COMMON LOWER DIVISION PREPARATION FOR CALIFORNIA STATE UNIVERSITY AND UNIVERSITY OF CALIFORNIA

MATH 170 Analytic Geometry and Calculus I 4
MATH 190 Analytic Geometry and Calculus II 4
MATH 220 Analytic Geometry and Calculus III 4

ADDITIONAL LOWER DIVISION MAJOR PREPARATION FOR SPECIFIC TRANSFER INSTITUTIONS

California State University - Dominguez Hills
MATH 160 Discrete Mathematics 4
or CIS 185 Discrete Structures (3)
CIS 182 JAVA Programming 3.5
PHYS 201 Engineering Physics 4
PHYS 202 Engineering Physics 4
PHYS 203 Engineering Physics 4

Physics articulation is approved as a sequence only (201+202+203).
CIS 282 is also recommended for this major.

In addition to the above (excluding CIS 182) the MATH EDUCATION OPTION requires
MATH 112 Elementary Statistics 4

California State University - Fullerton
CIS 180 Programming in C/C++ 3
or CIS 280X Object-Oriented Programming in C++ (3.5)
MATH 250 Linear Algebra and Differential Equations 5

All courses required for the major must be completed with a “C” or higher. Required courses may not be taken for Pass/No Pass. Each student is required to complete one of the following concentrations: Pure Mathematics, Applied Mathematics, Probability & Statistics or Teaching Mathematics.

Each student is also required to select one of the following cognates: Actuarial, Computer Science, Economics, Information Systems & Decision Science, Physics, Chemistry, Civil Engineering, Mathematics, or Research.

COMPUTER SCIENCE COGNATE
CIS 186 Visual Basic.Net programming 3.5
or CIS 182 JAVA Programming (3.5)
CIS 214 UNIX and LINUX Operating Systems 3
CIS 231 Assembly Programming for Microcomputers 3.5
CIS 292 Data Structures 3

ECONOMICS COGNATE
ECON 201M Principles of Macroeconomics 3
ECON 202M Principles of Microeconomics 3
Transfer Preparation

PHYSICS/ENGINEERING COGNATE
PHYS 201 Engineering Physics 4
PHYS 202 Engineering Physics 4
PHYS 203 Engineering Physics 4

CHEMISTRY COGNATE
CHEM 111 General Chemistry 5
CHEM 112 General Chemistry 5

California State University - Long Beach
CIS 182 JAVA Programming 3.5
PHYS 201 Engineering Physics 4

APPLIED MATHEMATICS OPTION
Complete the requirements listed above and follow sub-option 1 (science and engineering) PHYS 202, PHYS 203 or ENGR 235 or sub-option II (Economics and Management) ECON 201 or 201M and 202 or 202M.

MATHEMATICS EDUCATION OPTION
One of the following sequences is required: PHYS 201 and PHYS 202 or PHIL 106 and lower division Symbolic Logic (PHIL 270 at CSULB) or 8 units of a foreign language.

NOTE: To be considered for admissions as a Math major (any option) to CSULB, students must complete Math 170 and 190 and have an overall CSU transferrable GPA of at least a 2.5.

California State University - Los Angeles
PHYS 201 Engineering Physics 4

In addition to the requirements under the common list and above the B.A. in Mathematics also lists a minimum of 8 units of electives which can be chosen from the following: Math 250, Chemistry 111 and/or 112, Philosophy 106 and Physics 202.

NOTE: Students are advised to complete ENGL 103 as their CSU GE Critical Thinking requirement. This will also meet a graduation requirement at CSULA as the prerequisite for their writing proficiency requirement.

California State Polytechnic University – Pomona
CIS 180 Programming in C/C++ 3
MATH 250 Linear Algebra and Differential Equations 5
PHYS 201 Engineering Physics 4
PHYS 202 Engineering Physics 4

Major concentrations in Applied Mathematics, Secondary Teacher Preparation/Pure Math, and Statistics require the same lower division preparation as shown above.

University of California – Irvine
MATH 250 Linear Algebra and Differential Equations 5
CIS 180 Programming in C/C++ 3
or CIS 182 JAVA Programming (3.5)
or CIS 280X Object-Oriented Programming in C++ (3.5)
CHEM 111 General Chemistry 5
and CHEM 112 General Chemistry 5
or PHYS 201 Engineering Physics (4)
and PHYS 202 Engineering Physics 4
or PHYS 201 Engineering Physics (4)
and PHYS 203 Engineering Physics 4

REVISED SPRING 2015
### Transfer Preparation

**or PHYS** 201  Engineering Physics  (4)

**and PHYS** 202  Engineering Physics  4

**and PHYS** 203  Engineering Physics  4

Preference will be given to applicants with the highest overall GPA and who have completed the **required course work of one year of Calculus**. Effective fall 2013, transfer students must have a cumulative GPA of 3.0. At the upper-division level, students may specialize in Applied and Computational Mathematics, Mathematics for Education, Statistics, or a concentration in Mathematics for Economics is also offered.

### University of California - Los Angeles

**MATH** 250  Linear Algebra and Differential Equations  5

**CIS** 280X  Object-Oriented Programming in C++  3.5

**PHYS** 201  Engineering Physics  4

**TWO ADDITIONAL COURSES FROM:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIOL</td>
<td>200  Principles of Biology</td>
<td>5</td>
</tr>
<tr>
<td>CHEM</td>
<td>111  General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHEM</td>
<td>112  General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>PHYS</td>
<td>202  Engineering Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS</td>
<td>203  Engineering Physics</td>
<td>4</td>
</tr>
</tbody>
</table>

**or CHEM** 111  General Chemistry  (5)

**or CHEM** 112  General Chemistry  (5)

The courses listed above will also cover the requirements for Mathematics in Teaching minus the Biology 200 course.

### MATHEMATICS OF COMPUTATION/B.S. OPTION

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<tr>
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<td>201  Engineering Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS</td>
<td>202  Engineering Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS</td>
<td>203  Engineering Physics</td>
<td>4</td>
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**or CHEM** 111  General Chemistry  (5)

### MATHEMATICS/APPLIED SCIENCE/B.S. OPTION

**Medical and Life Sciences Concentration Plan:**

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<td>250  Linear Algebra and Differential Equations</td>
<td>5</td>
</tr>
<tr>
<td>BIOL</td>
<td>200  Principles of Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOL</td>
<td>202  Molecular Biology/Genetics</td>
<td>4</td>
</tr>
<tr>
<td>CIS</td>
<td>280X  Object-Oriented Programming in C++</td>
<td>3.5</td>
</tr>
<tr>
<td>CHEM</td>
<td>111  General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHEM</td>
<td>112  General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHEM</td>
<td>211  Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>PHYS</td>
<td>201  Engineering Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS</td>
<td>202  Engineering Physics</td>
<td>4</td>
</tr>
</tbody>
</table>

**or CHEM** 111  General Chemistry  (5)

There is also a concentration plan in **History of Science**.

### MATHEMATICS/ECONOMICS/B.S. OPTION

<table>
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<tr>
<td>CIS</td>
<td>280X  Object-Oriented Programming in C++</td>
<td>3.5</td>
</tr>
<tr>
<td>ECON</td>
<td>201  Principles of Macroeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

**or ECON** 201M  Principles of Macroeconomics  (3)

<table>
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<th>Units</th>
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</thead>
<tbody>
<tr>
<td>ECON</td>
<td>202  Principles of Microeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

**or ECON** 202M  Principles of Microeconomics  (3)

*REVISED SPRING 2015*
Transfer Preparation

FINANCIAL ACTUARIAL MATHEMATICS/B.S.
MATH  250  Linear Algebra and Differential Equations  5
ACCT  101  Fundamentals of Accounting I             4
ACCT  102  Fundamentals of Accounting II            4
CIS   280X Object-Oriented Programming in C++       3.5
ECON  201  Principles of Macroeconomics             3
or ECON 201M Principles of Macroeconomics           (3)
ECON  202  Principles of Microeconomics              3
or ECON 202M Principles of Microeconomics           (3)

University of California – Riverside
Courses Required for both the B.A. and B.S. Degree
MATH  250  Linear Algebra and Differential Equations  5
CIS   180  Programming in C/C++                        3

Add the following for the B.S. Degree
CIS   280X Object-Oriented Programming in C++         3.5

COMPUTATIONAL MATH TRACK/B.S. OPTION
CIS   280X Object-Oriented Programming in C++         3.5
CIS   292  Data Structures                            (3)

APPLIED MATH TRACK/B.S. OPTION
Biology Option
BIOL  200  Principles of Biology                     5
and BIOL 201 Principles of Biology                   5
or BOT 120  Intro to Plant Science                   (4)
and ZOOL 120 Intro to Animal Biology                 4

Chemistry Option
CHEM  111  General Chemistry                          5
CHEM  112  General Chemistry                          5
PHYS  201  Engineering Physics                        4
PHYS  202  Engineering Physics                        4
PHYS  203  Engineering Physics                        4

Economics Option
ECON  202  Principles of Microeconomics               3
or ECON 202M Principles of Microeconomics             (3)

Environmental Science Option
CHEM  111  General Chemistry                          5
CHEM  112  General Chemistry                          5
GEOL  101  Physical Geology (recommended)              4

Physics Option
PHYS  201  Engineering Physics                         4
PHYS  202  Engineering Physics                         4
PHYS  203  Engineering Physics                         4

Statistics Option
MATH  112  Elementary Statistics                      4
Transfer Preparation

The Pure Math Track does not have any additional lower division course requirements. Students admitted to this major will be required to complete math 170,190 and at least one additional sequence from the list on www.assist.org prior to transfer and have an overall GPA of at least 2.7 in UC transferable course work. IGETC is not accepted by this major.

The IGETC is not accepted for majors housed in the College of Natural and Agricultural Sciences. Transfer students are encouraged to follow the College of Natural and Agricultural Sciences breadth pattern as outlined on www.assist.org. Students intending to meet lower division requirements for any school or division of the University of California should consult the catalog of that institution in addition to checking the assist.org articulation website.

CAREER OPPORTUNITIES:
Upon completion of the bachelor’s degree program, graduates qualify for graduate study in Accounting, Computer Information Systems, Engineering, Physics, Economics and other related fields. Baccalaureate graduates also qualify for positions as an actuary and statisticians, appraisers, and estimators, financial analysts, financial planners, loan officers, marketing researchers, methods analyst, operations analyst, mathematicians in government and industry, secondary teaching and career opportunities in computer science.

IMPORTANT NOTICE: The requirements listed for major are subject to change without notice. It is the student’s responsibility to check for the most recent information with a Cerritos College counselor or by consulting ASSIST at www.assist.org.

NOTE: Courses listed may require prerequisite coursework.
ASSIST

How to use ASSIST to find your major preparation for CSU/UC:

1. **Log on:** [www.assist.org](http://www.assist.org)
2. **Select an Institution:** select “Cerritos College” or other community college from pull-down menu
3. **Select:** “Type of Transfer Institution” such as “UC Los Angeles”
4. **Select a major from pull-down menu**
   Report will show the university courses on the left and comparable community college classes on the right.
5. **PRINT:**-print by clicking on gold “PRINT THIS REPORT” button on top.
   Then use the ASSIST screen menu on the top toolbar or click on the printer icon that will appear at the bottom of the page.

How to use ASSIST to explore the majors available at University of California and California State University campuses
- Click on “EXPLORE MAJORS”

How to use ASSIST to figure out whether courses from the community college are transferable to the CSU/UC.
- Select the community college of interest (Cerritos College)
- Select either CSU transferable courses or UC Transferable courses
- Select a department for the courses in question

*USC Articulation available at: [www.usc.edu/articulation](http://www.usc.edu/articulation) and **Select:** “TRANSFER PLANNING GUIDE.”

**IMPORTANT:**
Students are advised to contact a Cerritos College counselor for more information & for details regarding other transfer agreements & options not available on ASSIST. Students can stop by the counseling desk to make an appointment or call (562) 860-2451 ext. 2231.