La Sierra UNIVERSITY

COMPUTER SCIENCE, B.S.

2013-2014

MAJOR REQUIREMENTS (85 Units) *Grades of "C" or better required. Courses may not need to be completed in order listed.*

	FALL	WINTER	SPRING
CPTG 121 Introduction to Computer Science I (4) *Prerequisite: MATH 121*			
CPTG 122 Introduction to Computer Science II (4) *Prerequisite: CPTG 121*			
CPTG 244 Data Structures (4) *Prerequisite: CPTG 122*			
CPTG 245 Computer Organization and Assembly Language Programming (4) *Prerequisite: CPTG 122*			
CPTG 255 Systems and Network Programming (4) *Prerequisite: CPTG 244*			
CPTG 324 Programming Languages (4) *Prerequisite: CPTG 244 & 245*			
CPTG 345 Digital Logic Design (4) *Prerequisite: CPTG 245*			
CPTG 434 Operating Systems (4) *Prerequisite: CPTG 244 & 245*			
CPTG 445 Computer Architecture (4) *Prerequisite: CPTG 244 & 245*			
CPTG 455 Software Engineering (4) *Prerequisite: CPTG 324 or CPTG 334; ENGL 113 or ENGL 124*			
CPTG 485 Seminar or MATH 485 Seminar (0.5-2 units each; 2 units total required) *Prerequisite: MATH 131*			
MATH 131 Calculus I (4) *Prerequisite: MATH 122 or appropriate Math Placement Test score. Prerequisite meets Foundational Studies III Mathemetics requirement.*			
MATH 132 Calculus II (4) *Prerequisite: MATH 131*			
MATH 133 Calculus III (4) *Prerequisite: MATH 132*			
MATH 231 Introduction to Linear Algebra & Discrete Mathematics *Prerequisite: CPTG 121 or MATH 131*			
MATH 276 Discrete Mathematics (4) *Prerequisite: CPTG 121 or MATH 131*			
Choose 16 additional units from the following, with a maximum of 8 units from MATH:			
CPTG 334 Systems Analysis (4) *Prerequisite: CPTG 244*			
CPTG 364 Analysis of Algorithms (4) *Prerequisite: CPTG 244 & MATH 276*			
CPTG 424 Database Design and Management (4) *Prerequisite: CPTG 244*			
CPTG 454 Compiler Theory (4) *Prerequisite: CPTG 324*			
CPTG 486 Topics in Computer Science (2-4) *Prerequisite: CPTG 244 & 245*			
CPTG 494 Internship (0-8) *Prerequisite: Junior or Senior class standing and majoring in Computer Science or Information Systems*			
CPTG 499 Directed Study (1-4) *Prerequisite: CPTG 244, 245, department chair's consent, and a major in Mathematics & Computer Science Department*			
MATH 361 Numerical Methods I (4) *Prerequisite: CPTG 121, MATH 231 & 232*			
MATH 362 Numerical Methods II (4) *Prerequisite: MATH 361*			
MATH 461 Biomathematical Modeling I (4) *Prerequisite: CPTG 121, MATH 232, BIOL 113 & 113L*			
MATH 462 Biomathematical Modeling II (4) *Prerequisite: MATH 461*			
Required Cognates			
PHYS 231 General Physics I (4) and PHYS 231L Laboratory (1) *PHYS 231A prerequisite: MATH 122; 231B prerequisite: MATH 132. Theme IVB**			
PHYS 232 General Physics II (4) *Prerequisite: PHYS 231 & 231L. Theme IVB**			

UNIVERSITY STUDIES FOUNDATIONAL STUDIES (20-37 UNITS) *Grades of "C" or better required.*

I	FIRST-YEAR SEMINAR	UNST 101A (1) and 101B (1) *OR* UNST 100A (3) and 100B (3)			
II	RHETORICAL SKILLS	A. ENGL 111 (3), 112 (3), 113 (3) College Writing *or* ENGL 124 Freshman Seminar (4)			
		B. Upper Division Rhetoric: CPTG 334 (4) *or* CPTG 455.			
III	MATHEMATICS	One college-level Mathematics course (4) *Major requires MATH 131, 132, & 133.*			
IV	WORLD LANGUAGES	Level 3 proficiency (e.g. 153) in one non-English language (4-12)			
V	HEALTH AND FITNESS	HLSC 120 Lifetime Fitness with laboratory (2)			

UNIVERSITY STUDIES GENERAL STUDIES (52 UNITS, 20 UPPER DIVISION) *Grades of "D" or better required, unless courses are required by major.*

THEME	IA	Understanding Human Beings *OR* **IB** Humans as Thoughtful Global Citizens (4)			
	IC	Globalization, Identity and Citizenship (SSCI 104 / 105 / 106 / 107) (4) *Prerequisite: ENGL 113/124.*			
THEME	IIA	History and Appreciation of Visual and Performing Arts (4)			
	IIB	Historical or Contemporary Culture and Context (4)			
	IIC	Exploring Culture (HUMN 204 / 205 / 206) (4) *Prerequisite: ENGL 111/124.*			
THEME	III	Any Theme III course (Theme III A, B, C, or D) (4)			
	IIIB	Required Beliefs and Heritage course (RELT 104 / 106 / 245 / RLGN 304) (4)			
	IIIC	Scripture (4)			
	RLGN	RLGN 304 Adventism in Global Perspective *OR* RLGN 305 Religion in Three Cultures (4) *Prerequisite: ENGL 113/124, Junior.*			
THEME	IVA	Life Science (4) *Theme IVA Life Science OR Theme IVB Physical Science must include a laboratory.*			
	IVB	Physical Science (4) *Theme IVA Life Science OR Theme IVB Physical Science must include a laboratory. May be satisfied by major's cognates**			
	IVC	Scientific Foundations (NSCI 404 / 405 / 406 / 407) (4) *Prerequisite: ENGL 113/124, Theme IVA/Theme IVB, F3 Mathematics.*			
THEME	V	Senior Seminar: UNST 404 Religion, Values, and Social Responsibility (4) *Prerequisite: ENGL 111/124, Junior.*			

UNIVERSITY STUDIES SERVICE-LEARNING (3 courses)

**A maximum of 4 units from the Major, and 8 units of Cognates required by the Major, may apply to University Studies General Studies requirements (2013-2014 Undegraduate Academic Bulletin p. 66).*

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 defiency.

COMPUTER SCIENCE

Bachelor of Science

The department provides a curriculum in mathematics and computing sciences as a cultural study for all liberal arts students, as a basic tool for the scientist, and as a preparation for graduate study and teaching.

CAREER OPPORTUNITIES AND RELATED OCCUPATIONS: The department provides a curriculum in mathematics and computing sciences as a cultural study for all liberal arts students, as a basic tool for the scientist, and as a preparation for graduate study and teaching. A bachelor's degree in computer science is sufficient for such areas as computer systems analyst, computer support specialist, software developer, web developer, computer programmer, and information security analyst.

EDUCATIONAL QUALIFICATIONS: A bachelor's degree is required for some or all entry-level employment. Most computer and information research scientists need a Ph.D. in computer science or a related field, such as computer engineering.

JOB OUTLOOK: Employment of computer systems analysts is projected to grow 25 percent from 2012 to 2022, much faster than the average for all occupations. Employment of computer support specialists is projected to grow 17 percent from 2012 to 2022, faster than the average for all occupations. Employment of software developers is projected to grow 22 percent from 2012 to 2022, much faster than the average for all occupations. Employment of web developers is projected to grow 20 percent from 2012 to 2022, faster than the average for all occupations. Employment of computer programmers is projected to grow 8 percent from 2012 to 2022, about as fast as the average for all occupations. Employment of information security analysts is projected to grow 37 percent from 2012 to 2022, much faster than the average for all occupations.

SALARY: The 2012 median annual wages for sample jobs for computer science graduates are as follows:

Computer programmer	$74,280
Computer support specialist	$48,900
Computer systems analyst	$79,680
Information security analyst	$86,170
Software developer	$72,560
Web developer	$62,500

Academic program information adapted from
La Sierra University. (2013). *Undergraduate Academic Bulletin* (pp. 130-133). Retrieved from http://www.lasierra.edu/bulletin.

Career information adapted from
U.S. Department of Labor, Bureau of Labor Statistics. (2013). *Occupational Outlook Handbook*. Retrieved from http://www.bls.gov/ooh.

ADDITIONAL INFORMATION

Websites

La Sierra University
www.lasierra.edu

Department
www.lasierra.edu/cs

Faculty

Chairperson:
Barbara Kreaseck, Ph. D.

Advisors:
Enoch Hwang, Ph.D.
Barbara Kreaseck, Ph. D.

Contact Information

Price Science Complex (PSC) Room 247
(951) 785-2197

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
http://iccp.org

La Sierra UNIVERSITY

Academic Advising
Center for Student Academic Success
Sierra Vista Hall, Room 114
(951) 785-2452
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