

EDU 166/266 Principles of Secondary Education & Content Area Modules Syllabus

Science

General Overview

The Mount Saint Mary's University Secondary Teacher Preparation Program has been designed to provide deep and consistent study of content-specific pedagogy and to allow candidates to apply their understandings with secondary students through interrelated fieldwork experiences.

Each professional preparation course consists of two modules, one guided by a Mount Saint Mary's University faculty member, and a second by an expert teacher in the candidate's content area. Each course module leads candidates to demonstrate competence in specific Practice and Opportunity Tasks aligned with the TPEs. **Each module represents 30 hours of interrelated instruction and fieldwork.**

Course Objectives

Content Area Course Modules in each discipline area (mathematics, science, social science, English/Language Arts, the arts, physical education, World Languages and health) are designed to address the following objectives.

Developmentally Appropriate Practices in Relation to Subject-Specific Pedagogy (TPE Revisions 2016)

Beginning teachers understand that students' development varies across and within age ranges; is influenced by social, cultural, linguistic, and other contexts; and that these factors influence each other in complex ways. Beginning teachers understand that students' learning and development are also influenced by the interaction between their prior experiences; ethnic, cultural, and linguistic backgrounds; maturational status; and the range of environmental and cultural experiences that they bring to the classroom.

Beginning teachers approach classroom practice with the belief that all students can learn, and they recognize that the social and academic environment within their classroom has tremendous impact on learning.

English Language Development in Relation to Subject-Specific Pedagogy (TPE Revisions 2016)

Beginning teachers know and can apply pedagogical theories, principles, and instructional strategies for comprehensive instruction of students whose first language is English, English learners, and Standard English learners. They know and can apply theories, principles, and instructional strategies for English language development leading to academic literacy in English in relation to the subject-specific content area. Beginning teachers are familiar with the philosophy, design, goals, and characteristics of programs for English language development. They implement an instructional program that facilitates integrated English language development, including all domains (reading, writing, listening, and speaking).

Subject-Specific Pedagogical Skills (TPE Revisions 2016)

Beginning teachers in all disciplines demonstrate knowledge of and the ability to teach content aligned with the California State Standards and the English Language Development Standards. The interdisciplinary nature of these standards requires beginning teachers to demonstrate both the capacity and a disposition to collaborate with their colleagues to assure that all students are provided curriculum and instruction that effectively merges literacy within each content area. Moreover, beginning teachers embrace the concept that English Language and literacy development is a shared responsibility of all content area educators.

SCIENCE: Beginning Single Subject Science teachers

- Demonstrate the ability to teach the state-adopted academic content standards for students in science and applicable English Language Development Standards. They balance the focus of instruction between disciplinary core ideas, crosscutting concepts, and scientific and engineering practices as indicated in the Next Generation Science Standards.
- Their explanations, demonstrations, and class activities serve to illustrate science concepts and principles, scientific investigation, and experimentation.
- Emphasize the nature of science, the integration of engineering design, and the connections between science, society, technology, and the environment.
- Integrate mathematical concepts and practices including the importance of accuracy, precision, and estimation of data and literacy into science pedagogy.
- Provide students the opportunity to use and evaluate strengths and limitations of media and technology as integral tools in the classroom.
- Encourage students to pursue science and engineering interests, especially students from groups underrepresented in science and engineering careers.
- When live animals are present in the classroom, beginning teachers teach students to provide ethical care.
- Demonstrate sensitivity to students' cultural and ethnic backgrounds in designing science instruction.
- Teach students to engage in disciplinary discourse practices that foster evidence-based explanations and argumentations to write opinion/persuasive and expository text in the content area.
- Teach students to independently read, comprehend, and evaluate instructional materials that include increasingly complex subject-relevant texts and graphic/media representations presented in diverse formats.
- Teach students to write argumentative and expository text in the content area.
- Assure that students at various English proficiency levels have the academic language needed to meaningfully engage in the content.
- Guide, monitor, and encourage students during investigations and experiments.
- Demonstrate and encourage use of multiple ways to measure and record scientific data, including the use of mathematical symbols.
- Structure and sequence science instruction to enhance students' academic knowledge to meet or exceed the state-adopted academic content standards for students.
- Establish and monitor procedures for the care, safe use, and storage of equipment and materials and for the disposal of potentially hazardous materials.
- Single subject and education specialist beginning teachers understand that all teachers have a critical role in literacy development for all TK-12 students.
- They understand and demonstrate the ability to address the literacy, linguistic, and cognitive demands of different content areas of their credential.
- Demonstrate foundational knowledge of identifying, assessing, and supporting students with reading difficulties, including students with dyslexia, with research based effective reading strategies.
- Provide integrated instruction incorporating the five themes of literacy identified in the ELA/ELD Framework.
- Plan and implement lessons that support students' meaning making and subject-specific language development as students read, write, and converse in each content area.
- Support students' ability to effectively express themselves in each content area as well as their ability to analyze the effectiveness of text, presentations, visual representations, and other forms of communication specific to each content area.
- Plan and implement literacy-based lessons and discipline-specific literacy practices that contribute to building students' content knowledge.

- Plan and implement lessons that address the foundational skills of literacy (e.g., decoding and word recognition) in the context of the content area(s) of instruction, as appropriate based on students' needs and students' literacy levels.
- Beginning teachers understand and plan lessons that build on students' increasing level of literacy skills across the grade levels and content area(s) to promote both continuity of literacy skills development and subject-specific learning in accordance with the applicable student content standards and framework.
- Beginning teachers observe and practice different approaches to literacy teaching and learning, including but not limited to inquiry-based learning, collaborating learning, and direct instruction.
- All beginning teachers identify challenges posed by complex texts in their discipline(s) and help students learn how to navigate increasingly complex text of a variety of forms and organizational patterns as appropriate to the content area, including but not limited to traditional texts, music, maps, graphics, charts, timelines, images, artworks, and multimodal text such as podcasts and videos, to help students read strategically, analytically, critically, and with a critical lens across the curriculum, and to monitor their understanding.
- They use teaching strategies across the instructional cycle that promote meaning making as students engage with text as readers and writers, and they integrate the use of language arts skills of reading, writing, listening, and speaking across the curriculum.