COMPUTER SCIENCE (BS)

Chairperson: Seta Whitby

Regular Faculty: Ray Ahmadnia, Jozef Goetz, Seta Whitby

Adjunct Faculty: Claudia Caceres, Mudassar Ghazi, Sara Hariri, Clifford Kettemborough, Mohammad Muqri, Juan Rodriguez, Samuel Son, Anat Zeelim

This major requires a minimum of 50 semester hours. Students are required to complete the core requirements, select at least one concentration (artificial intelligence, engineering, information science, internet programming, or software), and a minimum of **one** elective course, as well as satisfy the prerequisite requirements. Students may select certificates in Computer Coding, Cybersecurity, Systems Engineering or in Website and Internet Applications Development (see UNDERGRADUATE & GRADUATE CERTIFICATES section).

Degree Requirements

Total program: 79 – 92 semester hours

Core Requirements

Code	Title	Semester Hours
CMPN 280	Computer Organization	4
CMPS 367	Object Oriented Language C++	4
CMPS 368	Principles of Computer Networks	4
CMPS 370	Seminar	1
or CMPS 370C	System Engineering Seminar	
CMPS 385	Data Structures	4
CMPS 420	Cybersecurity	4
CMPS 471	Internship	1
CMPS 498	Comprehensive Exam	0
CMPS 499	Senior Project	4
Total Semester Hours		**26**

Select one of the Following Concentrations:
Artificial Intelligence Concentration

Code	Title	Semester Hours
CMPS 392	Project Management	4
CMPS 400	Analysis of Algorithms	4
CMPS 450	Automata Theory	4
CMPS 451	Artificial Intelligence	4
CMPS 453	Advanced Topics in Artificial Intelligence	4
Total Semester Hours		**20**

Engineering Concentration
20 semester hours

Code	Title	Semester Hours
CMPN 150	Principles of Electronics and Computer Engineering	4
CMPN 202	Electronic Devices and Circuits	4
CMPN 330	Microprocessor Systems	4
CMPN 480	Advanced Computer Architecture	4
CMPS Elective (Upper Division)		4
Total Semester Hours		**20**

Information Science Concentration
20 semester hours

Code	Title	Semester Hours
CMPS 375	Systems Analysis and Design	4
CMPS 392	Project Management	4
CMPS 410	Management Information Systems	4
CMPS 490	Database Management Systems	4
CMPS Elective (Upper Division)		4
Total Semester Hours		**20**

Internet Programming Concentration
20 semester hours

Code	Title	Semester Hours
CMPS 218	Publishing on the Web I	4
CMPS 319	Publishing on the Web II	4
CMPS 320	Internet Apps Development	4
CMPS 378	C# Programming	4
CMPS 480	Distributed Internet Computing	4
Total Semester Hours		**20**

Software Concentration
20 semester hours

Code	Title	Semester Hours
CMPS 371	Assembly Language	4
CMPS 400	Analysis of Algorithms	4
CMPS 455	Compiler Design	4
CMPS 460	Operating Systems	4
CMPS 490	Database Management Systems	4
Total Semester Hours		**20**

Elective Requirement for Each Concentration

A minimum of 4 **semester hours** from the following or students may choose elective courses outside of their declared concentration:

Code	Title	Semester Hours
CMPS 302	The Digital Society	4
CMPS 369	Local Area Networks	4
CMPS 372	Introduction to Python Programming	4
CMPS 379	Java	4
CMPS 386	Introduction to Data Mining	4
CMPS 388	Software Engineering	4
CMPS 390	Special Topics in Computer Science	1-4
CMPS 481	Mobile Applications Development	4
CMPS 491	Systems Architecture	4

Prerequisite Requirements

25 semester hours

Code	Title	Semester Hours
BUS 270	Statistics	4
CMPS 301	Programming Concepts	4
CMPS 327	Discrete Mathematics	4
MATH 201	Calculus I	4
MATH 202	Calculus II	4
PHYS 201	General Physics I	5
or PHYS 203	Physics I: Mechanics	
Total Semester Hours		**25**

Additional Prerequisites for Artificial Intelligence Concentration

Code	Title	Semester Hours
BUS 343	Foundations of Business Ethics	4
MATH 311	Calculus III	4
MATH 320	Linear Algebra	4
PHYS 204	Physics II: Electricity & Magnetism	5
Total Semester Hours		**17**

Additional Prerequisites for Engineering Concentration

Code	Title	Semester Hours
CHEM 201	General Chemistry I	4-5
or CHEM 103	Introduction to Chemistry	
PHYS 202	General Physics II	5
or PHYS 204	Physics II: Electricity & Magnetism	
Total Semester Hours		**9-10**

Additional Prerequisites for Information Science Concentration

Code	Title	Semester Hours
ECON 221	Economic Analysis II	4
or ECON 228	Economic Theories & Issues	
Total Semester Hours		**4**

Additional Prerequisites for Internet Programming and Software Concentrations

Code	Title	Semester Hours
PHYS 202	General Physics II	5
or PHYS 204	Physics II: Electricity & Magnetism	
Total Semester Hours		**5**

Masters in Data Analytics 4+1 Program

Open to undergraduate students in the College of Business as well as Computer Science majors, the Masters in Data Analytics 4+1 Program provides students with a comprehensive understanding of business intelligence and the ability to analyze data and generate insights for better decision-making in the modern business world. During the senior year, undergraduate students approved for this MSDA 4+1 Program will begin taking graduate MSDA courses, which will count toward both degrees, thereby providing an accelerated path to completion.

Minimum Requirements to Apply to Participate in the MSDA 4+1 Program:

1. Must be a current full-time undergraduate student at the University of La Verne.
2. GPA 2.75 overall and in the major.
3. Students must have completed a minimum of 88 units by the end of the junior year.
4. Students must complete the "Application for Graduation Process" for the bachelor's undergraduate degree (between April-May).

MSDA Courses in Senior Undergraduate Year:

1. Once accepted to the Program, it is expected students will register to attend both the Fall and Spring of their senior year as full-time students with a maximum of two MSDA courses each semester.
2. Students may take the remaining GE and major requirements concurrently during this senior year.
3. Students must maintain a 3.0 GPA in the courses intended to be used for the MSDA graduate degree.
4. No undergraduate courses may be used to satisfy MSDA graduate-level courses.
5. If students complete Statistics (e.g., BUS 270 Statistics or a substantially equivalent course) and Linear Algebra (e.g., MATH 320 Linear Algebra or a substantially equivalent course) with grades of C+ or better, MDA 500 Statistics and Linear Algebra can be waived.
6. A maximum of 12 units of MSDA courses (3 units each) can be taken in the senior year, with a maximum of 6 units in Fall and 6 units in Spring.
7. MSDA course options during the senior year may include a maximum of 4 MSDA courses and may be applied to the bachelor's undergraduate degree. See program chair for options.