3, 4, 5, 6, 7, 8	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	Weeks 1 – 10 ongoing

*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. Students 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.*

## *Assessment Details*

### **Task 1 – LESSON PLAN**

Plan and design one 60-minute lesson for a mixed-ability Stage 4 class. The lesson plan must follow a standard SED format and be presented using the template provided.

Plan your lesson for a class in a comprehensive high school which would typically include EAL/D students, Indigenous students and students with various religious and cultural backgrounds. Some students may have low levels of literacy. Differentiation to cater for some students is therefore required. Appropriate differentiation strategies are scaffolding, group work and/or an alternative task or mode of presentation.

1. Write a rationale for your lesson plan. Your rationale should address the questions: What do I want the students to learn? Why is it important? What strategies will I use? What assessment for learning strategies will I use to monitor progress?
2. Prepare the lesson plan to demonstrate how you will use appropriate structure, activities, strategies and formative assessment to develop understanding of the material.

Make sure you

- choose an appropriate topic for the year group
- support your rationale using references indicating your professional reading
- choose appropriate outcomes and lesson content
- choose an appropriate context
- demonstrate knowledge of effective teaching and learning strategies
- use appropriate format and provide sufficient detail for an effective lesson plan
- include an aspect of literacy/numeracy which integrates with the lesson focus
- provide in full one activity (which may be ICT-based)
- express yourself in clear, standard Australian English.

## Task 2 - ICT PORTFOLIO

You are to produce a portfolio of ICT-based activities. The activities should be as follows:

- **three** activities that make use of Web Apps, eg an online timeline maker or a collaborative flow chart  
**AND**
- **three** activities that are based on the use of different online simulations of a scientific principles  
**AND**
- **one** activity that is based on websites that focus on Aboriginal and Torres Strait Islander Science

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 activity 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 Apps.

The Apps you present should be freely available to any student without cost.

You **MUST** present your portfolio as a website, using a free website builder such as Wix, Weebly, Wikispaces or Google Sites. If possible, you should embed a "Date Last Edited" code into your website.

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.**

Any Website URLs included in your tasks must be hyperlinked

## 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 SED template**, including a statement of expected learning outcomes
2. A 20-minute mini-lesson.

**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, using readily available materials. You must use the SED template provided to you in lectures. The main focus of the lesson should be on the delivery by the teacher of some science content and/or skills, supported by a demonstration. You should explicitly state the learning outcomes expected at the beginning of your lesson. Explicit teaching/acknowledgement of the literacy/numeracy needs required to access the content of the lesson must be included.

The final lesson plan should be submitted to the tutor via email on the day the lesson is presented, as well as a hard copy. The plan should include:

- an overview of the main ideas presented
- the expected student outcomes and content statements covered explicitly stated
- 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 the demonstration
- a brief activity that addresses literacy or numeracy

This task 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

Prepare an outline for a unit of work for a Stage 5 class. The unit of work should cover the first five lessons, which are 80 minutes each; however, you are not preparing full lesson plans.

You must write a rationale for the unit (600-800 words) in which you

- provide a brief outline of the school and class context
- state precisely what you want the students to learn and why it is important
- describe and justify your choice of context to suit the needs and abilities of this class
- justify your teaching strategies by referring to readings, research and material presented in lectures and the Quality Teaching framework
- demonstrate how differentiation will support a diverse range of learners
- describe the prior knowledge students have to begin this unit and discuss how you would assess and build on this prior knowledge.

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.

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.

- syllabus content statements for each lesson
- a description of the activities in each lesson
- one full activity for formative assessment (not an essay)
- one ICT-based activity (not watching a video or PowerPoint presentation)
- one group-work task with a focus on literacy/numeracy (not a mind-map)
- one incursion/excursion/performance/product activity
- outlines only for the other teaching materials required

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.**

Any Website URLs included in your tasks must be hyperlinked.

## **Task 5 LEARNING LOG AND CONTRIBUTIONS TO CLASS FORUMS**

Throughout the semester, students will maintain a learning log, via a public blog provided in Moodle. The blog should contain regular posts in which students reflect on their learning and provide evidence of their progress on assessment tasks.

The blog should be a collection of your work throughout the course. This work becomes your evidence that is mapped to the AITSL Graduate Teaching Standards. For example, if you design a literacy or numeracy activity/resource in tutorial you should upload your completed activity to your blog and then link this to the standard 2.5. Then complete a reflection which may include how you could use the resource while you are on Professional Experience or identify which type of student would benefit from this type of resource.

To promote a collaborative teaching environment, students are to provide several reflective comments in response to the posts of fellow colleagues in the course.

**In addition** to posting to the forums, students are expected to make a significant contribution to the resources developed during tutorials. Class forums will be set up to allow collaboration and sharing of resources amongst students. Students will be assigned to tutorial groups via Moodle, and will be required to contribute to the forums as a tutorial group.

More information will be provided in lectures.

Any Website URLs included in your tasks must be hyperlinked.



## 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.

### *Return of Assessment Tasks*

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

### *Feedback*

<b>Assessment Task</b>	<b>Feedback Mechanism</b>	<b>Feedback Date</b>
<b>Task 1</b> Lesson Plan	Feedback sheet via Moodle	Week 8 Monday 9 April
<b>Task 2</b> ICT Portfolio	Feedback sheet via Moodle	Week 10 Monday 30 April
<b>Task 3</b> Microteaching	Written feedback sheet	One week after delivery of Microteaching lesson
<b>Task 4</b> Unit of Work	Feedback sheet via Moodle	Wednesday 30 May
<b>Task 5</b> Learning Log and Contributions to forums	Feedback sheet via Moodle	Wednesday 30 May

## 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

Bill Matchett, Dr Silvia Rudmann, Sarah Collins, Kirstin Ellard (2018) Investigating Science in Focus Preliminary Student Book

Glenda Chidrawi, Sarah Bradstock, Margaret Robson, Elizabeth Thrum (2018) Biology in Focus Year 11 Student Book

Roland Smith , Anna Davis (2018) Chemistry in Focus Prelim 11 Student Book

Kate Wilson, Rob Farr, Philip Young (2018) Physics in Focus Year 11 Student Book

### 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) *Teaching 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

NESA

<http://syllabus.nesa.nsw.edu.au/science/>

Science Teachers Association of NSW

<http://www.stansw.asn.au>

UNSW SCHOOL OF EDUCATION  
 FEEDBACK SHEET  
 EDST6713 SCIENCE DOUBLE METHOD 1

Student Name:

Task 1 – Lesson Plan

SPECIFIC CRITERIA	(-)	—————>			(+)
<b>Understanding of the question or issue and the key concepts involved</b> Rationale for lesson plan addresses the questions: <ul style="list-style-type: none"> <li>• What do I want the students to learn?</li> <li>• Why is it important?</li> <li>• What strategies will I use?</li> <li>• What assessment for learning strategies will I use to monitor progress?</li> <li>• Rationale supported using references indicating your professional reading</li> </ul>					
<b>Depth of analysis and/or critique in response to the task</b> <ul style="list-style-type: none"> <li>• appropriate topic choice for the year group</li> <li>• appropriate choice of outcomes and lesson content</li> <li>• appropriate choice of context</li> <li>• demonstrates knowledge of effective teaching and learning strategies</li> <li>• appropriate selection of student activities</li> <li>• depth of knowledge of the NSW syllabus documents and other relevant curriculum documents</li> <li>• links between syllabus outcomes and the chosen activities evident</li> </ul>					
<b>Familiarity with and relevance of professional and/or research literature used to support response</b> <ul style="list-style-type: none"> <li>• reference specifically to material, research and ideas presented in Science method lectures</li> </ul>					
<b>Structure and organisation of the response</b> <ul style="list-style-type: none"> <li>• appropriateness of overall structure of response</li> <li>• clarity and coherence of organisation; logical sequence</li> <li>• use of appropriate format</li> </ul>					
<b>Presentation of response according to appropriate academic and linguistic conventions</b> <ul style="list-style-type: none"> <li>• clarity, consistency and appropriateness of conventions for quoting, citing, paraphrasing, attributing sources of information, and listing references (APA style)</li> <li>• clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length</li> </ul>					
<b>GENERAL COMMENTS</b>					

Lecturer

Date

Recommended:     /20     Grade:

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.**

UNSW SCHOOL OF EDUCATION  
FEEDBACK SHEET  
EDST6713 SCIENCE DOUBLE METHOD 1

Student Name:

Task 2 – ICT Portfolio

SPECIFIC CRITERIA	(-)  (+)				
<b>Understanding of the question or issue and the key concepts involved</b> <ul style="list-style-type: none"> <li>• understanding of the task, including               <ul style="list-style-type: none"> <li>- a reflective discussion of the potential for student engagement</li> <li>- links to the syllabus, including outcomes and content statements</li> <li>- illustrated descriptions of each how the activity could be used,</li> <li>- screenshot(s) to illustrate the use of the ICT</li> <li>- hyperlinks for animations, websites and Web 2.0 tools or Apps</li> </ul> </li> <li>• clarity and accuracy in use of key terms and concepts in Science teaching</li> </ul>					
<b>Depth of analysis and/or critique in response to the task</b> <ul style="list-style-type: none"> <li>• 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</li> </ul>					
<b>Familiarity with and relevance of professional and/or research literature used to support response</b> <ul style="list-style-type: none"> <li>• reference specifically to material, research and ideas presented in Science method lectures and from the Professional Experience lectures.</li> </ul>					
<b>Structure and organisation of the response</b> <ul style="list-style-type: none"> <li>• clarity and coherence of organisation; logical sequence</li> <li>• material presented in an engaging way</li> <li>• appropriate construction of a functional website</li> </ul>					
<b>Presentation of response according to appropriate academic and linguistic conventions</b> <ul style="list-style-type: none"> <li>• clarity, consistency and appropriateness of conventions for quoting, citing, paraphrasing, attributing sources of information, and listing references (APA style)</li> <li>• clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length</li> </ul>					
<b>GENERAL COMMENTS</b>					

Lecturer

Date

Recommended:      /20      Grade:

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	
<p><b>A. Teachers know their subject content and how to teach that content to their students (AITSL Standard 2)</b></p> <ul style="list-style-type: none"> <li>• 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)</li> <li>• Was knowledge of relevant concepts, topics and themes demonstrated, including ATSI perspectives? (2.1.1, 2.4.1)</li> <li>• Were relevant linguistic structures and features and literacy /numeracy knowledge and skills integrated into the lesson? (2.5.1)</li> <li>• 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)</li> <li>• Were the teaching resources and materials suitable for the aims of the lesson? (2.1.1)</li> <li>• Were tasks required of students modelled and scaffolded? (2.1.1, 3.3.1)</li> </ul>			
<p><b>B. Teachers plan for and implement effective teaching and learning (AITSL Standard 3)</b></p> <ul style="list-style-type: none"> <li>• 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)</li> <li>• Were instructions, explanations and questioning techniques effective? (3.3.1)</li> <li>• 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)</li> <li>• Was students' understanding continually monitored and students' achievement of the learning outcomes noted? (3.6.1)</li> </ul>			
<p><b>C. Teachers create and maintain supportive and safe learning environments (AITSL Standard 4)</b></p> <ul style="list-style-type: none"> <li>• Was rapport with the learners established and responsiveness to their needs in the class demonstrated? (4.1.1)</li> <li>• Were activities well organised and direction clear? (4.2.2)</li> <li>• 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)</li> </ul>			
<p><b>Comments:</b></p>			

Lecturer:

Date:

Satisfactory /Unsatisfactory (circle)

UNSW SCHOOL OF EDUCATION  
FEEDBACK SHEET  
EDST6713 SCIENCE DOUBLE METHOD 1

Student Name:

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

SPECIFIC CRITERIA	(-) <span style="font-size: 2em;">→</span> (+)				
<b>Understanding of the question or issue and the key concepts involved</b> <ul style="list-style-type: none"> <li>• understanding of the task, including both a rationale and a unit of work</li> </ul>					
<b>Depth of analysis and/or critique in response to the task</b> <ul style="list-style-type: none"> <li>• 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 a rationale that includes:               <ul style="list-style-type: none"> <li>- a brief outline of the school and class context</li> <li>- a statement of what students should learn and why it is important</li> <li>- a description and justification of choice of context</li> <li>- justification of teaching strategies by referring to readings, research and material presented in lectures and the Quality Teaching framework</li> <li>- demonstration of how differentiation will support a diverse range of learners</li> <li>- description of the prior knowledge students have to begin this unit and discussion of how this prior knowledge will be assessed and built on</li> </ul> </li> <li>• design of a unit outline               <ul style="list-style-type: none"> <li>- which uses teaching strategies related to the needs and abilities of the class</li> <li>- contains an embedded context</li> <li>- employs a logically sequenced series of lesson outlines, utilising a variety of teaching strategies</li> <li>- has potential for student engagement with the material taught</li> <li>- contains the required lesson activities</li> </ul> </li> </ul>					
<b>Familiarity with and relevance of professional and/or research literature used to support response</b> <ul style="list-style-type: none"> <li>• reference specifically to material, research and ideas presented in Science method lectures and from the Professional Experience lectures.</li> </ul>					
<b>Structure and organisation of the response</b> <ul style="list-style-type: none"> <li>• appropriateness of overall structure of response</li> <li>• clarity and coherence of organization; logical sequence</li> <li>• use of appropriate format</li> </ul>					
<b>Presentation of response according to appropriate academic and linguistic conventions</b> <ul style="list-style-type: none"> <li>• contributions are complete and of a standard suitable for use with secondary school students</li> <li>• clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length</li> </ul>					
<b>GENERAL COMMENTS</b>					

**Lecturer**

**Date**

**Recommended: /20**

**Grade:**

**Weighting: 30%**

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UNSW SCHOOL OF EDUCATION  
FEEDBACK SHEET  
EDST6713 SCIENCE DOUBLE METHOD 1

Student Name:

Task 5 – Learning Log and Contributions to Class forums

SPECIFIC CRITERIA	(-) <span style="font-size: 2em;">→</span> (+)				
<b>Understanding of the question or issue and the key concepts involved</b> <ul style="list-style-type: none"> <li>understanding of the task by clearly identifying and responding to the main issues raised in lectures and assessment tasks and their relationship to relevant areas of theory, research and practice</li> </ul>					
<b>Depth of analysis and/or critique in response to the task</b> <ul style="list-style-type: none"> <li>Depth of analysis in personal blog posts</li> <li>Depth of analysis in response to blog posts by other students</li> </ul>					
<b>Familiarity with and relevance of professional and/or research literature used to support response</b> <ul style="list-style-type: none"> <li>Responses include reference specifically to material, research and ideas presented in Science method lectures and from the Professional Experience lectures.</li> </ul>					
<b>Structure and organization of the response</b> <ul style="list-style-type: none"> <li>ongoing engagement with forums in Moodle maintained throughout the course</li> <li>Engagement with forums in Moodle maintained in a timely manner</li> </ul>					
<b>Presentation of response according to appropriate academic and linguistic conventions</b> <ul style="list-style-type: none"> <li>contributions are complete and of a suitable standard</li> <li>clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length</li> </ul>					
<b>GENERAL COMMENTS</b>					

**Lecturer**

**Date**

**Recommended:     /20     Grade:**

**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.**