UNSW SYDNEY Arts & Social Sciences

School of Education

EDST6953
Physics Method 2

Term 2 2020

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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 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
EDST6953 Physics Method 2 (6 units of credit)
Term 2 2020

2. STAFF CONTACT DETAILS

Course Coordinator:	Oriana Miano
Email:	o.miano@unsw.edu.au
Availability:	By appointment
Tutor:	Jennifer Ming
Email:	j.ming@unsw.edu.au
Availability:	By appointment

3. COURSE DETAILS

Course Name	Physics Method 2
Credit Points	6 units of credit (uoc)
Workload	Includes 150 hours including class contact hours, readings, class preparation, assessment, follow up activities, etc.
Schedule	http://classutil.unsw.edu.au/EDST_T2.html

SUMMARY OF THE COURSE

This course is designed to develop in Initial Teacher Education students the appropriate pedagogies for teaching the Stage 6 *Physics Syllabus*, as well as offering an insight into the nature and practice of Physics. Initial Teacher Education students will develop skills in planning, teaching and assessing, contextualising Physics, managing practical work in science classrooms and integrating ICT resources into lessons. Important issues such as student prior learning, student differences and safety are also considered. Students will critically evaluate the features of effective classroom practice. The course focuses on the requirements and philosophy of the NSW Science syllabuses, with emphasis on *Stage 6 Physics Syllabus.*

THE MAIN WAYS IN WHICH THE COURSE HAS CHANGED AS A RESULT OF STUDENT FEEDBACK

- The hurdle requirement is now held as a component of Week 7, rather than earlier in the course. This change allows students more time to complete and submit the online assessment course and common e-portfolio. NB: The same portfolio covers both methods for which the student is enrolled.

STUDENT LEARNING OUTCOMES

Outcome	
1	Identify essential elements of the NESA Physics Syllabus documents, and strategies to support students as they transition between stages
2	Use strong knowledge of subject content to plan and evaluate coherent, goal-oriented and challenging lessons, lesson sequences and teaching programs which will engage all students
3	Set achievable learning outcomes to match content, teaching strategies, resources and different types of assessment for a unit of work in Physics
4	Provide clear directions to organise and support prepared activities and use resources
5	Assess and report on student learning in Physics to all key stakeholders
6	Identify the characteristics of an effective Physics teacher and the standards of professional practice in teaching, especially the attributes of Graduate teachers

AUSTRALIAN PROFESSIONAL STANDARDS FOR TEACHERS

Standard	
1.1.1	Demonstrate knowledge and understanding of physical, social and intellectual development and characteristics of students and how these may affect learning
1.2.1	Demonstrate knowledge and understanding of research into how students learn and the implications for teaching
1.3.1	Demonstrate knowledge of teaching strategies that are responsive to the learning strengths and needs of students from diverse linguistics, cultural, religious and socioeconomic backgrounds
1.5.1	Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities
2.1.1	Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area
2.2.1	Organise content into an effective learning and teaching sequence
2.3.1	Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans
2.5.1	Know and understand literacy and numeracy teaching strategies and their application in teaching areas
2.6.1	Implement teaching strategies for using ICT to expand curriculum learning opportunities for students
3.1.1	Set learning goals that provide achievable challenges for students of varying characteristics
3.2.1	Plan lesson sequences using knowledge of student learning, content and effective teaching strategies
3.3.1	Include a range of teaching strategies
3.4.1	Demonstrate knowledge of a range of resources including ICT that engage students in their learning
3.6.1	Demonstrate broad knowledge of strategies that can be used to evaluate teaching programs to improve student learning
4.2.1	Demonstrate the capacity to organise classroom activities and provide clear directions
5.1.1	Demonstrate understanding of assessment strategies, including informal and formal, diagnostic, formative and summative approaches to assess student learning
5.2.1	Provide feedback to students on their learning
5.3.1	Make consistent and comparable judgements
5.4.1	Demonstrate the capacity to interpret student assessment data to evaluate student learning and modify teaching practice
5.5.1	Report on student achievement

6.3.1	Seek and apply constructive feedback from supervisors and teachers to improve teaching practices.
7.1.1	Understand and apply the key principles described in codes of ethics and conduct for the teaching profession

NATIONAL PRIORITY AREA ELABORATIONS

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

4. RATIONALE FOR THE INCLUSION OF CONTENT AND TEACHING APPROACH

Lectures, tutorials and assignments will cover a variety of approaches to teaching, learning and assessing in the Physics 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 and achievement with Physics.

Student-centred activities will form the basis of the course. These activities will draw on the prior discipline 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 range of 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
- 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. This work will be monitored by the tutors. 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 15 minutes prior to the end of each tutorial.

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

6. COURSE CONTENT AND STRUCTURE

Module	Lecture	Tutorial
1 (24 hours eq. lecture/ tutorial time)	***On-line assessment module*** • Introduction to the concept and principles of effective assessment practices and their applications to learning and teaching • Focus is on building assessment knowledge and the skills required to plan, develop and implement a range of assessment strategies, to engage in moderation activities to ensure fair and consistent judgment of student learning, to analyse assessment data to inform future learning and teaching, and to develop reports for various stakeholders.	• Critically describe the role of assessment in ensuring effective learning and teaching; • evaluate the appropriateness of various assessment strategies in ensuring effective learning and teaching • apply assessment knowledge and skills in developing effective learning, teaching and assessment plans. Content of this module will be assessed during the Hurdle Requirement in Week 7
2	• The *Physics Stage 6 Syllabus* (Year 12) • Outcomes for Skills, Knowledge and Understanding • Building on Stage 6 Preliminary	• Planning across Preliminary and HSC courses: continuity and logical skill development • How students demonstrate understanding of knowledge and skills
3	• Using templates to develop an effective scope and sequence and unit of work • Importance of backward mapping	• Analysing and evaluating sequenced lesson plans for continuity of learning • Grouping outcomes to enhance learning
4	• Teaching the maths and numeracy skills for success in Physics • Descriptions of band standards in Physics	• Designing flipped lessons to support the mathematics for Physics • Analysis of student samples of work to plan future lessons
5	• Inquiry Learning: Student Research Projects and Depth Studies for Physics • Organising field-work for Stage 6 Physics	• Marking projects, depth studies and assessment tasks for Stage 6 • Using NESA's Assessment Resource Centre
6	• Preparing students for HSC Science examinations • Unpacking, modelling and workshop Physics specific questions	• Developing resources to address Physics specific exam techniques
7	• What makes an effective Physics teacher? • Planning for the unexpected • Where to next? Job readiness, accreditation, school expectations • Analysing school expectations using advertisements • Networking and professional development opportunities • Professional associations	**Hurdle Requirement as class activity** • Assessment and learning. • Self and peer assessment. Moderation. • Feedback. • Reporting to parents and other key stakeholders. • Goals for PE2 **Completing on- line course evaluation**

7. RESOURCES

Required Readings

Each student is required to obtain from the NESA website the following documents: *NSW Stage 6 Physics Syllabus* and Stage 6 Support Materials https://syllabus.nesa.nsw.edu.au/physics-stage6/ .

It is not necessary to purchase Physics textbooks for this course. Textbooks will not usually be used during tutorials.

Optional Senior Textbook

Xiao L. Wu, Farr, R. (2009) Physics in Focus

Additional Readings

Bryson, B. (2004) A Short History of Nearly Everything, Black Swan, London
Harrison, N (2008), *Teaching and learning in Indigenous education.* Oxford, Sydney
Hazzard, J. (2004) The Art of Teaching Science: Inquiry and Innovation in Middle School and High School

Xiao L. Wu, Farr, R. (2009) Physics in Focus (eBook version)

Recommended websites

NESA
http://syllabus.nesa.nsw.edu.au/science/

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

8. ASSESSMENT

Assessment Task	Length	Weight	Student Learning Outcomes Assessed	Program Learning Outcomes Assessed	National Priority Area Elaborations	Due Date
Assessment 1 Scope and sequence and one assessment task for one term: Preliminary	2,000 words equivalent	40%	1, 2, 3, 4, 5	1.3.1, 1.5.1, 2.1.1, 2.2.1, 2.3.1, 2.5.1, 3.2.1, 5.3.1, 6.3.1	D.1, 4, 5, 7, 8, 11,19 E.7 F.9	Wednesday 5th August by 5pm
Assessment 2 Unit of work for Year 12	3,000 words equivalent	60%	1, 2, 3, 4, 5	1.3.1, 1.5.1, 2.1.1, 2.2.1, 2.3.1, 2.5.1, 2.6.1, 3.2.1, 5.1.1, 5.4.1	A.5. 8 C.4, 5, 8, 12 D.4, 5, 8. 10, 11, 12, 15 E.2 F.5, 7, 9	Monday 31st August by 5pm
Hurdle requirement Assessment, Feedback and Reporting	In class	Hurdle Requirement	5, 6	5.1.1, 5.2.1, 5.3.1, 5.4.1, 5.5.1, 7.1.1	D.5, 9, 13, 14, 16 E.6	In class task in final tutorial

Submission of assessments

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 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. https://education.arts.unsw.edu.au/students/courses/course-outlines/

Assessment Details

Assessment 1 (2000 wd eq, 40%)

PART 1: Create a scope and sequence, including learning outcomes, covering 10 weeks for a Year 12 HSC class.

PART 2: Prepare an assessment task (not an essay) that directly links to the teaching and learning intentions for the term's work. Your scope and sequence must indicate when the task will occur and how the feedback form the summative task can also be used for formative assessment. Make sure your instructions for the task are grammatically correct and communicate effectively for students.

Design a marking rubric, which also includes space for a holistic comment.

Provide an exemplar student answer for the assessment task. Write a feedback comment for this response outlining its strengths and indicating at least one aspect which could be further improved.

Assessment 2 (3000 wd eq, 60%)

Prepare a unit of work for Year 12 which covers approximately half the term. You need to ensure the unit demonstrates you are ready to plan and teach Stage 6 effectively. Make sure you have reflected on the feedback you received for the scope and sequence you prepared for Assessment 1.

The unit of work should indicate a variety of formative assessment strategies which will provide students with feedback about:

a. what they can already do well

b. what they still need to improve

c. how they can effectively close the gap between a and b.

Include all activities and resources to support student learning. There must be at least one literacy activity/resource and one numeracy/ICT resource.

HURDLE REQUIREMENT
FEEDBACK AND REPORTING

Assessment is the process of gathering evidence from a variety of sources about learning outcomes and being able to use that information to improve learning and teaching. Evidence includes not only individual student work samples and test results, but also more global data derived from standardized tests (eg NAPLAN, ICAS, HSC etc) as well as more qualitative information generated from student self and peer evaluations, and student-parent conferences.

Feedback is a structured interaction with the student about their current learning: where they are, where they want and /or need to be and how to get there. It may be in oral or written form and may be given by the teacher, by the student's peers or take the form of self-assessment. Feedback needs to indicate learning that has been demonstrated (achieved) as well as what needs more work. For the feedback to also feed forward, comments need to provide students with strategies to guide their improvement. Feedback /reporting to and for parents is also important as they are critical stakeholders and partners in their children's learning.

Moderation is a process used by teachers to compare their judgements about student performance so that assessment is trustworthy. Teachers work together as a group to ensure that the way they use assessment grades is consistent with agreed or published standards. For A to E grades this means the grade a student receives in one school can be fairly compared to the same grade anywhere in NSW. For school-based tasks, it means the work of students in different classes can be assessed using the same success criteria to evaluate progress toward learning outcomes. Watch the series of seven videos to enhance your understanding and knowledge on how to make sound and consistent judgment of student work.
https://www.youtube.com/watch?v=-QBLZAbhaYc&list=PLgBQxWO_rR7ZrlZopD_wZvdt6kY8EsfLK

It is recommended that students read widely on how to design appropriate assessment tasks, how moderate student samples of work and how to provide effective feedback. Tutorial time will be allocated to discussing this aspect of professional competence and providing experience with the moderation and feedback process

The assessment process consists of two components.

1. A collection of five or six authentic student responses to preferably two assessment tasks. The responses may be written, visual or oral. The number depends on the length of the response. For each text

- ensure anonymity by removing student names and destroying the samples at the end of the course.
- include the instructions that were given for the assessment task and indicate whether the task was intended for formative purposes or summative and formative purposes
- annotate the task to indicate what worked well and what needs changing if it were to be used again
- include the assessment criteria and/or marking scheme/rubric for each task
- provide annotations (with time codes if your sample is audio- or video-based) to indicate what the student has demonstrated as areas of strength and areas that need to be developed further in relation to the task
- include a key for marking symbols
- find out what the general expectation and/or current standards of the school/system are in relation to this subject area/topic/skill by consulting published NAPLAN/HSC/other relevant data, as well as talking to teachers, and consider where this student work is in relation to those overall expectations/standards as well in relation to their previous performance

- provide written feedback for the student which indicates strengths and areas for improvement in relation to this work sample as well as their past performance and overall expectations/standards. Suggest a strategy that will guide the student in his/her learning. (If the task was used summatively you can still use it for formative purposes.)
- indicate what the implications of your evaluation might be for the teacher in terms of future teaching.

2. Write a few lines that could be included in a mid-year report comment to parents. Provide enough detail to indicate to parents which aspect of the student's performance you are commenting on. Add A, B, C, D or E to align with the advice and work samples provided by NESA and ACARA.

NOTES:
The student work samples must be authentic. <u>They should have been collected during Professional Experience 1 during a normal assessment task and/or provided by the method lecturer.</u> Annotated student work samples, notes and all other written evidence of teacher education students' ability to address Standard 5 to be discussed in class and submitted by the due date.

If a student is assessed as Unsatisfactory in the feedback and reporting hurdle requirement, s/he will automatically fail Method 2 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.

UNSW SCHOOL OF EDUCATION
FEEDBACK SHEET
EDST6953 PHYSICS METHOD 2

Student Name: Student No.:
Assessment Task 1: Scope and Sequence with Assessment Task for one term (preliminary)

SPECIFIC CRITERIA	(-) ⟶ (+)				
Understanding of the question or issue and the key concepts involved • Understanding of syllabus requirements regarding literacy, numeracy and the Working Scientifically skills • Understanding of strategies to develop literacy, numeracy and Working Scientifically skills • Understanding of Stage 6 Knowledge and Understanding requirements					
Depth of analysis and/or critique in response to the task • Ability to plan and assess for effective learning by designing teaching and learning activities using knowledge of the NSW syllabus documents or other curriculum requirements of the Education Act • Inclusion of 8 required teaching and learning activities • For each activity the following included: - a description of a teaching and learning activity - links to the syllabus, including outcomes **and** content statements - a resource to provide to students, either as a pdf or as part of a website or app - strategies to differentiate the activity for a least one identified group of students					
Familiarity with and relevance of professional and/or research literature used to support response • Demonstration of knowledge of syllabuses, relevant policies and procedures • Reference specifically to material, research and ideas presented in Physics method lectures and prescribed readings • Demonstration of understanding of relevant literature on Physics education					
Structure and organisation of response • Use of an appropriate format, logical sequence and 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 • Appropriateness of overall structure of response • Clarity and coherence of organization; logical sequence • Use of appropriate format					
GENERAL COMMENTS/RECOMMENDATIONS FOR NEXT TIME					

Lecturer: **Date:**
Recommended: /20 (FL PS CR DN HD) **Weighting: 40%**

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 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
EDST6953 PHYSICS METHOD 2

Student Name: Student No.:
Assessment Task 2: Planning a unit of work including formative assessment strategies

SPECIFIC CRITERIA	(-) ⟶ (+)				
Understanding of the question or issue and the key concepts involved • Understands the task and its relationship to relevant areas of theory, research and practice • Uses syllabus documents and terminology clearly and accurately • Sequences tasks and activities to suit logical learning progression • Integrates assessment task logically with learning intentions and learning sequence • Provides effective formative feedback for student sample					
Depth of analysis in response to the task • Includes key syllabus content to allow demonstration of appropriate selection of outcomes for Preliminary • Demonstrates understanding of the NSW Quality Teaching framework, the School Excellence Framework and NESA Assessment Guidelines					
Familiarity with and relevance of professional and/or research literature used to support response • Demonstrates understanding of the need to differentiate lessons to cater for diverse learners including Aboriginal and Torres Strait Islander and EAL/D students • Understands effective assessment practices					
Structure and organisation or response • Organises and structures scope and sequence according to NESA guidelines and requirements • Follows NESA assessment guidelines					
Presentation of response according to appropriate academic and linguistic conventions • Shows excellent command of English grammar conventions including spelling, syntax, and punctuation.					
GENERAL COMMENTS/RECOMMENDATIONS FOR NEXT TIME					

Lecturer: **Date:**
Recommended: /20 (FL PS CR DN HD) **Weighting: 60%**

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.**

Assessment, Feedback and Reporting

UNSW SYDNEY

STUDENT TEACHER		
Name:	zID:	Date:

Details			
Method		Topic/level	

AITSL Standard 5 **Assess, provide feedback and report on student learning**	**Comments**
A. Demonstrate understanding of assessment strategies, including informal and formal, diagnostic, formative and summative approaches to assess student learning (5.1.1) • Has the purpose of the assessment task been described appropriately? • Has the task been annotated appropriately to indicate what changes in layout, language or requirement could be improved? • Does the marking rubric/style provide diagnostic information for the student?	
B. Demonstrate an understanding of the purpose of providing timely and appropriate feedback to students about their learning (5.2.1) • Does the feedback allow the assessment to be used for formative purposes? • Is feedback expressed in appropriate language for the age/stage of the students? • Does the feedback -acknowledge the student's areas of strength? -identify areas where the student needs to do more work? -indicate strategies to help the student improve?	
C. Demonstrate understanding of assessment moderation and its application to support consistent and comparable judgements of student learning (5.3.1) • Is the difference between ranking and moderation understood? • Does the student recognise the importance of following marking guides/rubrics? • Can the student listen professionally to the opinions of others? • Does the student express his/her point of view respectfully, and provide appropriate evidence to support his viewpoint?	
D. Demonstrate the capacity to interpret student assessment data to evaluate student learning and modify teaching practice (5.4.1) • Has the student analysed and evaluated the schools' global assessment data? • Has the student collected a range of the students' past performance data? • Is the student able to interpret that data accurately to make generalizations about the specific work samples they have collected? • Is the student able to triangulate different forms of student assessment data so that they can propose appropriate modifications to learning and teaching?	
E. Demonstrate understanding of a range of strategies for reporting to students and parents/caregivers and the purpose of keeping accurate and reliable records of student achievement (5.5.1) • Are feedback and reporting understood as separate tasks? • Do the report comments provide succinct and helpful written information to pinpoint where the student is at in his/her learning? • Has the student provided evidence that the Assessment Resource Centre (NESA) has been used to provide appropriate A, B, C, D, E grades?	
Comments:	

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