MAJOR REQUIREMENTS (72 Units) Grades of “C” or better required. Courses may not be completed in order listed.

Computer Science Core Curriculum (34 units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPTG 121</td>
<td>Introduction to Computer Science</td>
<td>MATH 121</td>
</tr>
<tr>
<td>CPTG 122</td>
<td>Introduction to Computer Science II</td>
<td>MATH 121</td>
</tr>
<tr>
<td>CPTG 244</td>
<td>Data Structures</td>
<td>MATH 121</td>
</tr>
<tr>
<td>CPTG 245</td>
<td>Computer Organization and Assembly Language Programming</td>
<td>CPTG 122</td>
</tr>
<tr>
<td>CPTG 255</td>
<td>Systems and Network Programming</td>
<td>CPTG 244</td>
</tr>
<tr>
<td>CPTG 324</td>
<td>Programming Languages</td>
<td>CPTG 244 &amp; 245</td>
</tr>
<tr>
<td>CPTG 434</td>
<td>Operating Systems</td>
<td>CPTG 244 &amp; 245</td>
</tr>
<tr>
<td>CPTG 445</td>
<td>Computer Architecture</td>
<td>CPTG 244 &amp; 245</td>
</tr>
<tr>
<td>CPTG 485</td>
<td>Seminar</td>
<td>CPTG 224; For Majors only</td>
</tr>
</tbody>
</table>

Required Cognates (8 units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 131</td>
<td>Calculus I</td>
<td>MATH 122 or appropriate Math Placement Test score</td>
</tr>
<tr>
<td>MATH 276</td>
<td>Discrete Mathematics</td>
<td>CPTG 121 or MATH 131</td>
</tr>
</tbody>
</table>

Computer Science and Cognate Career Path* Electives (30 units, at least 16 units of CPTG electives)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPTG 323</td>
<td>Data Science</td>
<td>MATH 122</td>
</tr>
<tr>
<td>CPTG 334</td>
<td>Systems Analysis</td>
<td>CPTG 244</td>
</tr>
<tr>
<td>CPTG 335</td>
<td>Cyber Security</td>
<td>CPTG 244, 245 &amp; MATH 276</td>
</tr>
<tr>
<td>CPTG 345</td>
<td>Digital Logic &amp; Design</td>
<td>CPTG 245</td>
</tr>
<tr>
<td>CPTG 356</td>
<td>Principles of Networking</td>
<td>CPTG 244 &amp; 245</td>
</tr>
<tr>
<td>CPTG 364</td>
<td>Analysis of Algorithms</td>
<td>CPTG 244 &amp; MATH 276</td>
</tr>
<tr>
<td>CPTG 374</td>
<td>Web Application Development</td>
<td>CPTG 244</td>
</tr>
<tr>
<td>CPTG 384</td>
<td>Mobile Application Development</td>
<td>CPTG 244</td>
</tr>
<tr>
<td>CPTG 436</td>
<td>UNIX Systems Administration</td>
<td>CPTG 244 &amp; 245</td>
</tr>
<tr>
<td>CPTG 446</td>
<td>Embedded Systems Design</td>
<td>CPTG 245</td>
</tr>
<tr>
<td>CPTG 454</td>
<td>Compiler Theory</td>
<td>CPTG 324</td>
</tr>
<tr>
<td>CPTG 455</td>
<td>Database Design and Management</td>
<td>CPTG 244</td>
</tr>
<tr>
<td>CPTG 456</td>
<td>Principles of Networking</td>
<td>CPTG 244 &amp; 245</td>
</tr>
<tr>
<td>CPTG 466</td>
<td>Embedded Systems Design</td>
<td>CPTG 245</td>
</tr>
<tr>
<td>CPTG 485</td>
<td>Seminar</td>
<td>CPTG 224; For Majors only</td>
</tr>
</tbody>
</table>

*SEE OTHER SIDE FOR CAREER PATHWAYS

UNIVERSITY STUDIES FOUNDATIONAL STUDIES (21-34 UNITS) Grades of “C” or better required.

<table>
<thead>
<tr>
<th>Component</th>
<th>Course Code</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I FIRST-YEAR SEMINAR</td>
<td>UNST 101A (1), 101B (1) and UNST 101C (1)</td>
<td></td>
</tr>
<tr>
<td>A. ENGL 111 (3), 112 (3), 113 (3) College Writing</td>
<td>ENGL 111/124</td>
<td></td>
</tr>
<tr>
<td>B. Upper Division Rhetoric</td>
<td>CPTG 334 (4) or CPTG 455.</td>
<td></td>
</tr>
<tr>
<td>III MATHEMATICS</td>
<td>MATH 121, MATH 223, BIOL 113/113L</td>
<td></td>
</tr>
<tr>
<td>IV WORLD LANGUAGES</td>
<td>MATH 121, MATH 223, BIOL 113/113L</td>
<td></td>
</tr>
<tr>
<td>V HEALTH AND FITNESS</td>
<td>MATH 121, MATH 223, BIOL 113/113L</td>
<td></td>
</tr>
</tbody>
</table>

UNIVERSITY STUDIES GENERAL STUDIES (52 UNITS, 16 UPPER DIVISION) Grades of “D” or better required, unless courses are required by major.

<table>
<thead>
<tr>
<th>Component</th>
<th>Course Code</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I SOCIAL SCIENCES (SSCI)</td>
<td>8 units</td>
<td>Globalization, Identity and Citizenship (4 units from SSCI 204/205/206/207/208)</td>
</tr>
<tr>
<td>II ARTS AND HUMANITIES (HUMN)</td>
<td>12 units</td>
<td>Exploring Culture (4 units from HUMN 104/105/106/107/108/109)</td>
</tr>
<tr>
<td>III RELIGIOUS BELIEFS AND PRACTICES (RLGN)</td>
<td>16 units</td>
<td>RLGN 304 Adventism in Global Perspective or RLGN 305 Religion in Three Cultures</td>
</tr>
<tr>
<td>IV NATURAL SCIENCES (NSCI)</td>
<td>12 units</td>
<td>Scientific Foundations (4 units from NSCI 404/405/406/407/408)</td>
</tr>
<tr>
<td>V SENIOR SEMINAR</td>
<td>UNST 404B Religion, Values, and Social Responsibility</td>
<td></td>
</tr>
</tbody>
</table>

UNIVERSITY STUDIES SERVICE-LEARNING (3 courses)

*Note: Should a student's general education and major degree program not meet the minimum 190 units required for graduation, the student must complete elective units to make up the deficiency.
COMPUTER SCIENCE
Bachelor of Science

The objectives of the Department of Computer Science are to help students build a solid computer science foundation which focuses on the technical and applied knowledge, fundamental skill sets, state-of-the-art technological advances, effective communications, and best practices necessary to compete in today's ever-changing computer field.

CAREER PATHS: Students in the Computer Science program will begin by taking a set of fundamental core computer science courses. Students can then choose to focus in one or more career paths that they are interested in such as:

- Computer Engineering and Embedded Systems
- Software Engineering
- Information Systems
- Web and Mobile Applications
- Networks and Cyber Security
- Bioinformatics
- Preparation for Graduate Study

Computer Engineering and Embedded Systems
CPTG 345 Digital Logic & Design
CPTG 356 Principles of Networking
CPTG 436 UNIX Systems Administration
CPTG 446 Embedded Systems Design
PHYS 117 Introduction to Physics
PHYS 231 General Physics I
PHYS 353 Electronics

Software Engineering
CPTG 323 Data Science
CPTG 334 Systems Analysis
CPTG 364 Analysis of Algorithms
CPTG 424 Database Design & Management
CPTG 455 Software Engineering

Information Systems
CPTG 334 Systems Analysis
CPTG 356 Principles of Networking
CPTG 424 Database Design and Management
CPTG 436 UNIX Systems Administration
CPTG 455 Software Engineering

Networks and Cyber Security
CPTG 335 Cyber Security
CPTG 356 Principles of Networking
CPTG 374 Web Application Development
CPTG 424 Database Design and Management
CPTG 436 UNIX Systems Administration

Web and Mobile Applications
CPTG 356 Principles of Networking
CPTG 374 Web Application Development
CPTG 384 Mobile Application Development
CPTG 424 Database Design and Management
ARTS 194 Photoshop & Illustrator Image Creation
ARTS 394C Interface Design
ARTS 394G Motion Graphics
ARTS 395A Web Design Communication Principles

Bioinformatics
CPTG 323 Data Science
CPTG 364 Analysis of Algorithms
CPTG 424 Database Design and Management
CPTG 436 UNIX Systems Administration
MATH 155 Introductory Statistics
BIOL 111/111L General Biology I, Laboratory
BIOL 302 Genetics
BIOL 490 Bioinformatics

Graduate Study
CPTG 345 Digital Logic & Design
CPTG 356 Principles of Networking
CPTG 364 Analysis of Algorithms
CPTG 424 Database Design and Management
CPTG 455 Software Engineering
MATH 132 Calculus II
MATH 133 Calculus III
MATH 231 Introduction to Linear Algebra & Discrete Mathematics
MATH 361 Numerical Methods I

ADDITIONAL INFORMATION

La Sierra University
www.lasierra.edu

Department
www.lasierra.edu/cs

Faculty

Chair
Enoch Hwang, Ph.D

Faculty Mentors
Enoch Hwang, Ph.D.
Barbara Kreaseck, Ph.D.
Cheng Ng, Ph.D.

Contact Information

cs@lasierra.edu
Price Science Complex (PSC) Room 247
(951) 785-2105

Professional Organizations

Computing Research Association
1828 L Street, NW Suite 800
Washington, D.C. 20036
http://cra.org

Association of Information Technology Professionals
15000 Commerce Parkway, Suite C
Mount Laurel, NJ 08054
http://www.aitp.org

Institute for the Certification of Computing Professionals (ICCP)
2200 East Devon Ave. Ste. 268
Orlando, FL 32819

La Sierra
UNIVERSITY

Academic Advising
Office of Advising and Career Success
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