MATHEMATICS

CAREER INFORMATION

Mathematics is the language and instrument for the sciences and technology. It is concerned with a wide range of diverse problems from developing techniques to model real world applications and designing efficient methods for calculating their solutions, to creating new branches of mathematics and theories for as yet unsolved problems. Graduates with a mathematics majors have many options for either careers in applications, for further study in graduate school, or for teaching. Careers in teaching include positions in secondary schools, for which a teaching credential is additionally required, teaching in two year colleges, for which a master’s degree is required, and teaching at the university level, which requires a doctorate degree and involves research and creation of new mathematics.

GENERAL INFORMATION

Not all universities with this major are listed below. The lower division core preparation is listed for universities with which LBCC has established articulation agreements. The first course listed is the LBCC course; the course in parentheses immediately after is the university equivalent. It is generally recommended to take as many lower-division major courses as possible prior to transfer. Please check www.assist.org for the most current articulation information and information regarding minimum grade for each course, impacted major recommendations, application procedures, etc. Moreover, you must see a counselor to develop an accurate educational plan to ensure your competitiveness for admissions for your school(s) of choice. To thoroughly understand admissions and general education requirements please check the catalog of the transfer university. CSU/UC admissions and general education requirements are outlined on a separate curriculum guide.

*** Schools are listed in alphabetical order ***

CAL POLY POMONA

- **B.S. Degree – Mathematics**
  - **Options:** Applied Math; Pure Math; Secondary Teaching; Statistics

  **Option Requirements:**
  - **Applied Math:** Engr 54 (CS 125); Math 60 & 70 (Mat 114 & 115 & 116); 80 (214 & 215); 84 (216); Phys 3B ( Phy 133 & 133L)
  - **Pure Math:** Engr 54 (CS 125); Math 60 & 70 (Mat 114 & 115 & 116); 80 (214 & 215); 84 (216); Phys 3B ( Phy 133 & 133L)
  - **Secondary Teaching:** Engr 54 (CS 125); Math 60 & 70 (Mat 114 & 115 & 116); 80 (214 & 215); 84 (216); Phys 3B ( Phy 133 & 133L)
  - **Statistics:** Engr 54 (CS 125); Math 60 & 70 (Mat 114 & 115 & 116); 80 (214 & 215); 84 (216); Phys 3B ( Phy 133 & 133L)

SEE REVERSE SIDE FOR ADDITIONAL REQUIREMENTS
CAL POLY SAN LUIS OBISPO

- **B.S. Degree – Mathematics**
  Cbs11 or 14A (Csc 101); Math 60 & 70 & 80 (Math 141 & 142 & 143 & 241), 84 (242); Physics 3A & 3B & 3C (Phys 131 & 132 & 133)
  (No LBCC equivalents to the following Cal Poly SLO courses: Csc 102, 103; Math 202, 206, 248)

CSU CHICO

- **B.S. Degree – Mathematics**
  **Options:** Applied; General; Education; Statistics

  **Option Requirements:**
  **Applied:** Math 60 (Math 7A), 70 (7B), 80 (7C)
  (No LBCC equivalents to the following CSUC courses: Csci 15A, 54, 65; Math 7D, 65, 95)
  **General:** Math 60 (Math 7A), 70 (7B), 80 (7C)
  (No LBCC equivalents to the following CSUC courses: Csci 15A, 54, 65; Math 7D, 65, 95)
  **Education:** Math 60 (Math 7A), 70 (7B), 80 (7C)
  (No LBCC equivalents to the following CSUC courses: Csci 15A, 54, 65; Math 7D, 65, 95)
  **Statistics:** Math 60 (Math 7A), 70 (7B), 80 (7C)
  (No LBCC equivalents to the following CSUC courses: Csci 15A, 54, 65; Math 7D, 65, 95)

CSU DOMINGUEZ HILLS

- **B.S. Degree – Mathematics**
  **Core Requirements:** Math 60 (Mat 191), 70 (193), 80 (211); Phys 3A (Phy 130), 3B (132); Stat 1, 1H (Mat 131); Math 55A & 55B (Mat 281)
  (No LBCC equivalents to the following CSUDH courses: Csc 101, 121; Mat 141, 143, 213, 271)

  **Options:** Professional; Mathematics; Education; General

  **Option Requirements:** No additional lower division courses at LBCC

CSU FULLERTON

- **B.A. Degree – Mathematics**
  Engr 54 (Eggn 205) or Cbis 11 (Cpsc 121); Math 60 (Math 150A), 70 (150B), 80 (250A), 84 (250B)
  (No LBCC equivalents to the following CSUF courses: Math 280)

SEE NEXT PAGE FOR ADDITIONAL REQUIREMENTS
CSU Fullerton (continued)

Each student is required to complete ONE of the following cognates:

- **Computer Science**: Cbris 12 (Cpsc 223V); required to complete Cbris 11 (Cpsc 121) above
  (No LBCC equivalents to the following CSUF courses: Cpsc 131, 231, 253U)
- **Economics**: Econ 1A (Econ 202), 1B (201)
- **Management Science**: (No equivalents)
- **Physics**: Phys 3A (Phys 225 & 225L), 3B (226 & 226L), 3C (227 & 227L)
- **Chemistry**: Chem 1A (Chem 120A), 1B (120B)
- **Civil Engineering**: Engr 35 (Egce 201)
- **Mathematics**: No lower-division courses required

CSU HAYWARD

- **B.S. Degree – Mathematics**
  - Core Requirements: Math 60 & 70 & 80 (Math 1304 & 1305 & 2304)
  (No LBCC equivalents to the following CSUH courses: Math 2101, 2150)
  - Options: Pure Math, Applied Math, Mathematics Teaching
- **Option Requirements**: No additional lower division equivalents at LBCC

CSU LONG BEACH

- **B.S. Degree – Mathematics**
  - Options: Applied Mathematics; Statistics; Mathematics Education
  - Option Requirements:
    - **Applied Mathematics**:
      - Science & Engineering suboption: Engl 2 (Engl 101) or upper division CSULB course;
        Math 60 (Math 122), 70 (123), 80 (224); Physics 3A (Phys 151), 3B (152)
        One course from: Engr 17+17L (EE 211 & 211 L), 35 (CE 205) or Physics 3C (Phys 154 & 155).
      (No LBCC equivalents to the following CSULB courses: Math 247; CECS 174)
      - Economics & Management suboption: Engl 2 (Engl 101) or upper division CSULB course;
        Math 60 (Math 122), 70 (123), 80 (224); Econ 1A or 1AH (Econ 100) & 1B (101) or upper division CSULB course
      (No LBCC equivalents to the following CSULB courses: Math 247; CECS 174)
    - **Statistics**:
      - Engl 2 (Engl 101) or upper division CSULB course; Math 60 (Math 122), 70 (123), 80 (224)
      One of the following: Physics 2A (Phys 100A) & 2B (100B) or 3A (151) & 3B (152) or Phil 12 (Phil 170) and CSULB course or 8 units of foreign language or 6 lower-division units in a field in which approved upper-division statistics courses are also taken.
      (No LBCC equivalents to the following CSULB courses: Math 247; CECS 174)

SEE REVERSE SIDE FOR ADDITIONAL REQUIREMENTS
CSU Long Beach (continued)

Mathematics Education Option: Math 60 (Math 122), 70 (123), 80 (224)
One of the following: Engl 2 (Engl 101) or upper division CSULB courses
One of the following sequences: Physics 3A (Phys 151) & 3B (152); or Phil 12 (Phil 170) and
CSULB course; or 8 units of foreign language.
(No LBCC equivalents to the following CSULB courses: Math 233, 247)

CSU LOS ANGELES

• **B.A. Degree – Mathematics**
  **Core Requirements:** Engr 54 or Math 64; Math 60, 70, 80, 84; Physics 3A, 3B
  Two courses from: Chem 1A, 1B, Engr 17, 35, Phil 12

  **Options:** Pure Mathematics; Single Subject Teaching

  **Option Requirements:** No additional lower division equivalents at LBCC

• **B.S. Degree – Mathematics**
  **Core Requirements:** Engr 54 or Math 64; Math 60, 70, 80, 84, 85; Physics 3A, 3B, 3C

  **Options:** Applied Mathematics; Single Subject Teaching

  **Option Requirements:** No additional lower division equivalents at LBCC

HUMBOLDT STATE UNIVERSITY

• **B.A. Degree – Mathematics**
  Math 60 (Math 109), 70 (110), 80 (210), 84 (241)
  One course from: Cbis 8A (Cis 130) or lower-division courses at Humboldt State
  (No LBCC equivalent to the following Humboldt State course: Cis 230, 235, 240; Math 240)

• **B.A. Degree – Mathematics (Education)**
  Math 60 (Math 109), 70 (110), 80 (210), 84 (241)
  One course from: Cbis 8A (Cis 130) or lower-division courses at Humboldt State
  **Strongly recommended:** Art 15 (Art 105B); Phil 12 (Phil 100)
  (No LBCC equivalents to the following Humboldt State courses: Cis 230, 235, 240; Jmc 232;
  Math 240)

CSU SACRAMENTO

• **B.A. Degree - Mathematics**
  Math 60 (Math 30), 70 (31), 80 (32), 84 or 85 (45)
  (No LBCC equivalents to the following CSUS courses: Csc 15, 16)

SEE NEXT PAGE FOR ADDITIONAL REQUIREMENTS
**CSU SAN BERNARDINO**

- **B.A. Degree - Mathematics**
  Math 60 & 70 (Math 211 & 212 & 213), 80 (252), 84 (251), 85 (270)
  One course from: CBIS 12 (Csci 201) or Engr 54 (Csci 240) or Math 54 (Csci 240)
  (No LBCC equivalent to the following CSUSB course: Math 241)

- **B.S. Degree – Mathematics**
  Math 60 & 70 (Math 211 & 212 & 213), 80 (252), 84 (251), 85 (270); Phys 3A (Phys 221)
  One course from: CBIS 12 (Csci 201) or Engr 54 (Csci 240) or Math 54 (Csci 240)
  (No LBCC equivalent to the following CSUSB course: Math 241)

**SAN DIEGO STATE UNIVERSITY**

- **B.A. Degree – Mathematics**
  Cbis 9 (CS 107); Math 60 (Math 150), 70 (151), 80 (252); one level 3 course in foreign language
  Recommended: Physics 3A (Phys 195 & 195L), 3B (196 & 196L), 3C (197 & 197L)
  (No LBCC equivalents to the following SDSU courses: CS 108, 205; Math 241, 245, 254; Stat 250)

- **B.S. Degree – Mathematics**
  **Emphases:** Applied Mathematics; Computational Science; Mathematical Finance; Science

  **Emphases Requirements:**
  **Applied Mathematics:** CBIS 9 (CS 107); Math 60 (Math 150), 70 (151), 80 (252)
  **Computational Science:** CBIS 9 (CS 107); Math 60 (Math 150), 70 (151), 80 (252)
  **Mathematical Finance:** Acctg 1A (Acctg 201); CBIS 9 (Cs 107); Econ 1A or 1AH (Econ 101),1B (102); Math 60 (Math 150), 70 (151), 80 (252); Stat 1 (Stat 119)
  **Science:** CBIS 9; Math 60 (Math 150), 70 (151), 80 (252)

- **B.A. Degree – Mathematics: Preparation for the Single Subject Teaching Credential**
  CBIS 9 (CS 107); Math 60 (Math 150), 70 (151), 80 (252)
  (No LBCC equivalents to the following SDSU courses: CS 205; Math 245, 254)

**SAN JOSE STATE UNIVERSITY**

- **B.A. Degree - Mathematics**
  Math 60 (Math 30), 70 (31), 80 (32); Phys 3A (Phys 50), 3B (51), 3C (52)
  (No LBCC equivalents to the following SJSU courses: Math 30P, 42)

SEE REVERSE SIDE FOR ADDITIONAL REQUIREMENTS
**UC BERKELEY**

- **A.B. Degree – Mathematics/ Applied Mathematics**
  This major is offered by the College of Letters and Science (L&S). You must complete either the L&S Essential Skills Requirements (Reading & Composition, Foreign Language, and Quantitative Reasoning OR IGETC by the end of the spring term that precedes fall enrollment at Berkeley.

  Math 60 (Math 1A), 70 (1B), 80 (53), 84 (54)

**UC DAVIS**

- **A.B. Degree - Mathematics**
  Math 50 or high school equivalent (Math 12), 60 (21A), 70 (21B), 80 (21C or 21D), 84 (22A); Cbis 11 (Eng Cs 30) or lower division course at UCD; Phys 3A (Physics 9A)
  (No LBCC equivalents to the following UCD courses: Engin 5, 6; Math 22B)

- **B.S. Degree – Mathematics**
  **Tracks:** Graduate Study Preparation; Computational and Applied Math; Secondary Teaching; General Math

  **Track Requirements:**
  **Track I: Graduate Study Preparation**
  Math 50 or high school equivalent (Math 12), 60 (21A), 70 (21B), 80 (21C or 21D), 84 (22A); Cbis 11 (Eng Cs 30) or lower division course at UCD; Phys 3A (Physics 9A)
  (No LBCC equivalents to the following UCD courses: Engin 5, 6; Math 22B)

  **Track II: Computational and Applied Math**
  Math 50 or high school equivalent (Math 12), 60 (21A), 70 (21B), 80 (21C or 21D), 84 (22A); Cbis 11 (Eng Cs 30); Phys 3A (Physics 9A), 3C (9B); Physics 3B (9C) or Cbis 12 (Eng Cs 40)
  (No LBCC equivalents to the following UCD courses: Engin 5, 6; Math 22B)

  **Track III: Secondary Teaching**
  Math 50 or high school equivalent (Math 12), 60 (21A), 70 (21B), 80 (21C or 21D), 84 (22A); Cbis 11 (Eng Cs 30) or lower-division course at UCD; Phys 3A (Physics 9A); Stat 1 or 1H (Statist 13) or lower-division course at UCD
  (No LBCC equivalents to the following UCD courses: Engin 5, 6; Math 22B; Statist 32)

  **Track IV: General Math**
  Math 50 or high school equivalent (Math 12), 60 (21A), 70 (21B), 80 (21C or 21D), 84 (22A); Cbis 11 (Eng Cs 30) or lower-division course at UCD; Phys 3A (Physics 9A); Stat 1 or 1H (Statist 13) or lower-division course at UCD
  (No LBCC equivalents to the following UCD courses: Engin 5, 6; Math 22B; Statist 32)

SEE NEXT PAGE FOR ADDITIONAL REQUIREMENTS
UC IRVINE

- **B.S. Degree – Mathematics**
  Math 60 & 70 & 80 (Math 2A & 2B & 2D), 84 (3D)
  One of the following physical science sequences: Chem 1A & 1B (Chem 1A & 1B & 1C) or Phys 3A & 3B (Physics 7A & 7B & 7D) or Phys 3A & 3C (Physics 7A & 7B & 7E) or Phys 3A & 3B & 3C (Physics 7B & 7D & 7E)
  One course from: Cbis 11 (Engrcee 10) or Cbis 12 or Engr 54
  (No LBCC equivalents to the following UCI courses: Engr E310; Math 2E, 3A)

UC LOS ANGELES

- **B.S. Degree – Mathematics of Computation**
  This major is designed for students who are interested in the mathematical theory and applications of computing.

  Math 60 (Math 31A), 70 (31B), 80 (32A & 32B), 84 (33A); Phys 3A (Physics 1A), 3B (1B)
  One course from: Chem 1A (Chem 20A) or 1B (20B) or Phys 3C (Physics 1C)
  (No LBCC equivalents to the following UCLA courses: Comptng 10A, 10B, 10C, 30; Math 61)

- **B.S. Degree – Mathematics/ Applied Science**
  This major is designed for students with a substantial interest in mathematics and its applications to a particular field.

  Math 60 (Math 31A), 70 (31B), 80 (32A & 32B), 84 (33A)
  (No LBCC equivalents to the following UCLA courses: Comptng 10A)

  **In addition, choose courses from one of the following Plans:**
  - **Actuarial Plan:** Econ 1A or 1AH (Econ 2), 1B (1)
    (No LBCC equivalent to the following UCLA course: Econ 11)
  - **Operations Research Plan:** Acctg 1A (Mgmt 1A); Econ 1A or 1AH (Econ 2), 1B (1)
  - **Management/Accounting Plan:** Acctg 1A (Mgmt 1A), 1B (1B)
  - **Mathematics/History of Science Plan:**
    (No LBCC equivalents to the following UCLA courses: Hist 2B, 2D, 3A, 3B, 3C, 3D)
  - **Medical/Life Science Plan:** Bio 1A & 1B (Lifesci 1) or Bio 1A & Physi 1 (Lifesci 2); Chem 1A & 1B (Chem 20A & 20B & 20L & 30AL), 12A (30A); Phys 3A (Physics 1A), 3B (1B)
    (No LBCC equivalents to the following UCLA courses: Lifesci 3, 4)

- **B.S. Degree – Mathematics**
  This major is designed for students whose basic interest is mathematics.

  Math 60 (Math 31A), 70 (31B), 80 (32A & 32B), 84 (33A); Phys 3A (Physics 1A)
  Two courses from: Bio 1A or 1B (Lifesci 1), Chem 1A (Chem 20A), 1B (20B); Phys 3B (Physics 1B), 3C (1C)
  (No LBCC equivalents to the following UCLA courses: Comptng 10A; Econ 11; Philos 31, 32; Physics 6B, 6C)

SEE REVERSE SIDE FOR ADDITIONAL REQUIREMENTS
UC Los Angeles (continued)

- **B.S. Degree – Mathematics/Economics**
  This major is designed for students interested in the relationship between mathematics and economics.

  Math 60 (Math 31A), 70 (31B), 80 (32A & 32B), 84 (33A); Econ 1A or 1AH (Econ 2), 1B (1)
  (No LBCC equivalents to the following UCLA courses: Comptng 10A; Econ 11; Math 61)

UC RIVERSIDE

This major is offered by the College of Natural and Agricultural Sciences (CNAS). UCR requires Math majors to have an overall GPA of at least 2.70 in all UC transferable course work. The IGETC is not accepted for majors offered in the College of Natural and Agricultural Sciences. Transfer students are encouraged to follow the CNAS breadth pattern for supplementing their lower division math and science preparation with humanities or social sciences courses.

- **B.A. Degree – Mathematics**
  Math 60 & 70 (Math 9A & 9B & 9C), 80 (10A or 10B)

- **B.S. Degree – Mathematics**
  **Core Requirements:** Math 60 & 70 (Math 9A & 9B & 9C), 80 (10A or 10B); Cbis 11 (Cs 10);
  Cbis 12 (recommended) (Cs 12)

  **Tracks:** Pure Math; Computational Math; Applied Math

  **Track Requirements:**
  Pure Math: (No additional lower-division courses required)
  Computational Math: Cbis 12 (Cs 12) or lower-division course at UCR
  Applied Math (four options):
  Biology Option: Bio 1A (Biol 5A & 5AL), 1B (5B), and lower-division course at UCR
  Chemistry Option: Chem 1A & 1B (Chem 1A & 1B & 1C), Phys 3A & 3B (Phys 40A & 40B & 40C) or lower-division physics at UCR
  Environmental Science Option: Chem 1A & 1B (Chem 1A & 1B & 1C); Geol 1 or 1H (Geo 1) or Geol 2 & 2L (Geo 1)
  (No LBCC equivalent to the following UCR course: Ensc 6)

UC SANTA CRUZ

- **B.A. Degree – Mathematics**
  **Core Requirements:** Math 60 & 70 (Math 19A & 19B)
  (No LBCC equivalents to the following UCSC courses: Math 21, 23A, 23B)

  **Concentrations:** Mathematics Education; Computational Mathematics

  **Concentration Requirements:**
  Mathematics Education: Stat 1 or 1H (Math 5)
  Computational Mathematics: Math 85 (Math 24)