ELEMENATRY EDUCATION, BS

Program Description
A minimum of 120 semester hours is required for the BS degree. Degree requirements include University Core Curriculum, the major concentration, and the teacher education core. You can receive a BS degree in one of the following concentrations: Bilingual, Early Childhood with STEM Focus, Reading, or 4-8 Math.

Student Learning Outcomes

Bilingual
Students will:
- demonstrate a depth of knowledge of bilingual education;
- demonstrate a depth of speaking ability in Spanish;
- effectively apply the competencies of a bilingual education teacher in their clinical teaching experience.

Early Childhood with STEM Focus
Students will:
- provide well-designed instruction and assessment for students from a variety of backgrounds;
- develop classroom climates conducive to learning;
- apply in-depth knowledge of processes and practices associated with students’ reading and literacy development;
- fulfill professional roles and responsibilities.

Reading
Students will:
- provide well-designed instruction and assessment for students from a variety of backgrounds;
- develop classroom climates conducive to learning;
- apply in-depth knowledge of processes and practices associated with students’ reading and literacy development;
- fulfill professional roles and responsibilities.

4-8 Mathematics
Students will:
- establish a respectful educational environment for diverse middle level learners;
- demonstrate content knowledge by applying mathematics constructs;
- apply knowledge of curriculum standards for mathematics and their relationship to middle level learners within and across mathematical domains;
- engage middle level learners in developmentally appropriate mathematical activities and investigations;
- apply mathematical content and pedagogical knowledge to design lessons and units that facilitate student learning by incorporating a variety of strategies, including mathematics-specific instructional technologies;
- use formative and summative assessments to inform mathematics instruction.

General Requirements

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Core Curriculum Program</td>
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<tr>
<td>First-Year Seminars (when applicable)</td>
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<tr>
<td>Major Concentration Requirements</td>
<td>50-51</td>
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<td>Teacher Education Core Requirements</td>
<td>27</td>
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<td>Total Credit Hours</td>
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1 First-Year Seminars or Electives
Full-time, first time in college students are required to take the first-year seminars.
- UNIV 1101 University Seminar I (1 sch)
- UNIV 1102 University Seminar II (1 sch)

Program Requirements
Major Concentration Requirements (50-51 semester hours)
The Major Concentration consists of an academic or delivery system specialization and a combination of supporting fields.

1. Major concentrations may be selected from one of the following areas:
- Bilingual
- Early Childhood with STEM Focus
- Reading
- 4-8 Mathematics

2. The combination of supporting fields consists of a combination of three of the following five fields: English, Mathematics, Reading, Science, and Social Studies. A different combination of supporting fields is designated for each concentration. A minimum of 24 of the 50-51 semester hours must be in upper-division courses.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>UNIV 1101</td>
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<td>UNIV 1102</td>
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<tr>
<td>BIOL 1406</td>
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<tr>
<td>CHEM 1411</td>
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Major Concentration Requirements
Select one of the following Concentrations:
- Bilingual (p. 1)
- Early Childhood with STEM Focus (p. 2)
- Reading (p. 1)
- 4-8 Mathematics (p. 3)
**Teacher Education Core Requirements**  

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<td>BIEM 4345</td>
<td>Language Acquisition and Development</td>
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<tr>
<td>BIEM 4349</td>
<td>Linguistics for Bilingual Teachers</td>
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<td>BIEM 4355</td>
<td>Language Arts Studies in the Bilingual Curriculum</td>
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<td>BIEM 4356</td>
<td>Content Area Studies in the Bilingual Curriculum</td>
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<td>Foundations in Bilingualism</td>
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<td>MUSI 1301</td>
<td>Fundamentals of Music</td>
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<tr>
<td>READ 3310</td>
<td>Principles and Practices of Early Reading Instruction</td>
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<tr>
<td>READ 3320</td>
<td>Principles and Practices of Reading Instruction</td>
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<td>READ 3351</td>
<td>Reading Assessment and Intervention</td>
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<td>SMTE 1350</td>
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<td>SMTE 1351</td>
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<tr>
<td>SMTE 3315</td>
<td>Foundational Approaches to the Physical Sciences</td>
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<tr>
<td>SMTE 3316</td>
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<tr>
<td>SPAN 2312</td>
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<tr>
<td>ELEM 4330</td>
<td>Teaching Mathematics in the Elementary School</td>
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**Teacher Education Core Requirements**  

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<td>Foundations of Education</td>
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<tr>
<td>EDUC 3211</td>
<td>Culturally and Linguistically Responsive Teaching</td>
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<td>READ 3352</td>
<td>Content Area Reading for Elementary Students</td>
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<td>Design and Development of Technology-Integrated Learning Environments</td>
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<td>BIEM 4357</td>
<td>Methods of Teaching English as a Second Language</td>
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<td>EDUC 4395</td>
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<td>EDUC 4694</td>
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**Reading**  

All courses outside of the general core curriculum must be completed with a “C” or better.

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<td>EC-6 Assessment and Evaluation</td>
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<td>EC-6 Social Studies Curriculum</td>
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<td>EDCI 4302</td>
<td>STEM Science EC-6</td>
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<tr>
<td>ELEM 4330</td>
<td>Teaching Mathematics in the Elementary School</td>
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<td>ENGL 3340</td>
<td>Grammar</td>
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<td>Teaching Writing</td>
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<td>SMTE 1350</td>
<td>Fundamentals of Mathematics I</td>
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<td>Fundamentals of Mathematics II</td>
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<tr>
<td>SMTE 3315</td>
<td>Foundational Approaches to the Physical Sciences</td>
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<tr>
<td>SMTE 3316</td>
<td>Foundational Approaches to the Life Sciences</td>
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<td>SPED 3315</td>
<td>Reading and Language Interventions for Students with High-Incidence Disabilities</td>
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<tr>
<td>READ 3310</td>
<td>Principles and Practices of Early Reading Instruction</td>
<td>3</td>
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</tbody>
</table>
Elementary Education, BS

Teacher Education Core Requirements

**EDUC 2211** Foundations of Education 2

**IDET 3210** Design and Development of Technology-Integrated Learning Environments 2

**EDUC 3211** Culturally and Linguistically Responsive Teaching 2

**SPED 3310** Individual Differences in Schools and Communities 3

**EDUC 4305** Seminar I 3

**BIEM 4357** Methods of Teaching English as a Second Language 3

**EDUC 4395** Seminar II 3

**EDUC 4694** Clinical Teaching 6

**SPED 3310** Individual Differences in Schools and Communities 3

**READ 3320** Principles and Practices of Reading Instruction 3

**READ 3351** Reading Assessment and Intervention 3

**READ 3380** Children’s and Adolescents’ Literature 3

**READ 4394** Field Experiences in Reading 3

**READ 3352** Content Area Reading for Elementary Students 3

**Total Hours** 77

Non-Certification Track to the BS Degree

The degree will be a BS Degree without certification. Students will follow the same degree plan as one of the four emphasis above (EC-6 Reading, EC-6 Bilingual, EC-6 Early childhood with STEM, or 4-8 Mathematics) except for the last semester, during which they will choose 9 SCH of faculty advisor approved elective courses that will replace the clinical teaching component of the degree.

Course Sequencing

### Bilingual

#### First Year

**Fall**

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<thead>
<tr>
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<td>ENGL 1301</td>
<td>Writing and Rhetoric I</td>
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<tr>
<td>or ENGL 1302</td>
<td>or Writing and Rhetoric II</td>
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<tr>
<td>HIST 1301</td>
<td>U.S. History to 1865</td>
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<tr>
<td>or HIST 1302</td>
<td>or U.S. History Since 1865</td>
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<tr>
<td>ARTS 1301</td>
<td>Art and Society</td>
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<td>EDUC 1354</td>
<td>Child Growth and Development</td>
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<td>MATH 1314</td>
<td>College Algebra</td>
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**Total Hours** 16

**Spring**

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<td>HIST 1301</td>
<td>U.S. History to 1865</td>
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<tr>
<td>or HIST 1302</td>
<td>or U.S. History Since 1865</td>
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<tr>
<td>SMTE 1350</td>
<td>Fundamentals of Mathematics I</td>
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**Total Hours** 16

#### Second Year

**Fall**

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<th>Title</th>
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<td>Investigating Student Learning in Middle Level Mathematics (3)</td>
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<tr>
<td>EDCI 4350</td>
<td>Assessment in Middle Level Mathematics</td>
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<td>ELEM 4330</td>
<td>Teaching Mathematics in the Elementary School</td>
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<tr>
<td>POLS 2306</td>
<td>State and Local Government</td>
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<td>SMTE 3316</td>
<td>Foundational Approaches to the Life Sciences</td>
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<td>HIST 2301</td>
<td>Texas History</td>
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<tr>
<td>SMTE 1351</td>
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**Total Hours** 16

**Spring**

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<td>SPAN 2312</td>
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<tr>
<td>EDUC 2211</td>
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</table>
### Early Childhood with STEM Focus

#### First Year

##### Fall

- **UNIV 1101** University Seminar I  
  **Hours**: 1
- **ENGL 1301 or ENGL 1302** Writing and Rhetoric I  
  **Hours**: 3
- **BIOL 1308** Science for Life I (Non-Majors Biology)  
  **Hours**: 3

#### Second Year

##### Fall

- **ESCI 1401** Environmental Science I: Intro to Environmental Science  
  **Hours**: 4
- **EDUC 2211** Foundations of Education  
  **Hours**: 2
- **HIST 1301 or HIST 1302** U.S. History to 1865 or U.S. History Since 1865  
  **Hours**: 3
- **POLS 2306** State and Local Government  
  **Hours**: 3
- **SMTE 1350** Fundamentals of Mathematics I  
  **Hours**: 3

##### Spring

- **HIST 2301** Texas History  
  **Hours**: 3
- **ECED 3380** Developmentally Appropriate Practice in Early Childhood Education  
  **Hours**: 3
- **SMTE 1351** Fundamentals of Mathematics II  
  **Hours**: 3
- **SMTE 3315** Foundational Approaches to the Physical Sciences  
  **Hours**: 3

##### Summer

- **ECED 4330** Health, Nutrition, and Locomotor Concepts for the Young Child  
  **Hours**: 3
- **ECED 4340** Communication and Aesthetics  
  **Hours**: 3

#### Third Year

##### Fall

- **EDCI 4302** STEM Science EC-6  
  **Hours**: 3
- **READ 3320** Principles and Practices of Reading Instruction  
  **Hours**: 3
- **ELEM 4330** Teaching Mathematics in the Elementary School  
  **Hours**: 3
- **SMTE 3316** Foundational Approaches to the Life Sciences  
  **Hours**: 3
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<td>EC-6 Social Studies Curriculum</td>
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<td>Content Area Reading for Elementary Students</td>
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<td><strong>Fourth Year</strong></td>
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<td>SPED 3310</td>
<td>Individual Differences in Schools and Communities</td>
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<td>EC-6 Assessment and Evaluation</td>
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<td>Design and Development of Technology-Integrated Learning Environments</td>
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<tr>
<td>READ 3351</td>
<td>Reading Assessment and Intervention</td>
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<td><strong>Total Hours</strong></td>
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<table>
<thead>
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<tr>
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| **First Year** | | **Fall**
| UNIV 1101 | University Seminar I | 1 |
| ENGL 1301 | Writing and Rhetoric I | 3 |
| or ENGL 1302 | Writing and Rhetoric II | 3 |
| HIST 1301 | U.S. History to 1865 | 3 |
| or HIST 1302 | U.S. History Since 1865 | 3 |
| or HIST 2301 | Texas History | 3 |
| ARTS 1301 | Art and Society | 3 |
| PSYC 2301 | General Psychology | 3 |
| MATH 1314 | College Algebra | 3 |
| **Spring** | | **16** |
| UNIV 1102 | University Seminar II | 1 |
| COMM 1311 | Foundation of Communication | 3 |
| EDUC 1354 | Child Growth and Development | 3 |
| BIOL 1308 | Science for Life I (Non-Majors Biology) | 3 |
| University Core Curriculum | | 3 |
| SMTE 1350 | Fundamentals of Mathematics I | 3 |
| **Second Year** | | **16** |
| POLS 2306 | State and Local Government | 3 |
| HIST 1302 | U.S. History Since 1865 | 3 |
| or HIST 1301 | U.S. History to 1865 | 3 |
| or HIST 2301 | Texas History | 3 |
| EDUC 2211 | Foundations of Education | 2 |
| ENGL 3340 | Grammar | 3 |
| SMTE 3315 | Foundational Approaches to the Physical Sciences | 3 |
| **Spring** | | **14** |
| SMTE 1351 | Fundamentals of Mathematics II | 3 |
| ENGL 3360 | Teaching Writing | 3 |
| ENGL 2332 | Literature of the Western World: From the Classics to the Renaissance | 3 |
| or ENGL 2316 | or Literature and Culture | 3 |
| or ENGL 2333 | or Literature of the Western World: From the Enlightenment to the Present | 3 |
| SMTE 3316 | Foundational Approaches to the Life Sciences | 3 |
| ESCI 1401 | Environmental Science I: Intro to Environmental Science | 4 |
| **Third Year** | | **Fall**
| EDUC 3211 | Culturally and Linguistically Responsive Teaching | 2 |
| READ 3310 | Principles and Practices of Early Reading Instruction | 3 |
| READ 3320 | Principles and Practices of Reading Instruction | 3 |
| SPED 3310 | Individual Differences in Schools and Communities | 3 |
| POLS 2306 | State and Local Government | 3 |
| **Spring** | | **16** |
| READ 3351 | Reading Assessment and Intervention | 3 |
| READ 3352 | Content Area Reading for Elementary Students | 3 |
| ECED 4350 | EC-6 Social Studies Curriculum | 3 |
| ECED 4345 | EC-6 Assessment and Evaluation | 3 |
| SPED 3315 | Reading and Language Interventions for Students with High-Incidence Disabilities | 3 |
| **Summer** | | **15** |
| EDUC 4301 | STEM Mathematics | 3 |
| or SMTE 3352 | or Fundamentals of Mathematics III | 3 |
| READ 3380 | Children's and Adolescents' Literature | 3 |
| BIEM 4357 | Methods of Teaching English as a Second Language | 3 |
| **Fourth Year** | | **9** |
| EDUC 4305 | Seminar I | 3 |
| ELEM 4330 | Teaching Mathematics in the Elementary School | 3 |
Elementary Education, BS

<table>
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<th>Course Title</th>
<th>Hours</th>
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<td>READ 4394</td>
<td>Field Experiences in Reading</td>
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<td>EDCI 4302</td>
<td>STEM Science EC-6</td>
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| Total Hours | 123 |

### 4-8 Mathematics

#### First Year

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<td>or ENGL 1302</td>
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<td>BIOL 1406</td>
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<td>EDUC 1354</td>
<td>Child Growth and Development</td>
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<td>MATH 1316</td>
<td>Trigonometry</td>
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<td>or HIST 1302</td>
<td>or U.S. History Since 1865</td>
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<td>CHEM 1411</td>
<td>General Chemistry I</td>
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<td>SMTE 1351</td>
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<td>MATH 2413</td>
<td>Calculus I</td>
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<td><strong>Hours</strong></td>
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#### Second Year

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<th>Semester</th>
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<tr>
<td>Fall</td>
<td>University Core Curriculum</td>
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<td>HIST 2301</td>
<td>Texas History</td>
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<td>or U.S. History to 1865</td>
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<td></td>
<td>ENGL 2316</td>
<td>Literature and Culture</td>
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<td>or ENGL 2332</td>
<td>or Literature of the Western World: From the Classics to the Renaissance</td>
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<td>or ENGL 2333</td>
<td>or Literature of the Western World: From the Enlightenment to the Present</td>
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<td>POLS 2305</td>
<td>U.S. Government and Politics</td>
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<td>MATH 1442</td>
<td>Statistics for Life</td>
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<td>ARTS 1301</td>
<td>Art and Society</td>
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<td>POLS 2306</td>
<td>State and Local Government</td>
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<td>PSYC 2301</td>
<td>General Psychology</td>
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<td></td>
<td>EDUC 2211</td>
<td>Foundations of Education</td>
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<td>MATH 2305</td>
<td>Discrete Mathematics I</td>
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### Third Year

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<td>MATH 3312</td>
<td>College Geometry</td>
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<td>EDCI 4301</td>
<td>STEM Mathematics</td>
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<td></td>
<td>or SMTE 3352</td>
<td>or Fundamentals of Mathematics III</td>
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<td>EDUC 3211</td>
<td>Culturally and Linguistically Responsive Teaching</td>
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<td>SPED 3310</td>
<td>Individual Differences in Schools and Communities</td>
<td>3</td>
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<td>READ 3320</td>
<td>Principles and Practices of Reading Instruction</td>
<td>3</td>
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<td>ELEM 4330</td>
<td>Teaching Mathematics in the Elementary School</td>
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<td>SMTE 4382</td>
<td>Basic Mathematics From An Advanced Viewpoint</td>
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<td>EDCI 3350</td>
<td>Investigating Student Learning in Middle Level Mathematics (3)</td>
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<td>READ 3352</td>
<td>Content Area Reading for Elementary Students</td>
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<td>SMTE 3315</td>
<td>Foundational Approaches to the Physical Sciences</td>
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<td>ECED 4345</td>
<td>EC-6 Assessment and Evaluation</td>
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### Fourth Year

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<td>Fall</td>
<td>EDUC 4305</td>
<td>Seminar I</td>
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<td>BIEM 4357</td>
<td>Methods of Teaching English as a Second Language</td>
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<td></td>
<td>EDCI 4350</td>
<td>Assessment in Middle Level Mathematics</td>
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<tr>
<td></td>
<td>IDET 3210</td>
<td>Design and Development of Technology-Integrated Learning Environments</td>
<td>2</td>
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<td></td>
<td>SMTE 3316</td>
<td>Foundational Approaches to the Life Sciences</td>
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<td><strong>Hours</strong></td>
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<td>Spring</td>
<td>EDUC 4395</td>
<td>Seminar II</td>
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<td>EDUC 4694</td>
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NOTE: Non-Certification Track to the BS Degree

The degree will be a BS Degree without certification. Students will follow the same degree plan as one of the four emphasis above (EC-6 Reading, EC-6 Bilingual, EC-6 Early childhood with STEM, or 4-8 Mathematics) except for the last semester, during which they will choose 9 SCH of faculty advisor approved elective courses that will replace the clinical teaching component of the degree.
Courses

Bilingual/ESL/Multicultural Education Courses

BIEM 4344 The Bilingual Child, Culture, & the Social Studies Curriculum
3 Semester Credit Hours (3 Lecture Hours)
Studies of the bilingual children, the effect of culture on psychological development, and the challenges of the social studies curriculum.

BIEM 4345 Language Acquisition and Development
3 Semester Credit Hours (3 Lecture Hours)
A study of language acquisition and development with special reference to implications for monolingual and bilingual learners.

BIEM 4349 Linguistics for Bilingual Teachers
3 Semester Credit Hours (3 Lecture Hours)
A study of the phonological, morphological, syntactical, lexical, and semantic characteristics of contemporary Spanish and English. The course focuses on Spanish-English bilingualism.

BIEM 4355 Language Arts Studies in the Bilingual Curriculum
3 Semester Credit Hours (3 Lecture Hours)
Basic methodological strategies and assessment skills required to teach language arts in the elementary bilingual classroom are provided. Emphasis is on teaching in Spanish.

BIEM 4356 Content Area Studies in the Bilingual Curriculum
3 Semester Credit Hours (3 Lecture Hours)
The concepts and skills required to teach mathematics and science in the elementary bilingual classroom are provided.

BIEM 4357 Methods of Teaching English as a Second Language
3 Semester Credit Hours (3 Lecture Hours)
Studies in methodology and techniques available for teaching those whose native language is not English. Testing and assessment of English language learners will be integrated into the course.
Prerequisite: EDUC 3211.

BIEM 4360 Foundations in Bilingualism
3 Semester Credit Hours (3 Lecture Hours)
The philosophical and legal foundations of bilingual schooling in the United States through a sociohistorical approach. The rationale for bilingual education is examined, as are the basic program models. An overview of bilingual education in Texas is also provided.

BIEM 4696 Directed Individual Study
1-6 Semester Credit Hours (1 Lecture Hour)
Programs will be designed for individual cases through special permission of the Department Chair and Dean. May be repeated for credit when the topic varies.

Early Childhood Education Courses

ECED 1320 Child Growth and Development: Infancy Through Adolescence
3 Semester Credit Hours (3 Lecture Hours)
This course provides the student with an overview of the physical, cognitive, social, emotional, and psychological development of children from infancy through adolescence. Students must be aware of overall growth and development to fully understand the students they will teach and the families they will serve.

ECED 1322 Promoting Health, Nutrition and Locomotor/Physical Skills of Young Children
3 Semester Credit Hours (3 Lecture Hours)
This course will facilitate the acquisition/attainment of knowledge necessary for educators to support and meet the health, nutrition and Locomotor/Physical needs of the children with whom they will work/educate.

ECED 2342 Young Children and the Creative Arts
3 Semester Credit Hours (3 Lecture Hours)
This course will provide students with the knowledge and understanding needed to select appropriate techniques to support young children and the creative arts. Students will use the Texas Prekindergarten Guidelines and the Texas Essential Knowledge and Skills to develop activities that support young children's personal expression through visual arts, music, creative movement, dance, and theatre.

ECED 2352 Educating Young Children Through DAP
3 Semester Credit Hours (3 Lecture Hours)
This course will provide students with the understanding of current, best practices that effectively engage young children in the learning process. Developmentally appropriate strategies that will engage young children in exploration and maximize the learning opportunities in small and large groups will be presented. Students will apply their understanding of appropriate practices for young children in the creation of lesson plans and planning of classroom environment.
Prerequisite: ECED 1320.

ECED 2362 Culturally Responsive Pedagogy to Support Young Children
3 Semester Credit Hours (3 Lecture Hours)
This course will introduce students to the concept of culturally responsive pedagogy and how culture influences young children's identity, their school experience as well as the preservice teacher. Students will explore the meanings of culture, social justice, culturally responsive pedagogy, and ways to create a classroom environment that is respectful, inclusive and equitable.
Prerequisite: ECED 1320.

ECED 3322 Math with Young Learners
3 Semester Credit Hours (3 Lecture Hours)
This course addresses the important "big ideas" in mathematics appropriate for PreK-3rd grade students, with an emphasis on student-centered learning and inclusive environments for all learners of math. Students will have the opportunity to engage in math, observe and reflect upon children's mathematical thinking and solution strategies, identify and integrate children's lived experiences and background knowledge into mathematics lessons, and use assessments to build on children's understanding and extend their learning. This course is designed to have students experience and learn mathematics through a process of inquiry which differs in significant ways from traditional mathematics classes. Students will deepen their own mathematical knowledge while furthering their understanding of effective mathematics instruction. Students will develop an understanding of the math content in accordance with State and National Standards and contemporary educational research findings in early childhood mathematics teaching and learning.
Prerequisite: ECED 1320.

ECED 3324 Child Development
3 Semester Credit Hours (3 Lecture Hours)
Provides the student with an overview of the physical, social, emotional, and psychological development of children from infancy through early childhood.
ECED 3332 Science with Young Learners
3 Semester Credit Hours (3 Lecture Hours)
This course is designed to provide preservice teachers with a global understanding of teaching science in the EC-3rd grade school setting. This aim requires preservice teachers to learn about the nature of science, engage in science investigations, and construct an understanding of natural phenomena. At the same time, students will explore how to facilitate this knowledge construction with young children through the use of inquiry. Students will become knowledgeable of the state-adopted proficiencies for teachers (science emphasis), state standards for science (science TEKS), as well as, the Next Generation Science Standards (NGSS), the national science education standards. 
Prerequisite: ECED 1320.

ECED 3342 Emergent Writing
3 Semester Credit Hours (3 Lecture Hours)
This course aims to prepare undergraduate teacher candidates to support young children's emergent literacy, with an emphasis on oral language and writing. The development of children's writing skills, from scribbling and drawing to conventional spelling is explored. Current research, educational practice, and instructional materials will be analyzed, with an emphasis on how to integrate child-initiated writing into multiple areas of the curriculum.
Prerequisite: ECED 1320.

ECED 3352 Assessment in Early Childhood
3 Semester Credit Hours (3 Lecture Hours)
This course addresses the various ways to assess the development and learning of children from EC-3rd grade. The ways in which teachers select, administer, and interpret formal, informal, and alternative assessments will be explored. The principles of designing and using assessment and evaluation techniques that are culturally fair, intellectually sound, reliable, dependable, and content-valid for young children will be investigated. Finally, various ways to systematically observe and document students' development and learning will be reviewed.
Prerequisite: ECED 1320.

ECED 3380 Developmentally Appropriate Practice in Early Childhood Education
3 Semester Credit Hours (3 Lecture Hours)
An intensive study of developmentally appropriate practice in early childhood education. Students will learn the components of lesson plans and create several lesson plans. Emphasis will be placed on selecting, defining, developing strategies and techniques, and assessing practices which support developmentally appropriate practices.
Prerequisite: ECED 3324.

ECED 4310 Socialization of the Young Child
3 Semester Credit Hours (3 Lecture Hours)
An intensive study of the social development, the agents of socialization, and the socialization process in early childhood.
Prerequisite: ECED 2310 or 3324.

ECED 4312 Inquiry-based Learning in the Early Childhood Classroom
3 Semester Credit Hours (3 Lecture Hours)
This course is a study of theory into practice through the creation of an emergent curriculum that integrates content in the areas of math, science, and technology alongside learners' interests. Students will be expected to have a firm foundation in math and science content, with the aim of this course to build on that knowledge to develop hands-on, concrete, and relevant experiences to help young children develop an understanding of the physical world and to develop skills of inquiry. Technology serves as both a subject of instruction as well as an instructional tool to support learning and communication. This course also includes a discussion of the differentiation of instruction, learner characteristics, the learning environment, curriculum, and standards. 
Prerequisite: ECED 1320.

ECED 4320 The Young Child, Family and Community Resources
3 Semester Credit Hours (3 Lecture Hours)
A study of current family structures, their relationship to the young child, society, and the community. Emphasis will be placed on an inclusive model which addresses the needs of the global community as it relates to the young child.
Prerequisite: ECED 2310 or 3324.

ECED 4321 Infant and Toddler Development
3 Semester Credit Hours (3 Lecture Hours)
The course will explore the specific development and growth of infants and toddlers. In addition, appropriate programs and environments which support infant and toddlers' physical, emotional, social, and cognitive growth and development will be explored.

ECED 4322 Teaching Young Children Through the Social Studies
3 Semester Credit Hours (3 Lecture Hours)
This course will acquaint students with techniques of incorporating the social studies concepts of geography, government and economics through a cultural lens. This perspective will prepare students to teach young children in culturally diverse communities

ECED 4325 Current Issues and Trends in Early Childhood Education
3 Semester Credit Hours (3 Lecture Hours)
The course will focus on the study and discussion of topics related to current issues and trends that affect early childhood education programs and policies. The course will assist students to become advocates for young children

ECED 4330 Health, Nutrition, and Locomotor Concepts for the Young Child
3 Semester Credit Hours (3 Lecture Hours)
The relationship between health, nutrition, and locomotor development in the young child is investigated.

ECED 4332 Social-Emotional Development and Child Guidance
3 Semester Credit Hours (3 Lecture Hours)
This course focuses on conflict resolution, problem-solving, the development of supportive interactions, and children's initiation and self-help skills. Students will build knowledge about underlying emotional skill development as well as knowledge of the influence of stress and trauma, protective factors, resilience, and supportive relationships on the cognitive and emotional development of young children. In addition, students will analyze children's social skills to develop supportive interactions and use developmentally appropriate strategies to effectively manage instructional activities for young children. Finally, students will utilize knowledge of children's learning and social/emotional development in order to adapt the environment to meet students' individual and group needs.
Prerequisite: ECED 1320.
ECED 4334 Internship I in Early Childhood Education
3 Semester Credit Hours
This course is the first of a sequential series of field-based experiences. Students will work in collaboration with staff and teachers where they are placed to plan and implement developmentally appropriate lesson plans which shall be evaluated in cooperation with the teacher and supervisor. Faculty approval of the early childhood program for internship is required.

ECED 4335 Internship II in Early Childhood Education
3 Semester Credit Hours
This course is the last of a sequential series of field-based experiences designed to ensure that the ECED degree candidate develops and demonstrates the ability to apply the knowledge and skills learned in content and professional courses. Faculty approval of the early childhood program for internship is required.

ECED 4340 Communication and Aesthetics
3 Semester Credit Hours (3 Lecture Hours)
A study of language development; early literacy, language arts, and aesthetics. Students will develop an integrated thematic unit plan. Strategies and curriculum materials that are developmentally appropriate for young children will be emphasized to support the Texas Essential Knowledge and Skills (TEKS).

ECED 4345 EC-6 Assessment and Evaluation
3 Semester Credit Hours (3 Lecture Hours)
A study of assessment for children EC-6 utilizing both formal and informal instruments will be addressed. A knowledge of choosing, administering, and reporting developmental assessment will be explored with an emphasis on assessment tools that can be used by teachers of young children. Principles of designing and using assessment and evaluation techniques that are culturally fair, intellectually sound, reliable, and content-valid for young children. Differentiation among criterion-referenced, norm-referenced, individual, informal, authentic, and group assessments will be emphasized. Students will review strategies for using assessment data to design instruction, and match assessment techniques to individual children and learning situations.

ECED 4350 EC-6 Social Studies Curriculum
3 Semester Credit Hours (3 Lecture Hours)
This course will expose students to skills and concepts taught in the Social Studies curriculum in the elementary school. Developmentally appropriate strategies, concepts, and curricular materials used in teaching the Social Studies will be emphasized.

Prerequisite: ECED 3324.

Mathematics Courses

MATH 0099 Math Non-Course Based Development
0 Semester Credit Hours
Preparation workshop to help students achieve College Readiness in mathematics under the Texas Success Initiative. Topics include five general areas: fundamental mathematics, algebra, geometry, statistics, and problem solving.

MATH 0200 Brief Developmental Mathematics
1-2 Semester Credit Hours (1-2 Lecture Hours)
Topics as in MATH 0300. For students who have completed most topics in MATH 0300. Requires permission of MATH department. (Not counted toward graduation) Fall, Spring, Maymester, Summer.

Co-requisite: MATH 1314, MATH 1442.

MATH 0214 Brief Developmental Mathematics-Algebra
2 Semester Credit Hours (2 Lecture Hours)
This course is co-requisite course supporting for MATH 1314. Support will focus on essential skills required for success in College Algebra (Math 1314). Supporting topics include review of intermediate algebra, polynomial equations, graphing techniques, and applications. Course provides the necessary academic support for TSI liable students concurrently enrolled in MATH 1314 as the co-requisite with MATH 0214. Students who register for MATH 0214 must co-register in MATH 1314. Math 0214 is not counted toward graduation. Fall, Spring, Summer.

Co-requisite: MATH 1314.

MATH 0224 Brief Developmental Mathematics-Business Mathematics
2 Semester Credit Hours (2 Lecture Hours)
This course is the co-requisite course supporting for MATH 1324. Support will focus on essential skills required for success in Business Math (Math 1324). Supporting topics include the use of calculators and technology. Topics focus on basic review of mathematical skills, elementary algebra, mathematical and logical reasoning, probability, and financial management, while providing the necessary academic support for TSI liable students concurrently enrolled in MATH 1324 as the co-requisite with MATH 0224. Students who register for MATH 0224 must co-register in MATH 1324. Math 0224 is not counted toward graduation. Fall, Spring, Summer.

Co-requisite: MATH 1324.

MATH 0232 Brief Developmental Mathematics-Contemporary Mathematics
2 Semester Credit Hours (2 Lecture Hours)
This course is co-requisite course supporting for MATH 1332. Support will focus on essential skills required for success in Contemporary Mathematics (Math 1332). Supporting topics include a basic review of mathematical skills, elementary algebra, mathematical and logical reasoning, probability, and descriptive statistics, while providing the necessary academic support for TSI liable students concurrently enrolled in MATH 1332 as the co-requisite with MATH 0232. Students who register for MATH 0232 must co-register in MATH 1332. Math 0232 is not counted toward graduation. Fall, Spring, Summer.

Co-requisite: MATH 1332.

MATH 0242 Brief Developmental Mathematics-Statistics
2 Semester Credit Hours (2 Lecture Hours)
This course is co-requisite course supporting for MATH 1442. Support will focus on essential skills required for success in Statistics for Life (Math 1442). Supporting topics include the use of calculators and technology. Topics focus on descriptive and inferential statistics, probabilities including notation, while providing the necessary academic support for TSI liable students concurrently enrolled in MATH 1442 as the co-requisite with MATH 0242. Students who register for MATH 0242 must co-register in MATH 1442. Math 0242 is not counted toward graduation. Fall, Spring, Summer.

Co-requisite: MATH 1442.

MATH 0300 Developmental Mathematics
3 Semester Credit Hours (3 Lecture Hours)
Topics include number concepts, computation, elementary algebra, geometry, and mathematical reasoning. Also, linear equations and inequalities, rational expressions, exponents and radicals, quadratics and word problems. May be repeated for credit as needed to complete mastery of all topics. (Not counted toward graduation.) Fall, Spring, Summer.
MATH 0310 Development Mathematics-Algebra
3 Semester Credit Hours (2 Lecture Hours, 2 Lab Hours)
3 sem. hrs. (2:2) Topics include number concepts, computation, elementary algebra, and geometry. Also, linear equations and inequalities, rational expressions, exponents and radicals, quadratics and word problems. May be repeated for credit as needed to complete mastery of all topics. (Not counted toward graduation.) Fall, Spring, Summer.

MATH 0398 Introduction to Algebra
3 Semester Credit Hours (3 Lecture Hours)
Number concepts, computation, elementary algebra, geometry, and mathematical reasoning.

MATH 0399 Intermediate Algebra
3 Semester Credit Hours (3 Lecture Hours)
Topics include linear equations and inequalities, rational expressions, exponents and radicals, quadratics and word problems.
Prerequisite: MATH 0398.

MATH 1014 Essential Support for College Algebra for STEM Majors
0 Semester Credit Hours
Focuses on essential skills required for success in College Algebra for STEM majors (Math 1314-designated sections). Students who register for MATH 1014 must co-register in MATH 1314 sections designated with S. Math 1014 is not counted toward graduation. Fall, Spring, Summer.
Co-requisite: MATH 1314.

MATH 1024 Essential Support for Business Math
0 Semester Credit Hours
Supports MATH 1324 with focus on essential skills required for success in Business Math, and providing the necessary academic support for TSI liable students concurrently enrolled in MATH 1324. Students who register for MATH 1024 must co-register in MATH 1324. Math 1024 is not counted toward graduation. Fall, Spring, Summer.
Co-requisite: MATH 1324, MATH 1325.

MATH 1314 College Algebra
3 Semester Credit Hours (3 Lecture Hours)
Quadratic equations, inequalities, graphs, logarithms and exponentials, theory of polynomial equations, systems of equations by using matrix. Counts as the mathematics component of the University Core Curriculum. Fall, Spring, Summer. Students in STEM programs must register in sections with S designation. Meets 3 hours per week with one meeting per week in MATH 1014.
Prerequisite: MATH 0300, 0300, minimum score of 530 in 'SAT MATH SECTION', minimum score of 19 in 'ACT Math', MATH 0320, 0320, minimum score of 350 in 'TSI Math', minimum score of 910 in 'TSIA2 Math' or minimum score of 6 in 'TSIA2 Math Diagnostic'.
TCCNS: MATH 1314

MATH 1316 Trigonometry
3 Semester Credit Hours (3 Lecture Hours)
Trigonometric functions, identities, equations involving trigonometric functions, solutions of right and oblique triangles.
Prerequisite: (MATH 1314, 1314, minimum score of 550 in 'SAT MATH SECTION' or minimum score of 21 in 'ACT Math') or minimum score of 21 in 'ACT Math'.
TCCNS: MATH 1316

MATH 1324 Mathematics for Business and Social Sciences
3 Semester Credit Hours (3 Lecture Hours)
Students will learn how the properties and language of mathematics can be used in business and real-world problem solving and understand the techniques and applications of finance problems, basic matrix operation, basic counting principles, probability analysis in modeling real-world scenarios, and review of Algebra topics. Three lecture hours plus one discussion session a week in corequisite (MATH 1024) This course could be taught in 14-weeks or 7-weeks semesters, and in F2F or fully online formats. May not be counted toward a degree in the Colleges of Science or Engineering. Fall, Spring Summer.
Prerequisite: minimum score of 550 in 'SAT MATH SECTION', minimum score of 21 in 'ACT Math' or minimum score of 21 in 'ACT1 Math'.
TCCNS: MATH 1324

MATH 1325 Calculus for Business & Social Sciences
3 Semester Credit Hours (3 Lecture Hours)
Students will develop and combine the concepts in and relationships between Mathematics and Business from the fundamentals of calculus and optimization in all Business fields. Students are expected to learn the materials algebraically with technology. Students will combine the concepts of limits, continuity, differentiation and integration techniques to solve problems in business, economics, and social sciences. Three lecture hours plus one discussion session a week in MATH 1025. This course could be taught in 14-weeks and 7-weeks semesters in F2F and fully online formats. May not be counted toward a degree in the Colleges of Science or Engineering. Fall, Spring, Summer.
Prerequisite: MATH 1324, minimum score of 550 in 'SAT MATH SECTION', minimum score of 21 in 'ACT Math' or minimum score of 21 in 'ACT Math'.
Co-requisite: MATH 1025.
TCCNS: MATH 1325

MATH 1332 Contemporary Mathematics
3 Semester Credit Hours (3 Lecture Hours)
This course serves as a terminal course and supplies a brief overview of several topics in mathematics. Topics may include introductory treatments of sets, logic, number systems, number theory, relations, functions, probability and statistics. Appropriate applications are included. This course emphasizes using critical thinking to make decisions based on information.
TCCNS: MATH 1332

MATH 1390 Introduction to Mathematical Topics
1-3 Semester Credit Hours (1-3 Lab Hours)
A course to introduce students to mathematical topics in a formal setting. The course may support problem solving, or systematic investigations of topics outside the current mathematical catalog. May not be substituted for regularly scheduled offerings.
MATH 1442 Statistics for Life
4 Semester Credit Hours (3 Lecture Hours, 2 Lab Hours)
An introduction to statistical concepts and methods used in all disciplines to enhance decision making based on data analysis, including: basic experimental design models, measurement and data collection through sampling; display and summary of information, and assessment of relationship through descriptive techniques; probability concepts leading to estimation and hypothesis testing of means, variance and proportions, regression analysis, one-factor ANOVA and chi-square test of independence; and applications through case studies. The laboratory component of the course offers applications of the theory presented during the classroom sessions.
Prerequisite: MATH 0300, 0300, minimum score of 530 in 'SAT MATH SECTION', minimum score of 19 in 'ACT Math', MATH 0310, 0310, 0320, 0320, minimum score of 350 in 'TSI Math' or minimum score of 19 in 'ACT Math'.
TCCNS: MATH 1442

MATH 2305 Discrete Mathematics I
3 Semester Credit Hours (3 Lecture Hours)
An introduction to topics in Discrete Mathematics with an emphasis on applications in Mathematics and Computer Science. Topics include formal logic, graphs, trees and related algorithms, and combinatorics and discrete probability.
Prerequisite: MATH 2413, 2413, minimum score of 620 in 'SAT Math', minimum score of 620 in 'SAT1 Mathematics', minimum score of 640 in 'SAT MATH SECTION', minimum score of 27 in 'ACT Math' or minimum score of 27 in 'ACT1 Math'.
TCCNS: MATH 2305

MATH 2312 Precalculus
3 Semester Credit Hours (3 Lecture Hours)
A more rapid treatment of the material in MATH 1314 and MATH 1316, this course is designed for students who wish a review of the above material, or who are very well prepared. Functions, graphs, trigonometry, and analytic geometry.
Prerequisite: MATH 1314, 1314, minimum score of 550 in 'SAT MATH SECTION', minimum score of 21 in 'ACT Math' or minimum score of 21 in 'ACT1 Math'.
TCCNS: MATH 2312

MATH 2413 Calculus I
4 Semester Credit Hours (3 Lecture Hours, 2 Lab Hours)
Limits, continuity, derivatives, applications of the derivative, and an introduction to integrals. Contains a laboratory component.
Prerequisite: MATH 1316, 1316, 2312, 2312, minimum score of 640 in 'SAT MATH SECTION' or minimum score of 27 in 'ACT1 Math'.
TCCNS: MATH 2413

MATH 2414 Calculus II
4 Semester Credit Hours (3 Lecture Hours, 2 Lab Hours)
Prerequisite: MATH 2413 or 2413.
TCCNS: MATH 2414

MATH 2415 Calculus III
4 Semester Credit Hours (3 Lecture Hours, 2 Lab Hours)
Vectors and space curves, partial derivatives, multiple integrals, special coordinate systems, line and surface integrals, Green's, Stokes', and the Divergence Theorems. Contains a laboratory component. Vectors and space curves, partial derivatives, multiple integrals, special coordinate systems, line and surface integrals, Green's, Stokes', and the Divergence Theorems. Contains a laboratory component.
Prerequisite: MATH 2414 or 2414.
TCCNS: MATH 2415

MATH 3300 Geospatial Mathematical Techniques
3 Semester Credit Hours (3 Lecture Hours)
Characteristics of geographic/spatial information; overview of relevant sections of numbers, algebra and geometry, plane and spherical trigonometry, matrices, determinants and vectors, curves and surfaces, integral and differential calculus, partial derivatives, with an emphasis on geospatial applications. Concepts of geospatial coordinate systems and geospatial coordinate transformations; overview of spatial statistics and best-fit solutions with geospatial applications. Students may not receive credit for both MATH 3300 and GISC 3300.
Prerequisite: MATH 2413 and 2414.

MATH 3301 Introduction to Complex Analysis
3 Semester Credit Hours (3 Lecture Hours)
This course introduces functions of a complex variable and their applications. Contents include differentiation and integration; zeros, poles and residues; conformal mappings.
Prerequisite: (MATH 2415 or 2415) or (MATH 2414 or 2414 and MATH 3314 or 3314).

MATH 3310 Mathematical Analysis for Mechanical Engineering
3 Semester Credit Hours (3 Lecture Hours)
Applications of fundamentals of linear algebra, vector analysis, numerical methods, computer programming and probability and statistics into mechanical engineering. May not count towards the MATH major. Students may not receive credit for both MATH 3310 and MEEN 3310.
Prerequisite: MATH 3315.

MATH 3311 Linear Algebra
3 Semester Credit Hours (3 Lecture Hours)
Fundamentals of linear algebra and matrix theory. Topics include vectors, matrix operations, linear transformations, fundamental properties of vector spaces, systems of linear equations, eigenvalues and eigenvectors. Applications.
Prerequisite: MATH 2413 or 2413.

MATH 3312 College Geometry
3 Semester Credit Hours (2 Lecture Hours, 2 Lab Hours)
A careful study of the foundations of Euclidean geometry by synthetic methods with an introduction to non-Euclidean geometries. An introduction to transformational geometry.
Prerequisite: MATH 2413 or 2413.

MATH 3313 Foundations of Number Theory
3 Semester Credit Hours (3 Lecture Hours)
This course assists a student's transition to advanced mathematics. Fundamentals of logic and proof are reviewed and applied to topics from elementary number theory.
Prerequisite: MATH 2414 or 2414.
MATH 3314 Foundations of Real Numbers
3 Semester Credit Hours (3 Lecture Hours)
This course assists a student's transition to advanced mathematics. Fundamentals of logic and proof are reviewed and applied to development of the real number line.
Prerequisite: MATH 2414.

MATH 3315 Differential Equations
3 Semester Credit Hours (3 Lecture Hours)
An introduction to both theoretical and applied aspects of ordinary differential equations. Topics include: first order equations, linear second order equations, elementary numerical methods, and the Laplace transform.
Prerequisite: MATH 2414 or 2413.

MATH 3342 Applied Probability and Statistics
3 Semester Credit Hours (3 Lecture Hours)
A calculus based introduction to probability and statistics. Emphasis will be on development of statistical thinking and working with data. Topics include probability theory, descriptive statistics, common distributions, and statistical inference.
Prerequisite: MATH 2413 or 2413.

MATH 3345 Statistical Modeling and Data Analysis
3 Semester Credit Hours (3 Lecture Hours)
An introduction to probability/statistical modeling and data analysis techniques to investigate data. Topics include: exploratory data analysis, probability models and simulation, sampling distributions, statistical inference. Applications to real world problems. Students will be expected to present and justify results orally and in writing. Note: MATH 3342 and MATH 3345 cannot both be counted for credit.
Prerequisite: MATH 2413 or 2413 and (COSC 1330, 1330, 1435 or 1435).

MATH 3347 Introduction to Probability
3 Semester Credit Hours (3 Lecture Hours)
This is an introduction to probability. In the course, key fundamental concepts of probability, random variables and their distributions, expectations, and conditional probabilities will be covered. Topics include counting rules, combinatorial analysis, sample spaces, axioms of probability, conditional probability and independence, discrete and continuous random variables, jointly distributed random variables, characteristics of random variables, law of large numbers and central limit theorem, random processes, Markov chains, Markov chain-Monte Carlo, Poisson Process and Entropy.
Prerequisite: MATH 2415.

MATH 3349 Principles of Data Science
3 Semester Credit Hours (3 Lecture Hours)
Combining data, computation, and inferential thinking, data science is redefining how people and organizations solve challenging problems and understand their world. This class bridges computer science, statistics, and mathematics courses as well as methods courses in other fields. In this class, we explore key areas of data science including question formulation, data collection and cleaning, visualization, predictive modeling, and decision making. Through a strong emphasis on data centric computing, quantitative critical thinking, and exploratory data analysis, this class covers key principles and techniques of data science. These include languages for transforming, querying and analyzing data; algorithms for machine learning methods including regression, classification and clustering, principles behind creating informative data visualizations, and techniques for scalable data processing.
Co-requisite: MATH 3311.

MATH 3385 Linear Optimization and Decisions
3 Semester Credit Hours (3 Lecture Hours)
This course introduces the linear programming and optimization problems arising in many applications. Contents include linear programming models with solutions, the simplex method, duality theory and its use for management decision making, dual simplex method and sensitivity analysis.
Prerequisite: MATH 3311 and 2413.

MATH 3390 Problem Solving in Mathematics
1-3 Semester Credit Hours (1-3 Lecture Hours)
A problem solving course for students who want to participate in math problem solving competitions, train for the actuarial or other professional examinations, work on research aimed at conference presentations, or perform research projects at the junior level that are not at the level of directed independent study material.
Prerequisite: MATH 2414.

MATH 4185 Senior Mathematics Seminar
1 Semester Credit Hour (1 Lecture Hour)
This course introduces a weekly mathematics seminar. Students will generate a viable project for the capstone course.

MATH 4285 Mathematics Major Capstone
2 Semester Credit Hours (2 Lecture Hours)
Development of projects as proposed in MATH 4185, as well as mathematics communication skills. Students will present their projects, and take a national level assessment.
Prerequisite: MATH 4185.

MATH 4301 Introduction to Analysis
3 Semester Credit Hours (3 Lecture Hours)
An advanced treatment of the foundations of calculus stressing rigorous proofs of theorems. Topics include: elements of propositional and predicate logic, topology of the real numbers, sequences, limits, the derivative, and the Riemann integral.
Prerequisite: MATH 2415 or 2415 and (COSC 1330, 1330, 1435 or 1435).

MATH 4306 Modern Algebra
3 Semester Credit Hours (3 Lecture Hours)
Fundamentals of set operations, maps and relations, groups, rings and field theory. Topics include permutation groups, cosets, homomorphisms and isomorphisms, direct product of groups and rings, integral domains, field of quotients, fundamental properties of integers, the ring of integers modulo n, and rings of polynomials. Applications.
Prerequisite: MATH 3311 and 3313.

MATH 4312 Differential Geometry
3 Semester Credit Hours (3 Lecture Hours)
Differential forms on R1, R2, R3, and Rn; Integration and differentiation of differential forms; Stokes' Theorem; manifolds; Gaussian curvature and the Gauss-Bonnet Theorem.
Prerequisite: MATH 2415.

MATH 4315 Partial Differential Equations
3 Semester Credit Hours (3 Lecture Hours)
An introduction to partial differential equations emphasizing the wave, diffusion and potential (Laplace) equations. A focus on understanding the physical meaning and mathematical properties of solutions of partial differential equations. Methods include fundamental solutions and transform methods for problems on the line, and separation of variables using orthogonal series for problems in regions with boundary. Additional topics include higher dimensional problems and special topics like harmonic functions, the maximum principle, Green's functions etc.
Prerequisite: MATH 3315 and 2415.
MATH 4321 Applied Regression Analysis
3 Semester Credit Hours (3 Lecture Hours)
Introduction to the formulation of linear models and the estimation of the parameters of such models, with primary emphasis on least squares. Application of multiple regression and curve fitting and the design of experiments for fitting regression models.
Prerequisite: MATH 1342, 2342 or 1470.

MATH 4328 Discrete Mathematics II
3 Semester Credit Hours (3 Lecture Hours)
A continued study of topics from Discrete Mathematics I with additional topics from discrete mathematics that have strong application to the field of computer science. Additional topics include: recurrence relations, formal languages, and finite-state machines.
Prerequisite: MATH 2305 and COSC 2437.

MATH 4342 Introduction to Mathematical Statistics
3 Semester Credit Hours (3 Lecture Hours)
This is a first course in mathematical statistics, topics include: moment-generating functions, functions of random variables, sampling distributions, methods of estimation including Bayesian estimation, characteristics of estimators, interval estimation, hypothesis testing, Neyman-Pearson Lemma, likelihood ratio test, tests involving means and variances, regression and correlation, multiple linear regression, introduction to ANOVA, non-parametric tests.
Prerequisite: MATH 2415.

MATH 4385 Applied Modeling
3 Semester Credit Hours (3 Lecture Hours)
Capstone course for mathematics majors. The construction of mathematical models from areas such as economics, refining, biology and mariculture, etc. Where possible, local phenomena will be modeled with the assistance of outside consultants.
Prerequisite: MATH 3315 and 3342 or MATH 3345.

MATH 4390 Selected Topics
3 Semester Credit Hours (3 Lecture Hours)
Offered on sufficient demand.

MATH 4696 Directed Independent Study
1-6 Semester Credit Hours
See college description.

Reading Courses
READ 0399 Basic Reading and Comprehension
3 Semester Credit Hours (3 Lecture Hours)
This is a reading course for students who need assistance in developing college level reading skills. Emphasis will be on improving reading comprehension, critical reasoning skills, recognition of the organization of ideas in written material, study skills and vocabulary development. The Higher Education Assessment (THEA) reading skills will be covered.

READ 3310 Principles and Practices of Early Reading Instruction
3 Semester Credit Hours (3 Lecture Hours)
This course explores theories of early language and literacy development of children. Course content addresses language development and literacy concepts essential for pre-reading areas, such as phonemic awareness, oral language development, listening comprehension development, and alphabetic knowledge. The course explores ways educators can enhance language and literacy concepts utilizing art, music, and drama. READ 3310 emphasizes development of emergent literacy skills that lead to literacy skills taught in READ 3320.

READ 3320 Principles and Practices of Reading Instruction
3 Semester Credit Hours (3 Lecture Hours)
The purpose of this course is to provide the preservice teacher with a solid foundation for effective literacy instruction. This course will review research-based teaching strategies, instructional materials for phonics, vocabulary, fluency, and comprehension as methods and assessments for efficacious literacy instruction. The primary focus of course content will be on core (tier 1) classroom instruction with discussions of differentiated instruction and frameworks for responsive intervention also addressed. The targeted grade levels for this course are third through sixth grade.

READ 3321 Principles and Practices of Reading Instruction, Grades 4 – 8
3 Semester Credit Hours (3 Lecture Hours)
This course will emphasize materials, methods, and beliefs for teaching reading in grades 4-8. Components of the course will include but not be limited to the five pillars of reading instruction identified by the National Reading Panel (2000): phonemic awareness, phonics, fluency, vocabulary, and comprehension.

READ 3351 Reading Assessment and Intervention
3 Semester Credit Hours (3 Lecture Hours)
This course is an introduction to utilizing formal and informal reading assessments and intervention strategies in a classroom setting. Students will administer assessments in the areas of phonemic awareness, phonics, fluency, vocabulary, and comprehension. Students will then select and adapt appropriate scientifically proven instructional strategies, based upon assessment results, for working with readers of varying abilities and implement these through actual lessons.
Prerequisite: READ 3310 and 3320 or READ 3353.

READ 3352 Content Area Reading for Elementary Students
3 Semester Credit Hours (3 Lecture Hours)
This course focuses on recent issues, materials, methods, and strategies considered essential for effective reading instruction in the elementary school content areas. Components of the course will include comprehension strategies, vocabulary development, reading-writing connections, and word study. The course will also include but not be limited to the five pillars of reading instruction identified by the National Reading Panel (2000): phonemic awareness, phonics, fluency, vocabulary, and comprehension.
Prerequisite: READ 3310 and 3320.

READ 3353 Content Area Reading for Secondary Students
3 Semester Credit Hours (3 Lecture Hours)
The skills required of secondary students to deal with subject matter in the various content areas are presented. In addition, developmental and corrective processes that incorporate the identification and remediation of dyslexia and other reading disorders are presented.

READ 3355 Teaching Reading in the Secondary School
3 Semester Credit Hours (3 Lecture Hours)
This course focuses on planning, developing, selecting, and organizing reading materials for secondary reading instruction.
Prerequisite: READ 3353.

READ 3356 Technology and Literacy
3 Semester Credit Hours (3 Lecture Hours)
Various software packages that have been developed for providing initial and tutorial instruction in the language arts are presented. In addition, instructional techniques for using these packages are covered.
Prerequisite: READ 3320 and 3321.
READ 3380  Children's and Adolescents' Literature
3 Semester Credit Hours (3 Lecture Hours)
Provides students with an understanding of children's and adolescent literature. Included in the class is the reading and study of literature and how to promote reading of literature in the schools. Extensive reading is required.

READ 4352  Advanced Practices in Reading/ Language Arts
3 Semester Credit Hours (3 Lecture Hours)
The emphasis is on instructional approaches supported by current theory and research and supervised implementation in a school setting. Attention is given to word study, comprehension, critical reading and reasoning, and reading-writing connections. Components of the course will include but not be limited to the five pillars of reading instruction identified by the National Reading Panel (2000): phonemic awareness, phonics, fluency, vocabulary, and comprehension.
Prerequisite: READ 3320, 3351, 3380 and 4394. * May be taken concurrently.

READ 4394  Field Experiences in Reading
3 Semester Credit Hours (3 Lecture Hours)
The culminating experience for those students working toward a specialization in reading. Students are provided supervised experience in field-based activities, in addition to on-campus activities.
Prerequisite: READ 3310, 3320, 3351, 3352 and 3380.
Co-requisite: EDUC 4605.

READ 4696  Directed Individual Study
1-6 Semester Credit Hours (1 Lecture Hour)
Programs will be designed for individual cases through special permission of the Department Chair and Dean. May be repeated for credit when the topic varies.

Science/Math and Tech Education Courses
SMTE 0094  Geology Laboratory Safety Seminar
0 Semester Credit Hours
This non-credit course is designed as an on-line offering that must be passed by students each semester and at a grade of 100%. Students will be responsible for taking safety courses with different course numbers of SMTE, as each lab must meet different safety requirements as specified by the A&M System, depending on the types of hazardous materials used in each lab. Students will not be charged a fee for taking these courses.

SMTE 0095  Physics Laboratory Safety Seminar
0 Semester Credit Hours
This non-credit course is designed as an on-line offering that must be passed by students each semester and at a grade of 100%. Students will be responsible for taking safety courses with different course numbers of SMTE, as each lab must meet different safety requirements as specified by the A&M System, depending on the types of hazardous materials used in each lab. Students will not be charged a fee for taking these courses.

SMTE 0096  Environmental Science Laboratory Safety Seminar
0 Semester Credit Hours
This non-credit course is designed as an on-line offering that must be passed by students each semester and at a grade of 100%. Students will be responsible for taking safety courses with different course numbers of SMTE, as each lab must meet different safety requirements as specified by the A&M System, depending on the types of hazardous materials used in each lab. Students will not be charged a fee for taking these courses.

SMTE 0097  Art Student Safety Seminar
0 Semester Credit Hours
This non-credit course is designed as an on-line offering that must be passed by students each semester and at a grade of 100%. Students will be responsible for taking safety courses with different course numbers of SMTE, as each lab must meet different safety requirements as specified by the A&M System, depending on the types of hazardous materials used in each lab. Students will not be charged a fee for taking these courses.

SMTE 0098  Theatre Student Safety Seminar
0 Semester Credit Hours
This non-credit course is designed as an on-line offering that must be passed by students each semester and at a grade of 100%. Students will be responsible for taking safety courses with different course numbers of SMTE, as each lab must meet different safety requirements as specified by the A&M System, depending on the types of hazardous materials used in each lab. Students will not be charged a fee for taking these courses.

SMTE 0099  Engineering Safety Seminar
0 Semester Credit Hours
SMTE 1350  Fundamentals of Mathematics I
3 Semester Credit Hours (3 Lecture Hours)
The conceptual framework for understanding and applying properties, models, and operations related to various number systems in problem solving settings.
Prerequisite: MATH 1314.
TCCNS: MATH 1350

SMTE 1351  Fundamentals of Mathematics II
3 Semester Credit Hours (3 Lecture Hours)
The conceptual framework for understanding and applying properties, models, and operations related to various data systems in problem solving settings.
Prerequisite: SMTE 1350.
TCCNS: MATH 1351
**SMTE 3315 Foundational Approaches to the Physical Sciences**  
3 Semester Credit Hours (2 Lecture Hours, 2 Lab Hours)  
Physical science topics such as simple machines, atoms, molecules, electricity and magnetism, sound, and light. Laboratory involvement will emphasize techniques of problem solving, data gathering, and data application. The course is taught following an inquiry based format and is recommended for future K-8 level science educators.  
Co-requisite: SMTE 0096.

**SMTE 3316 Foundational Approaches to the Life Sciences**  
3 Semester Credit Hours (2 Lecture Hours, 2 Lab Hours)  
Emphasis on biological concepts including cells, plants, invertebrate and vertebrate structural systems. Laboratory investigations focus on techniques of problem solving, data gathering, and data applications. The course is taught following an inquiry based format and is recommended for future K-8 level science educators.  
Co-requisite: SMTE 0096.

**SMTE 3320 Secondary Science Laboratory Techniques**  
3 Semester Credit Hours (3 Lecture Hours)  
This course is designed to assist the 4-8 and 7-12 future science teacher in developing content knowledge, skills and mastery of designated laboratory and research techniques through scientific experimentation in areas such as chemistry, biology and physics. State and national laboratory safety mandates will also be addressed.  
Prerequisite: BIOL 1407, CHEM 1412 and EDUC 3311.

**SMTE 3350 Fundamentals of Mathematics III**  
3 Semester Credit Hours (3 Lecture Hours)  
The conceptual framework for understanding and applying properties, models, and operations related to various geometric systems in problem solving settings.  
Prerequisite: SMTE 1351.

**SMTE 4217 Secondary Approaches to the Life Sciences**  
2 Semester Credit Hours (2 Lecture Hours)  
Study of secondary science teaching and learning from the standpoints of theory and practice, curriculum objectives, materials and evaluation. The course will emphasize contemporary issues by focusing on biological content ranging across the sub-disciplines of molecular biology, physiology, evolution and environmental science while teaching in a relevant and engaging context that includes web searches, laboratory activities, and student-centered inquiry activities.

**SMTE 4270 Science Education Topics I**  
2 Semester Credit Hours (2 Lecture Hours)  
Presentation of the conceptual framework for understanding and applying science content in life sciences including biology, ecology and evolution using the national standards for science education and Texas Essential Knowledge and Skills (TEKS). The course is taught using scientifically researched literature and content knowledge in an inquiry based format and is recommended for future 4-8 and 7-12 level science educators.

**SMTE 4273 Historical Development of the Sciences**  
2 Semester Credit Hours (2 Lecture Hours)  
Study of human endeavors leading to the present body of scientific knowledge placed in a historical and philosophical context. Portions of the materials will be presented in a format conducive to adaptation for middle school and high school.  
Prerequisite: BIOL 1407, CHEM 1412 and EDUC 3311.

**SMTE 4380 Mathematics Education Topics I**  
3 Semester Credit Hours (3 Lecture Hours)  
Presentations of contemporary issues in mathematics education. Topics include history of mathematics education, state and national standards for mathematics education, cognitive development, the importance of culture, language and gender in learning mathematics, authentic assessment, and interdisciplinary curriculum.

**SMTE 4382 Basic Mathematics From An Advanced Viewpoint**  
3 Semester Credit Hours (3 Lecture Hours)  
Capstone course for students pursuing grades 4-8 certification in mathematics. Presents basic mathematical concepts in the context of advanced mathematics courses. The course includes historical development of significant ideas in mathematics and science, interpretations of mathematical topics at multiple levels, and the use of technology to generate and convey understanding of mathematical ideas.  
Prerequisite: MATH 2305 and 3312.

**SMTE 4400 Selected Topics**  
1-4 Semester Credit Hours (1-4 Lecture Hours)  
Subject materials variable. May be repeated for credit when topics are significantly different.

**SMTE 4490 Directed Independent Study**  
1-4 Semester Credit Hours  
Requires a formal proposal of study to be completed in advance of registration and to be approved by the supervising faculty, the Chairperson, and the Dean of the College.

**Special Education Courses**

**SPED 2397 Special Education Field Experience**  
3 Semester Credit Hours (3 Lecture Hours)  
This course requires students to participate in schools and programs that serve individuals with disabilities on and off campus. Students will be actively involved in the learning situation.

**SPED 3310 Individual Differences in Schools and Communities**  
3 Semester Credit Hours (3 Lecture Hours)  
This online course is designed to familiarize the student with the various disability conditions, aspects of intersectionality related to other cultural and linguistic characteristics, and instructional planning for students with individual needs.  
Prerequisite: EDUC 2211.

**SPED 3315 Reading and Language Interventions for Students with High-Incidence Disabilities**  
3 Semester Credit Hours (3 Lecture Hours)  
This course is intended to prepare special educators with content knowledge and effective instructional practices related to strategic reading and language intervention and instruction.  
Prerequisite: SPED 3310, READ 3310 and 3320.

**SPED 3320 Mathematics and Content Area Interventions for Students with High-Incidence Disabilities**  
3 Semester Credit Hours (3 Lecture Hours)  
This course is intended to prepare special educators with content knowledge and effective instructional practices related to strategic intervention and instruction in mathematics and other content areas.  
Prerequisite: SPED 3310.

**SPED 3325 Strategic Instruction for Students with High-Incidence Disabilities**  
3 Semester Credit Hours (3 Lecture Hours)  
This course provides an introduction and demonstration of specific skills necessary for teaching students with high-incidence disabilities.  
Prerequisite: SPED 4310.
**SPED 3330** Individualized Education Programs for Students with Disabilities  
3 Semester Credit Hours (3 Lecture Hours)  
This course emphasizes the design and implementation of individualized educational programs (IEP) for students with disabilities.  
**Prerequisite:** SPED 4310.

**SPED 3335** Applied Learning Theory  
3 Semester Credit Hours (3 Lecture Hours)  
This course is designed to develop and extend the student's knowledge of the principles of applied learning theory as it relates to students with extensive and pervasive support needs.  
**Prerequisite:** SPED 4310.

**SPED 3340** Individuals with Severe Disabilities  
3 Semester Credit Hours (3 Lecture Hours)  
This course is an introductory study of the adaptations, approaches, and supports necessary to meet the educational needs of students who have communication, intellectual, motor, sensory, medical impairments, and/or other extensive and pervasive support needs.  
**Prerequisite:** SPED 4310.

**SPED 3350** Assistive and Instructional Technology for Students with Disabilities  
3 Semester Credit Hours (3 Lecture Hours)  
This course provides an understanding of assistive technology and its application in instructional programs for students with disabilities. Students will learn to design effective instructional experiences utilizing instructional and assistive technologies. Students will have extensive virtual practice with assistive technologies and demonstration through videos and case studies. This course will address the knowledge, skills, and application of information necessary to implement assistive technology in a variety of academic settings.  
**Prerequisite:** SPED 3310.

**SPED 4315** Motor Development for Students with Exceptional Needs  
3 Semester Credit Hours (3 Lecture Hours)  
A comparative overview of the physical development and motor-activity needs of students with disabilities.

**SPED 4320** Community-based Instruction for the Students with Exceptionalities  
3 Semester Credit Hours (3 Lecture Hours)  
Strategies and procedures for teaching community-based instruction to individuals with disabilities, including independent living and socialization skills, are discussed.

**SPED 4345** Behavioral Supports and Interventions for Students with Disabilities  
3 Semester Credit Hours (3 Lecture Hours)  
This introductory course will focus on positive behavioral supports and behavior intervention techniques. Course content includes information on: definitions, characteristics, prevalence, causes, assessment, prevention of behavioral difficulties, functional behavior assessment, applied behavior analysis, education service delivery, advocacy, and other current issues in the field.

**SPED 4355** Collaboration and Transition in Special Education  
3 Semester Credit Hours (3 Lecture Hours)  
This course is intended to provide special educators with knowledge relating to the role of parents, paraeducators, administrators, other professionals, and students on multi-disciplinary teams; initiatives in building inclusive programs; and the array of services available to youth with disabilities, with emphasis on transition programming to ensure student success in postschool education, employment, and community integration upon high school graduation. The course provides skills in effective communication; promoting family involvement, including families from culturally and linguistically diverse communities; team planning; collaborative and transition-focused instruction.  
**Co-requisite:** EDUC 4605.

**SPED 4360** Intercultural Communication and Collaboration  
3 Semester Credit Hours (3 Lecture Hours)  
This course is intended to prepare special educators with content knowledge and effective instructional practices related to strategic reading and language intervention and instruction.  
**Co-requisite:** EDUC 4995.

**SPED 4696** Directed Individual Study  
1-6 Semester Credit Hours  
Programs will be designed for individual cases through special permission of the Department Chair and Dean. May be repeated for credit when the topic varies.