

# BA in Mathematics with Integrated Single Subject (Math) Teaching Credential

90-92 units

This degree program is offered collaboratively by the Department of Mathematics, Physics, and Statistics in the College of Liberal Arts and Sciences and the Division of Teacher Education in the School of Education. Students earn a bachelor of arts degree in mathematics and a single-subject teaching credential in a total of four years. Full program details and requirements are available on the Integrated Bachelor's/Credential Program (<http://catalog.apu.edu/academics/college-education-behavioral-sciences/school-education/teacher-education/integrated-bachelors-credential/>) page of this catalog.

## Major Requirements

| Code                    | Title   | Units     |
|-------------------------|---|-----------|
| <b>Required Courses</b> |   |           |
| MATH 165                | Calculus I  | 3         |
| MATH 166                | Calculus II   | 3         |
| MATH 167                | Sequences and Series <sup>F</sup>   | 1         |
| MATH 250                | Data Analysis <sup>F</sup>  | 3         |
| MATH 268                | Multivariable Calculus  | 3         |
| MATH 270                | Ordinary Differential Equations <sup>S</sup>  | 4         |
| MATH 280                | Discrete Mathematics and Proof <sup>F</sup>   | 3         |
| MATH 290                | Linear Algebra <sup>S</sup>   | 3         |
| MATH 400                | Abstract Algebra <sup>ES</sup>  | 3         |
| MATH 450                | Real Analysis <sup>EF</sup>   | 3         |
| MATH 480                | Writing 3: Mathematical Reading, Writing, and Presentation <sup>1, F</sup>              | 3         |
| MATH 496                | Mathematics Senior Seminar <sup>2, S</sup>  | 3         |
| CS 120                  | Introduction to Computer Science I <sup>3</sup>   | 4         |
| PHYC 165<br>& PHYC 145  | Physics for Science and Engineering: Mechanics and Physics Laboratory I <sup>4, F</sup> | 5         |
| <b>Total Units</b>      |   | <b>44</b> |

In addition to the required courses above, complete one of the tracks below.

| Code  | Title   | Units     |
|---|---|-----------|
| <b>General Mathematics Track</b>  |   |           |
| Complete at least 14 units from the courses below. You must complete MATH 361 and at least one of MATH 460 and MATH 470. You cannot count both PHYC 166 and CS 125. |   | 14        |
| MATH 269  | Vector Calculus <sup>OF</sup>   |           |
| MATH 340  | Geometry <sup>S</sup>   |           |
| MATH 361  | Introduction to Modeling with Probability   |           |
| MATH 390  | Number Theory <sup>OF</sup>   |           |
| MATH 460  | Topology <sup>OS</sup>  |           |
| MATH 470  | Complex Analysis <sup>ES</sup>  |           |
| MATH 495  | Advanced Topics in Mathematics  |           |
| CS 125  | Introduction to Computer Science II   |           |
| PHYC 166<br>& PHYC 146  | Physics for Science and Engineering: Electricity and Magnetism and Physics Laboratory II <sup>S</sup> |           |
| <b>Total Units</b>  |   | <b>14</b> |

| Code  | Title  | Units     |
|---|--|-----------|
| <b>Secondary Math Education Track</b>   |  |           |
| Complete all 16 units below. This track meets the requirements of the CTC-approved Single Subject Waiver program. |  |           |
| MATH 130  | Introduction to Statistics <sup>5</sup>                      | 3         |
| MATH 301  | Mathematics for Secondary Teachers <sup>OF</sup>             | 3         |
| MATH 340  | Geometry <sup>S</sup>  | 3         |
| MATH 390  | Number Theory <sup>OF</sup>                                  | 3         |
| EDLS 202  | Introduction to Teaching as a Profession (7-12) <sup>6</sup> | 4         |
| <b>Total Units</b>  |  | <b>16</b> |

<sup>1</sup> Meets the General Education Writing 3 requirement.

<sup>2</sup> Meets the General Education Integrative and Applied Learning requirement.

<sup>3</sup> Meets the General Education Oral Communication requirement if taken with CS 290 and CS 480, or ENGR 240 and ENGR 480.

<sup>4</sup> Meets the General Education Natural Sciences requirement. Students must complete both PHYC 165 and PHYC 145 to fulfill the GE Natural Sciences requirement.

<sup>5</sup> Meets the General Education Quantitative Literacy requirement.

<sup>6</sup> Meets the General Education Civic Knowledge and Engagement requirement.

|     |                                       |
|-----|---------------------------------------|
| F   | Offered in Fall only                  |
| S   | Offered in Spring only                |
| F/S | Offered in both Fall and Spring terms |
| EF  | Offered in Fall in even years         |
| ES  | Offered in Spring in even years       |
| OF  | Offered in Fall in odd years          |
| OS  | Offered in Spring in odd years        |

## Single Subject (Math) Teaching Credential Requirements

| Code                          | Title   | Units     |
|-------------------------------|---|-----------|
| <b>Foundation Courses</b>     |   |           |
| TESP 501                      | Art of Teaching I: Foundations of Teaching <sup>1</sup>                             | 3         |
| TESP 502                      | Science of Teaching I: How Students Learn <sup>1</sup>                              | 3         |
| TESP 503                      | The Soul of Teaching: Tapestry of American Education                                | 3         |
| TESP 504                      | Schools and Educational Systems   | 3         |
| <b>Specialization Courses</b> |   |           |
| TEP 511                       | Art of Teaching II: Pedagogy and Instructional Design                               | 3         |
| TEP 512                       | Science of Teaching II: Effective Assessment Strategies for All Learners            | 3         |
| TEP 531                       | Methods of Teaching Reading and Writing (7-12)                                      | 3         |
| TEP 532                       | Secondary Pedagogy I: Teaching in Secondary Schools (7-12)                          | 2         |
| TEP 533                       | The Differentiated Classroom: Maximizing Capacity of Each Learner (7-12)            | 3         |
| TEP 534                       | Secondary Pedagogy II: Content-Specific Strategies, Teaching, and Assessment (7-12) | 2         |
| TEP 561                       | Clinical Practice I: Single Subject Credential                                      | 2         |
| TEP 562                       | Clinical Practice II: Single Subject Credential                                     | 2         |
| <b>Total Units</b>            |   | <b>32</b> |

<sup>1</sup> Must be completed prior to beginning clinical practice.

The following courses meet the undergraduate General Education requirements within the Integrated Bachelor's/Credential Program:

- TESP 502 meets the General Education Social Sciences requirement.
- TESP 503 meets the General Education Intercultural Competence requirement.
- TESP 504 meets the General Education Civic Knowledge and Engagement requirement.
- TEP 551 and TEP 552 combined, and TEP 561 and TEP 562 combined, meet the General Education Integrative and Applied Learning requirement.

## **Program Learning Outcomes**

### **BA in Mathematics**

#### **Program Learning Outcomes**

Students who successfully complete this program shall be able to:

1. Master fundamental mathematical methods and problem solving strategies.
2. Employ logical reasoning and standard proof techniques to construct rigorous mathematical arguments.
3. Communicate mathematical ideas in speech and writing, combining precise language and notation with insightful explanation.
4. Use mathematical models to analyze cross-disciplinary problems.
5. Employ appropriate technology and computational techniques.
6. Articulate how Christian perspectives and the study of mathematics and its applications mutually inform and enhance each other.

## **Integrated Single Subject (Math) Teaching Credential**

### **Program Learning Outcomes**

Students who successfully complete this program shall be able to:

1. Engage and support all students in learning.
2. Create and maintain effective environments for student learning.
3. Understand and organize subject matter for student learning.
4. Plan instruction and design learning experiences for all students.
5. Assess student learning.
6. Develop as a professional educator.