# UNDERGRADUATE CURRICULUM COMMITTEE (UCC) PROPOSAL FORMhttp://www.ric.edu/webcommunications/images/SealWithText_Small_Black.png

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| A.1. [Course or program](#30j0zll) | **New course: SED 415: Rethinking** Mathematics Teaching and Learning | | |  |
| A.2. [Proposal type](#3znysh7) | **Course creation** | | |
| A.3. [Originator](#2et92p0) | **Vivian La Ferla** | [Home department](#tyjcwt) **Educational Studies** | | |
| A.4. [Context and Rationale](#3dy6vkm) | This is the sixth course in the pedagogical sequence of the secondary education program, following SED 315, which focuses on equitable ways of teaching and learning mathematics. This course is new but draws on the content of SED 411: Content and Pedagogy in Secondary Mathematics Education.  This course is the Practicum II for Mathematics Education and occurs in the semester prior to student teaching. It builds on the skills and practices learned in the pedagogical sequence with a focus on three main lines of inquiry and practice: mathematical growth mindsets, culturally relevant approaches to teaching mathematics and problem-solving analysis. This four credit/fourteen-week course will be taken by all candidates in secondary Mathematics education.  In SED 415, candidates will discuss key books, research and readings on mathematical mindsets with a focus on equitable strategies to support mathematics teaching and learning in economically, racially, culturally, and linguistically diverse schools. Candidates will learn how to tailor curriculum, pedagogy, and community building strategies to the strengths and needs of students from a range of backgrounds with expansive cultural and mathematical repertoires. At the same time, candidates will explore the field of mathematical growth mindsets to learning how to design and implement lessons and techniques that encourage middle and high school students to be thinkers and communicators of mathematics. Candidates will impart the power of mistakes and productive struggle to these students since this approach reaches beyond the school walls.  A second key feature of the course will be an emphasis on incorporating social justice in the mathematics curriculum. Teaching mathematics from a culturally relevant and critical perspectives with a focus on visual attention and its benefits, construction of culturally different approaches to mathematical proof and the many implications it has for youth, families and communities.  Third, candidates will study and practice approaches to Mathematical Problem Analysis by developing vital skills for teaching critical thinking across and within the mathematics curriculum. Candidates will practice teacher-led facilitations and presentations (or mini-lessons), as well as, for instance, approaches like student-centered mathematics activities, problem solving and problem posing analyses. Social justice situations will be analyzed using mathematics as a vehicle to solve these problems. Candidates will participate and design both small/large group work, and engaging activities with some of them based on technology, visual methodologies and problem-solving.  This practicum-style course will involve a 3-week clinical preparation component in which students will plan and implement lessons based on concepts, approaches, and strategies explored in class.  The main goal of this course is for candidates to link theory and practice in order to develop everyday techniques for enacting an effective social justice-oriented classroom pedagogy in Mathematics. | | | |
| A.5. [Student impact](#2jxsxqh) | Students in the mathematics secondary education program take this course as part of the methods sequence which is part of the overall redesign. | | | |
| A.6. [Impact on other programs](#z337ya) | This course will be required of all students in the secondary Mathematics education program. | | | |
| A.7. [Resource impact](#3j2qqm3) | [*Faculty PT & FT*](#1y810tw): | **FSEHD faculty will teach this course.** | | |
| [*Library*:](#4i7ojhp) | **None** | | |
| [*Technology*](#2xcytpi) | **None** | | |
| [*Facilities*](#1ci93xb): | **None** | | |
| A.8. [Semester effective](#2s8eyo1) | **Fall 2019** |  |  | |

B. [NEW OR REVISED COURSES](#3whwml4)

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|  | New |  |
| B.1. [Course prefix and number](#2bn6wsx) | SED 415 |  |
| B.3. [Course title](#qsh70q) | Rethinking Mathematics Teaching and Learning |  |
| B.4. [Course description](#3as4poj) | Students connect *equitable* pedagogical approaches to the teaching and learning of mathematics. Focus on mindsets, mathematical problem analysis, visualizing mathematics and incorporating social justice in the mathematics curriculum.  Clinical preparation (3 weeks or equivalent). |  |
| B.5. [Prerequisite(s)](#1pxezwc) | **SED 315** |  |
| B.6. [Offered](#49x2ik5) | **Spring | |** |  |
| B.7. [Contact hours](#2p2csry) | **4** |  |
| B.8. [Credit hours](#147n2zr) | **4** |  |
| B.9. [Justify differences if any](https://docs.google.com/document/d/1_zJQxH0uG2sCFqQvkRObkMbuBxxvUOcvfcJ0QnEhw0c/edit#bookmark=id.2xcytpi) | 3 weeks or equivalent (per the new RIDE regulations) of level 3 clinical preparation will be in addition to the 4 hours of contact time.  Definition of Level 3 clinical preparation: - Practicum. At this higher level phase, teacher candidates hone their skills in teaching small groups and whole classes of students under the guidance, support, and supervision of highly skilled educators. They learn how to collect, assess, and use data to inform instruction, know state and national standards and how to align them with their teaching, and begin to develop a repertoire of effective teaching strategies. They observe and actively collaborate with their cooperating teacher. They participate in designing the environment for independence, where each person is a valued member of a community of learners. | |
| B.10. [Grading system](#3o7alnk) | **Letter grade |** |  |
| B.11. [Instructional methods](#23ckvvd) | **| Lecture | Small group | Individual | Clinical Preparation** |  |
| B.12.[Categories](#ihv636) | **Required for major; Required for Certification** |  |
| B.13. Is this an Honors course? | **NO** |  |
| B.14. [General Education](#32hioqz)  N.B. Connections must include at least 50% Standard Classroom instruction. | **NO** |  |
| B.15. [How will student performance be evaluated?](#1hmsyys) | **Attendance | Class participation | Field Observations | Presentations | Papers |**  **Class Work | Projects | Teacher Candidate mini Work Sample: unit plan and RI-ICEE-aligned lessons** |  |

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| B.18**.** [**Course learning outcomes**](#lnxbz9)**: List each one in a separate row** | [**Professional Org.Standard(s)**](#35nkun2)**, if relevant** | [**How will each outcome be measured**](#1ksv4uv)**?** |
| Reflect on their social locations, identities, and material conditions, as well as shifts in their emerging professional skill set: strengths, areas for growth, aspirations, and pedagogical knowledge. They will make connections between this reflective knowledge and the ongoing development of their identities as teachers. | FSEHD 3, 4, 6  RIPTS 1, 8, 10 | Written reflections;  Clinical prep: reflection notebook of implemented lesson plans using RI-ICEE template and RI-ICEE evaluations for improvement. |
| Actively contribute to building a positive and mutually supportive classroom community. | FSEHD 5, 6  RIPTS 7, 10 | Participation; student-led facilitations |
| Link mathematical mindset theory to practice (i.e. praxis) by deepening their understanding of mindset groupings, assessment for mindsets that benefit *all* students to learn mathematics. | FSEHD 1, 2, 4, 5  RIPTS 1,5,6,9 | Class discussion; written reflections; mock lessons; student-led facilitations; TCmWS; RI-ICEE-aligned lesson plan which includes groupings and assessments. |
| Implement concrete mathematical instructional practices around strategies around standards- and data-based instruction, technology, classroom/school environments, and connecting to families and communities. | FSEHD 1,2,5  RIPTS 1,2,3,11 | Clinical Prep: RI-ICEE aligned lesson plan template and RI-ICEE evaluation tool  Family newsletter |
| Apply mathematical mindsets as an equitable and responsive approach to a culturally diverse, heterogenous classroom, in their work with youth around mathematical problem analysis and rich mathematical tasks. | FSEHD 1, 2, 3, 4  RIPTS 1, 3, 4, 5 | Class discussion & readings; mock lessons; student-led facilitations; TCmWS;  Clinical Prep; RI-ICEE-aligned lesson plan |
| Plan for instruction and create varied assessments including growth mindset and problem solving that draw on and deepen/expand their repertoire of instruction and assessment. These will be grounded in research and theory, and aligned to state and national standards | FSEHD 1, 2, 4  RIPTS 1,2, 5,9 | Class discussion; mock lessons; student-led facilitations; TCmWS; RI-ICEE-aligned lesson plan |
| Develop a culturally relevant and critical pedagogical perspective to teaching mathematics relative to visual attention, cultural views on mathematical proof and its implications for youth, families and communities. | FSEHD 1, 2, 4  RIPTS 1,2,5,8,9 | Class discussion & readings; mock lessons; written reflections; TCmWS; RI-ICEE-aligned lesson plan |
| Develop vital skills for teaching critical thinking across the curriculum through mathematical problem-solving strategies and using rich mathematical tasks. | FSEHD 1, 2, 4  RIPTS 2,3, 4,5,8, 9 | Mock lessons; TCmWS; RI-ICEE-aligned lesson plan; mathematical problem-solving tasks |
| Identify and create problem solving materials (higher- order thinking) and assessments for students with a range of mathematical abilities. | FSEHD 1, 2, 4  RIPTS 2, 3, 4,5 | TCmWS; RI-ICEE-aligned lesson plan |
| Create an appropriate and effective Design for Instruction (mathematics unit plan) for a specific, culturally diverse group of students | FSEHD 1, 2, 4  RIPTS 2, 3, 4, 6 | TCmWS |
| Utilize technology effectively in planning and implementation of lesson plans | FSEHD 1, 2, 4  RIPTS 2, 4  ISTE | Student-led facilitations and workshops; TCmWS |

\* the RI-ICEE is the required observation instrument used throughout the FSEHD and based on Rhode Island Professional Teaching Standards (RIPTS).

\*TCmWS stands for the Teacher Candidate mini Work Sample, a summative assessment that involves designing an entire unit plan including individual lessons and assessments.

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| B.19. [**Topical outline**](#44sinio)**: Do NOT insert whole syllabus, we just need a two-tier outline** |
| 1. **Mathematical Mindsets: Inquiry in Mathematics Methodolgy for ALL** 2. Teaching Mathematics as Growth Mindset: How to develop middle and high school student’s identity as thinkers and communicators in mathematics. 3. The role of hands-on mathematics experiences as a vehicle for inclusion 4. The power of mistakes and struggles in mathematics 5. Rich Mathematical Tasks 6. From tracking to growth Mindset groupings 7. Assessment for a growth mindset 8. **Incorporating social justice in the mathematics curriculum** 9. Teaching mathematics from a culturally relevant and critical pedagogical perspective 10. Cultural preferences relative to visual attention and the construction of mathematical concepts. 11. Cultural views on what constitutes a mathematical proof 12. Benefits of visual representations 13. Implications for youth, families, and communities 14. **Approaches to Mathematics Problem Analysis in the classroom** 15. Develop vital skills for teaching critical thinking across the curriculum through mathematical problem-solving strategies and using rich mathematical tasks. 16. Recognize and construct connections across mathematical ideas as you solve problems using mathematical tools. 17. Examine connections between problem-solving: listening, speaking, reading and writing in the mathematics classroom. 18. Identify and create problem solving materials and assessments for students with a full range of math abilities. |
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##### D.1. Approvals:

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| Name | Position/affiliation | [Signature](#_41mghml) | Date |
| Lesley Bogad | Chair of Educational Studies |  |  |
| Julie Horwitz or Gerri August | FSEHD Deans |  |  |
| Earl Simson | FAS Dean |  |  |