

<b>Subject Title:</b>	Chemistry Secondary Curriculum 2		
<b>Subject Code:</b>	EDU4CH2	<b>Credit Points:</b>	15
<b>Teaching Period:</b>	Trimester 3	<b>Mode:</b>	Blended
<b>Prerequisite:</b>		<b>Level:</b>	4
<b>Subject Description:</b>			
<p>In this subject knowledge and skills are developed about pedagogical content knowledge, planning, implementation, assessment and reporting, and reflection. The emphasis is on effective teaching and learning within an Australian/Victorian context for Years 11 &amp;12, drawing upon the examples of current curriculum and professional frameworks.</p> <p>Pre-service teachers consider, demonstrate and reflect upon a professional understanding of teaching method-specific concepts, issues and developments, safety, where applicable, and legal responsibilities, application of learning technologies, audio-visual materials, and resources.</p>			
<b>Intended Learning Outcomes (ILOs) &amp; Australian Professional Standards for Teachers (APST)</b>			
Upon successful completion of this subject, you will be able to:			APST
1	Demonstrated knowledge of the concepts, skills, structure of the content and teaching strategies of Chemistry and Science Education, and an in-depth understanding of how students learn in Chemistry.	1.2, 2.1	
2	Critically analysed, planned and synthesised, a range of Chemistry and Science learning and teaching activities and sequences for senior secondary students that involve a variety of pedagogical approaches and resources (including safe and ethical pedagogy and use of resources including ICT) appropriate to state and national curricula.	1.2, 2.2, 2.6, 3.1, 3.2, 3.3, 3.4, 4.4, 4.5	
3	Described, designed, and evaluated a unit of work involving a variety of teaching strategies that cater for individual differences in student learning (across a range of abilities) and integrate capabilities and priorities of state and/or national curriculum in Chemistry Education.	1.5, 2.4, 2.5, 2.6, 3.3, 4.1, 5.3, 5.4	
4	Examined the relationships between assessment, feedback and reporting, learning task design, student engagement and knowledge and skills to be developed in Chemistry, and apply to the requirements of curriculum documents.	2.3, 3.6, 5.1, 5.2	

Assessment:				
Assessment Summary		Word Count Equivalence	%	APST
1	Task 1: Curriculum-based Unit Plan	1800	40	1.2, 1.5, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.6, 4.1, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4
2	Task 2: Case Study of Issue/Teaching Resources (Produce and Publish)	1800	40	1.2, 2.1, 2.6, 3.4
3	Task 3: Reflective Journal	900	20	1.2, 2.4, 2.5, 2.6, 3.3, 4.1, 5.1, 5.2, 5.3, 5.4
Assessment Details (including Assessment Criteria)				
1	<p><b>Task 1: Curriculum-based Unit Plan</b></p> <p>Pre-service teachers will be assigned a topic in the Years 11-12 curriculum. In the topic the student will design a three week unit of work to be compiled and submitted from intensive class content, online modules that cover "Introduction", "Planning", "Curriculum" and "Assessment and Reporting". Not all of the topic needs to be covered. The topic will be particularly chosen to identify an enduring idea within the discipline. This will require depth of understanding elaborated upon in the teaching approach. The teaching approach will need to be defended. Pre-service teachers will use teacher judgement and reference the study design and teacher advice documentation to assist them with the timing and sequence required.</p> <p>It is expected that a comprehensive resource collection as in Task 1 EDU4MS1 will be compiled for this topic and used with insight. Skills and feedback from Task 2 EDU4MS1 provide the scaffolding for this task.</p> <p><b>Assessment Criteria</b></p> <p>This unit of work is to include</p> <ol style="list-style-type: none"> <li>1. one overview plan for a unit (a unit at a glance is required),</li> <li>2. one innovative and detailed lesson plan,</li> <li>3. reference to one diagnostic,</li> <li>4. one formative and one summative assessment task*,</li> <li>5. a clear orientation to selected curriculum (curriculum document, learning area, learning level), and an overarching justification and illustration of pedagogical and curricular considerations.</li> </ol> <p>*The summative task will be in the form of a School Assessed Coursework (SAC) and an associate assessment rubric, which will be designed as a teaching team.</p>			
2	<p><b>Task 2: Case Study of Issue/Teaching Resources (Produce and Publish)</b></p> <p>Pre-service teachers will select a topic of concern to them (an Issue in Chemistry Education) to research and report upon in a scholarly manner. Suggestions will be given as a guide and previously published articles provided as exemplars. This is a teacher as researcher approach where we look to current published literature and use reflective practice to apply the theory we encounter in our future practice. Pre-service teachers will write an article to be published in a Science Professional Association that addresses the issue selected. This sets both the audience and the expected mode of communication. To scaffold quality writing, pre-service teachers will design a narrated PowerPoint that outlines the key points as both a summary of the content, a means for sharing and an article plan. Pre-service teachers will peer-review each narrated case study PowerPoint and provide a brief response based on the readings and the Module materials.</p> <p><b>Assessment Criteria</b></p> <p>In the final article produced there should be:</p> <ol style="list-style-type: none"> <li>1. Evidence of appropriate current reading</li> <li>2. The topic addressed with breadth and depth</li> </ol>			

	<ol style="list-style-type: none"> <li>Evidence of insight, originality and a clear stance taken for future science teaching pedagogy</li> <li>Strong links to the content covered in tutorials and intensives</li> <li>Calibre of writing, including the use of academic referencing for journal publication</li> </ol> <p>Task 2i: Excursion Audit and Resource</p> <p>Pre-service teachers will be allocated an excursion location that can be used in Chemistry teaching (or select their own local chemistry excursion location in consultation with their lecturer). For this excursion location each student will visit their centre/site and perform an audit of the site and its resources using a template audit document. Following this each student will, in consultation with the site staff to identify any particular resource needs, construct an innovative, new teachers' resource package that will be shared with their peers and the site for potential publication/use.</p> <p>Each student's audit and resource will be shared with their peers via LMS with a 5 minute introductory video to accompany the documentation.</p> <p>Formative written feedback and rubric assessment will be provided in response to each task.</p>
3	<p>Task 3: Reflective Journal</p> <p>This reflection is to express, justify and support (with high-quality resources and evidence) your developing professional and pedagogical beliefs, in a manner and mode appropriate to your selected Method area. You will develop a concise professional statement that demonstrates an informed, coherent philosophy and pedagogical stance in your teaching method. This should show what matters to you and how you intend to teach this subject in schools.</p> <p>The grading criteria for this task focus on the areas of:</p> <ul style="list-style-type: none"> <li>Critical reflection on philosophy and pedagogy within the selected Method area;</li> <li>Development of a professional statement;</li> <li>Effective, scholarly, research-based expression.</li> </ul> <p>This Reflection task will allow you to demonstrate critical consideration of ideas and issues explored through face-to-face and online activities, ongoing participation in the method subject, careful analysis of self as teacher, and personal and professional reflection. In order to compile your ideas and response to this task, you should ensure that you engage in critical personal reflection regarding your developing professionalism and pedagogy. You should record reflective responses throughout this trimester, as this is your first opportunity to explore your selected Method areas within your pedagogical and curricular frame.</p> <p>From the commencement of trimester 2, you are strongly encouraged to record:</p> <ol style="list-style-type: none"> <li>Reflective responses to face-to-face intensive classes;</li> <li>Reflective responses recorded throughout online modules; and</li> <li>Reflective professional statement completed upon conclusion of other assessments and online requirements.</li> </ol> <p>Throughout the trimester and when developing your statement, you should critically reflect on:</p> <ul style="list-style-type: none"> <li>Literature and research in your subject area;</li> <li>Course materials you have considered in the online modules and intensive workshops;</li> <li>The portfolio of ideas and responses you developed during the modules in this subject; and</li> <li>Your professional experiences in schools.</li> </ul> <p>This Reflection is just the beginning of an ongoing reflective journal that should provide evidence of your development as a critically reflective practitioner; this is a valuable tool as a pre-service teacher and will be useful as you collate a professional folio towards the end of your course. You will be required to undertake additional reading to develop and support your Reflection.</p> <p>The finished product of your Reflection may take different forms for each Method. It should include a digital component – whether in reference to the impact of digital technologies in your Method area, or the mode of delivery of your Reflection. It might include a reflective journal that demonstrates how you have developed your knowledge and skills by participating in the various online and face-to-face activities in the modules and intensives. The mode of your expression and delivery will be further specified and explained during Intensive 2 and/or via LMS. Your Reflection should include Method-specific observations or reflections from your professional experience/s to date.</p>

Learning Resources	
Required Texts	
1	Venville, G. and Dawson, V. (2012) The Art of Teaching Science For idle and Secondary School (2 <sup>nd</sup> Ed.) Allen and Unwin
Recommended Reading	
1	VCAA Website: <a href="http://www.vcaa.vic.edu.au/Pages/vce/studies/chemistry/chemindex.aspx">http://www.vcaa.vic.edu.au/Pages/vce/studies/chemistry/chemindex.aspx</a> Revised Chemistry Study Design: <a href="http://www.vcaa.vic.edu.au/Documents/vce/chemistry/ChemistrySD-2016.pdf">http://www.vcaa.vic.edu.au/Documents/vce/chemistry/ChemistrySD-2016.pdf</a>
2	Chemistry Practical Activities: <a href="http://www.rsc.org/learn-chemistry/wiki/Lab/List_of_introductory_level_Practical_Chemistry_experiments">http://www.rsc.org/learn-chemistry/wiki/Lab/List_of_introductory_level_Practical_Chemistry_experiments</a>
3	VCE Assessment Handbook Chemistry: <a href="http://www.vcaa.vic.edu.au/.../vce/chemistry/chemistryhandbook-2013.doc">www.vcaa.vic.edu.au/.../vce/chemistry/chemistryhandbook-2013.doc</a>
4	History of Chemistry: <a href="https://www.youtube.com/watch?v=9V7yX-qXrpo">https://www.youtube.com/watch?v=9V7yX-qXrpo</a>
5	Greatest discovery in science: 1. <a href="https://www.youtube.com/watch?v=s7xxMX4Ovig">https://www.youtube.com/watch?v=s7xxMX4Ovig</a> 2. <a href="http://www.businessinsider.com.au/chemists-whose-discoveries-changed-our-lives-2013-10#louis-pasteur-created-the-first-vaccine-1">http://www.businessinsider.com.au/chemists-whose-discoveries-changed-our-lives-2013-10#louis-pasteur-created-the-first-vaccine-1</a>
6	Chemistry Study Designs: Accreditation period 2013-2016 <a href="http://www.vcaa.vic.edu.au/Pages/vce/studies/chemistry/chemindex.aspx">http://www.vcaa.vic.edu.au/Pages/vce/studies/chemistry/chemindex.aspx</a> Accreditation period 2016-2021 and 2017-2021(page 6) <a href="http://www.vcaa.vic.edu.au/Documents/vce/chemistry/ChemistrySD-2016.pdf">http://www.vcaa.vic.edu.au/Documents/vce/chemistry/ChemistrySD-2016.pdf</a>
7	Senior Chemistry Text books including but not exclusive to publishers such as: Jacaranda, Oxford, Nelson and Macmillan

Learning Activities Overview:		
Week	Learning Topic	Learning Activities/Readings
1	Introduction, VCE Chemistry Study Design, Resources	What is Chemistry? History of Chemistry. Resources for teaching Chemistry Reading: VCE Chemistry Study Design
2	Introduction, VCE Chemistry Study Design, Resources (Continued)	What is Chemistry? History of Chemistry. Resources for teaching Chemistry Reading: VCE Chemistry Study Design (Continued)
3	Assessment and Reporting in VCE Chemistry	Introduction to Assessment in VCE Chemistry <ul style="list-style-type: none"> <li>• Big ideas that underpin Chemistry curricula</li> <li>• Explore structure and content</li> </ul> Reading: Assessment and Reporting Advice - Chemistry
4	Chemistry Curriculum: Assessment Moderation	Assessment Moderation and Practice in VCE Chemistry Reading: VCE Study Designs and Assessment Guides
5	VCAL and VET Overview ICT, Literacy and Numeracy in Chemistry	Readings: VCAL and VET documentation ICT, Literacy and Numeracy in Chemistry Reading: Venville, G. and Dawson, V. (2012) Ch. 11 ICT in the Science Classroom
6	Teaching and Learning Strategies for Years 7-10 Chemistry	Teaching and Learning Strategies in Chemistry Classrooms (Years 7-10). Tips and Tricks
7	Teaching and Learning Strategies for Year 11 Chemistry	Teaching and Learning Strategies in Chemistry Classrooms (Year 11). Tips and Tricks
8	Teaching and Learning Strategies for Year 12 Chemistry	Teaching and Learning Strategies in Chemistry Classrooms (Year 12). Tips and Tricks
9	Inquiry and Investigations in Chemistry (including teaching safety)	Effective use of Inquiry and Investigations in the Chemistry classroom Tips and Tricks including the teaching of safety in Chemistry laboratories Reading: Venville, G. and Dawson, V. (2012) Ch. 6 Inquiry and Investigations in Science
10	Australian Curriculum (Senior), Cross Curriculum Priorities, Integrated Curriculum	Exploration of the development of Chemistry concepts through the curriculum P-12, the Senior Australian Curriculum (Chemistry), Cross-Curriculum Priorities, Integrated Curriculum with General Capabilities and other domains
11	Evaluation of Teaching Programs, International Assessments and	Evaluation of Teaching Programs, International Assessments.
12	Safety Practices	Safety Procedures and Practices in Chemistry laboratories

Assessment	
Assessment Task No.	Description of task:
1	Curriculum-based Unit Plan
APST	Description of how each Graduate Teacher Standards is Taught, Practiced and Assessed
1.2, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.6, 4.1, 4.4, 4.5	<p>Taught – Academic content covered in weeks 1-12 of the semester.</p> <p>Practiced – PSTs will be initially introduced into the curriculum documents and resources both from quality Government sites and through teacher advice in state curriculum documents. Then in the subsequent weeks through online module encounters and interaction the topics of planning, pedagogical knowledge and theory required in developing well-structured, well-resourced and innovative lessons, sequences of lessons and unit plans will design how to address the needs, assess and provide feedback for all student learning in a class.</p> <p>Assessed – Assessment Task 1</p>
Assessment Task No	Description of task:
2	Case Study of Issue/Teaching Resources (Produce and Publish)
APST	Description of how each Graduate Teacher Standards is Taught, Practiced and Assessed
1.2, 2.1, 2.6, 3.4	<p>Taught – Academic content covered in weeks 1-12 of the semester.</p> <p>Practiced – The scope of the Chemistry Curriculum and its embedded resources is interrogated by PSTs through investigation of all elements and levels of the document. Encounters through online modules of readings, activities and discussions of the Chemistry Curriculum documents (and support documents) provides an informed vantage point. From this place of understanding critique and insight into literature presented issues related to Chemistry teaching are investigated and capitalised upon.</p> <p>Assessed - Assessment Task 2</p>
Assessment Task No	Description of task:
3	Reflective Journal
APST	Description of how each Graduate Teacher Standards is Taught, Practiced and Assessed
1.2, 2.4, 2.5, 2.6, 3.3, 4.1, 5.1, 5.2, 5.3, 5.4	<p>Taught – Academic content covered in weeks 1-12 of the semester.</p> <p>Practiced – Experiences in the online modules are followed by interactive discussion spaces where sharing occurs with regard to the practice and the theory of teaching in Chemistry. PSTs then draw from what they have encountered and develop a stance of what it is to be a Chemistry teacher and how they will integrate what they have encountered. The practices and experiences and exposure of the week by week content provide the background for this task.</p> <p>Assessed - Assessment Task 3</p>