## MATHEMATICS BACHELOR OF ARTS
### CLASS OF 2023
#### CONCENTRATION IN APPLIED MATHEMATICS CLASSICAL

<table>
<thead>
<tr>
<th>TERM 1</th>
<th>TERM 2</th>
<th>TERM 3</th>
<th>TERM 4</th>
<th>TERM 5</th>
<th>TERM 6</th>
<th>TERM 7</th>
<th>TERM 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 150A</td>
<td>MATH 150B</td>
<td>MATH 250A</td>
<td>MATH 250B</td>
<td>MATH 306</td>
<td>MATH 310</td>
<td>MATH 414</td>
<td>MATH 412 or MATH 450</td>
</tr>
<tr>
<td>(GE B.4)</td>
<td>4 units</td>
<td>4 units</td>
<td>4 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
</tr>
<tr>
<td>MATH 180</td>
<td>MATH 107</td>
<td>MATH 210</td>
<td>MATH 280</td>
<td>MATH 307</td>
<td>MATH 350</td>
<td>MATH 425</td>
<td>MATH 406</td>
</tr>
<tr>
<td>(Cognate I ^a)</td>
<td>(Cognate II ^a)</td>
<td>(Cognate III ^a)</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
</tr>
<tr>
<td>MATH 151A</td>
<td>MATH 151B</td>
<td>MATH 251A</td>
<td>MATH 320</td>
<td>MATH 380</td>
<td>MATH 302</td>
<td>GE B.3</td>
<td></td>
</tr>
<tr>
<td>1 unit</td>
<td>1 unit</td>
<td>1 unit</td>
<td>(Computer Programming) 3 units</td>
<td>(Upper Division Writing) 3 units</td>
<td>3 units</td>
<td>1 unit</td>
<td></td>
</tr>
<tr>
<td>GE A.1</td>
<td>GE A.2</td>
<td>GE B.1</td>
<td>GE C.2</td>
<td>GE B.5</td>
<td>Electives</td>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>to complete 120 units</td>
<td>to complete 120 units</td>
<td></td>
</tr>
<tr>
<td>CNSM 101</td>
<td>GE B.2</td>
<td>GE C.1 or C.2</td>
<td>GE D.2</td>
<td>GE D.3</td>
<td>GE C.1</td>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>(GE A.3)</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td>3 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14 units</td>
<td>15 units</td>
<td>15 units</td>
<td>16 units</td>
<td>15 units</td>
<td>16 units</td>
<td>14 units</td>
</tr>
</tbody>
</table>

**a.** Other cognates are also available – see reverse side

<table>
<thead>
<tr>
<th>37</th>
<th>GE lower division</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>GE upper division</td>
</tr>
<tr>
<td>57</td>
<td>Mathematics Required Courses</td>
</tr>
<tr>
<td>3</td>
<td>Mathematics Supporting Courses</td>
</tr>
<tr>
<td>6</td>
<td>Pick 2 of 3 Courses</td>
</tr>
<tr>
<td>8</td>
<td>Electives</td>
</tr>
<tr>
<td>120</td>
<td>TOTAL UNITS</td>
</tr>
</tbody>
</table>

## INSTRUCTIONS FOR COMPLETING THE MATHEMATICS BACHELOR OF ARTS
1. Meet with your assigned faculty advisor each semester to plan and review your academic progress.
2. Visit your College of Natural Sciences and Mathematics Student Success Team in MH 488 to review GE and graduation requirements.
3. Complete GE courses in areas A1, A2, and A3 with a C- or higher. Complete a total of 12 units in GE Area B. One GE Course in B, C, D, or E must double-count as a Z course. Check your Titan Degree Audit for courses that appear in both categories.
4. **All** Mathematics courses must be completed with a grade of C or higher.
5. Apply for Graduation through your Student Center at the start of Term 7.

Revised 13 May 2019
The Math Major is for students who are preparing to (1) enter a graduate study in mathematics, (2) seek math-related careers in business, industry or government, or (3) pursue a career in teaching.

**MATHEMATICS CORE AND SUPPORTING COURSES**

- Complete the courses listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 150A</td>
<td>Calculus I</td>
</tr>
<tr>
<td>MATH 151A</td>
<td>Calculus I Workshop</td>
</tr>
<tr>
<td>MATH 150B</td>
<td>Calculus II</td>
</tr>
<tr>
<td>MATH 151B</td>
<td>Calculus II Workshop</td>
</tr>
<tr>
<td>MATH 250A</td>
<td>Calculus III</td>
</tr>
<tr>
<td>MATH 251A</td>
<td>Calculus III Workshop</td>
</tr>
<tr>
<td>MATH 250B</td>
<td>Intro to Linear Algebra and Differential Equations</td>
</tr>
<tr>
<td>MATH 280</td>
<td>Strategies of Proof</td>
</tr>
<tr>
<td>MATH 307</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>MATH 350</td>
<td>Advanced Calculus I</td>
</tr>
</tbody>
</table>

- Applied Concentration Requirements (21 units total)
  - **Applied Mathematics Clausal Required Courses (15 units)**
    - MATH 302 Modern Algebra (3 units)
    - MATH 306 Vector and Tensor Analysis (3 units)
    - MATH 310 Ordinary Differential Equations (3 units)
    - MATH 406 Intro to Partial Differential Equations (3 units)
    - MATH 425 Differential Geometry (3 units)

- **Applied Mathematics Clausal Elective Course (6 units)**
  - MATH 412 Complex Analysis (3 units)
  - MATH 414 Topology (3 units)
  - MATH 450 Advanced Calculus II (4 units)

**COGNATE OPTIONS**

Each student is required to select one of the following cognates:

- Chemistry
  - CHEM 120A General Chemistry (5 units)
  - CHEM 120B General Chemistry (5 units)

- Civil Engineering
  - EGCE 201 Statics (3 units)
  - EGCE 301 Mechanics of Materials (3 units)
  - EGCE 302 OR Dynamics (3 units)
  - EGCE 325 Structural Analysis (3 units)

- Computer Science
  - CPSC 131 Data Structures Concepts (3 units)
  - CPSC 223H OR Visual BASIC Programming (3 units)
  - CPSC 223J OR Java Programming (3 units)
  - CPSC 223N OR Visual C# Programming (3 units)
  - CPSC 240 OR Computer System Architecture I (3 units)
  - CPSC 332 OR File Structures and Database Systems (3 units)
  - CPSC 253U OR Operating System Workshop in Unix (1 unit)

- Economics
  - ECON 201 Principles of Microeconomics (3 units)
  - ECON 202 Principles of Macroeconomics (3 units)
  - ECON 310 OR Intermediate Microeconomics Analysis (3 units)
  - ECON 320 OR Intermediate Macroeconomics Analysis (3 units)
  - ECON 440 OR Econometrics (3 units)
  - ECON 441 Mathematical Economics (3 units)

- Finance
  - FIN 320 Financial Management (3 units)
  - FIN 340 Introduction to Investments (3 units)
  - FIN 360 Principles of Insurance (3 units)
  - ISDS 473 Applied Business Forecasting (3 units)

- Intro to Math
  - MATH 107 Intro to Computational Linear Algebra (4 units)
  - MATH 180 Strategies of Problem Solving (3 units)
  - MATH 210 Intro to Laplace Transforms and Fourier Series (4 units)

**ISDS**

- Three of the following course options:
  - ISDS 422 Surveys and Sampling Design and Applications (3 units)
  - ISDS 465 Linear Programming in Management Science (3 units)
  - ISDS 472 Design of Experiments (3 units)
  - ISDS 474 Data Mining (3 units)
  - ISDS 475 Multivariate Analysis (3 units)

- Mathematics
  - Three upper division Mathematics courses from one of four Mathematics major concentrations other than student’s concentration.

- Research
  - MATH 491 Research Seminar (1 unit)
  - MATH 497 Undergraduate Research (3 units)
  - MATH 498 Senior Thesis (2 unit)

- The research cognate is intended for students that would benefit more from research and a thesis than a standard cognate. Student should begin this cognate no later than their junior year.

**UNIVERSITY & GE REQUIREMENTS**

- **Upper Division Writing Requirement**
  - To meet the upper-division baccalaureate writing requirement, students must pass with a “C” (2.0) or better MATH 380.

- **Computer Programming Requirement**
  - To meet the elementary computer programming requirement, students must pass with a “C” (2.0) or better MATH 320, CPSC 120 or CPSC 121.

**GENERAL EDUCATION REQUIREMENTS**

- **Area A Core Competencies** – Complete one course in each subarea for a total of 9 units of lower division.
  - Complete 9 lower division units (*).

- **Area B Scientific and Quantitative Reasoning** – Complete one course in each subarea; the course in B3 must be associated with the course taken to satisfy B1 or B2. Area B courses must include 9 lower division and 3 upper division units (*).

- **Area C Arts and Humanities** – Complete 3 units from C.1, 3 units from C.2, 3 units from C.3, and 3 units from either C.1 or C.2 for a total of 9 lower division and 3 upper division units (*).

- **Area D Social Sciences** – Complete 9 lower and 3 upper division units (*).

- **Area E Lifelong Learning and Self Development** – Complete 3 units.

- **Area Z Cultural Diversity** – Cultural Diversity Requirement (3 units). One GE course in B, C, D, or E must double-count as a Z course (check TDA or CSUF website for courses that appear in both categories).