Computer Science

Computer Science Degrees and Certificates

THE COMPUTER SCIENCE MAJOR (BA)

dly changing and exciting field. Its impact on our lives is evidenced by

the variety of uses of information technology in business, industry, e

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*MTH1

15 and MTH 210 may also be used to satisfy core requirements.

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duatewithaBachelorofArtsorBachelorofScienceddegreefromLyonColl

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ithourscomprisedofourrequiredCorecurriculum(44-48hours),there

quirements of at least one major (credit hours vary per major), and as le

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multivegradepointaverageforallworktakenatLyonCollegeandda2.00

cumulative grade point average in their major program of study.

SUMMARY OF REQUIREMENTS FOR A MAJOR IN COMPUTER SCIENCE

Item #	Title	Credits
	MTH 115 or MTH 290	3
MTH 210	Calculus I	4
CSC 100	Introduction to Programming in C++	3
CSC 240	Data Structures with C++	3
CSC 245	Introduction to Digital Logic	3
CSC 255	Computer Architecture	3

CSC 265	Algorithms	3
CSC 310	Mathematical Foundations of Computer Science	3
CSC 320	Programming Languages	3
CSC 420	Operating Systems	3
	CSC Electives (9 credits)	9
	Sub-Total Credits	40

CORE CURRICULUM

Item #	Title	Credits
	Core Curriculum Requirements	44 - 48
	Sub-Total Credits	44-48

	Total credits:	**84-88**

CATEGORY DESCRIPTIONS

MTH 115 or MTH 290

Item #	Title	Credits
MTH 115	Discrete Mathematics	3
MTH 290	Foundations of Modern Mathematics	3

CSC Electives (9 credits)

3 electives at the 300/400 level; one may be a 300/400 level MTH class.

Core Curriculum Requirements

Developmental requirements (up to 6 credits):

Taken in the first semester, if placed into it:

- ENG 001 College English

Taken in the first year, if placed into it:

- MTH 001 Intermediate Algebra

Proficiency requirements (15 credits):

Taken in the first two years, if not placed out of it:

- MTH 101 College Algebra **or**
- MTH 103 College Algebra w/Lab **or**
- MTH 105 Mathematics for Liberal Arts

Taken in the first year (depending on placement):

- ENG 101 English Composition I (taken immediately if placed into it or immediately following completion of ENG 001 with a grade of 'C' or better)
- ENG 102 English Composition II (taken immediately following successful completion of ENG 101 with a grade of 'C' or better)

Recommended but not required in the first year:

- First-year of a foreign language

Common Core requirements (13-14 credits):

Taken in the first year (or within one year of completing any pre-requisite coursework):

- COR 100 Year One
- COR 101 Year One OH ONE

Taken anytime in the first TWO years:

- ENG 105 World Literature
- POL 105 The American Experience

Taken anytime prior to graduation:

- HIS 110 World Civilization
- HIS 112 World Civilization II

Distribution requirements:

One fine arts course (3 credits)

Select from the following:

- ART 101 Introduction to Visual Arts
- ART 201, 202 World Art I and II
- MUS 105 Language of Music
- MUS 110 Music Theory

- THE 101 Introduction to Theatre

One social science course (3 credits)

Select from the following:

- ANT 101 Introduction to Cultural Anthropology
- ECO 101 Principles of Economics I
- PSY 101 Introduction to Psychology

One mathematics course (3-4 credits)

Select from the following:

- MTH 105 Mathematics for Liberal Arts
- MTH 110 Elementary Functions
- MTH 115 Discrete Mathematics **or** MTH 290 Foundations of Modern Mathematics
- ECO 208 Quantitive Methods in Business, Economics, and Decision Science
- MTH 210 Calculus I
- BUS 323 Statistical Applications to Business Decision Making
- PSY 235 Statistics for the Behavioral Sciences

One lab science course (4 credits)

Select from the following:

- BIO 100, 100L Biology in Context
- BIO 110, 110L Principles of Biology I
- CHM 105, 105L Introduction to Chemistry
- CHM 110, 110L General Chemistry I
- PHY 210, 211 General Physics
- PHY 240, 241 Fundamentals of Physics
- SCI 100, 100L Physical Science for Liberal Arts

One religion/philosophy course (3 credits)

Select from the following:

- RPH 110 Old Testament
- RPH 120 New Testament
- RPH 130 Introduction to Christian Theology
- RPH 140 Introduction to World Philosophies
- RPH 150 World Religions
- RPH 205 Introduction to Ethics

Two physical education courses (0-2 credits)

Select from the following:

- PED courses with designations from 101 to 130
- OLP courses with designations from 120 to 130

NOTE: Only one activity (specified PED/OLP) course can be taken per semester. Additionally, only seven activity credits can be counted toward the graduation requirement.

THE COMPUTER SCIENCE MINOR

The Computer Science minor is a course of study des

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ience fundamentals, to include computational theory, discrete structu

tures, and the application of Logic to both hardware and software development

opment. A minor in Computer Science can enhance the value of a wide variety

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search hor taking an internship.

NOTE

* Students may use MTH 115 and MT

SUMMARY OF REQUIREMENTS FOR A MINOR IN COMPUTER SCIENCE

Item #	Title	Credits
	MTH 115 or MTH 290	3
MTH 210	Calculus I	4
CSC 100	Introduction to Programming in C++	3
CSC 240	Data Structures with C++	3
CSC 245	Introduction to Digital Logic	3
CSC 265	Algorithms	3
	CSC Elective (3 credits)	3
	Sub-Total Credits	22

	Total credits:	**22**

CATEGORY DESCRIPTIONS

MTH 115 or MTH 290

Item #	Title	Credits
MTH 115	Discrete Mathematics	3
MTH 290	Foundations of Modern Mathematics	3

CSC Elective (3 credits)

One Computer Science elective.

Computer Science (CSC) Classes

CSC 100: Introduction to Programming in C++

An introduction to structured programming, including conditional statements

nts, loops, functions, input, output, and use of variables data types. Object-

CSC 105: Digital Humanities

An introduction to the theory and met

oriented features are introduced

Credits: 3

Prerequisites: MTH 101 Or MTH 103

hodsofDigitalHumanities.Topicswillincludedigitaltextencoding(XML)

, text computation and analysis, data visualization, and geographic inform

ationsystem(GIS)mapping

Credits:3

CSC 109: Introduction to Programming in Python

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age. Topics include basic programming concepts, problem-solving methods,

algorithmdevelopment,programdesignandlearningtheuseof

packages/li

CSC 115: Introduction to Programming in Java

An introduction to object-oriented programming and data processing using libraries useful for data processing tasks.

Credits: 3

Prerequisites: MTH 101

tedprogrammingusingJava.Topicsincludeproblem-solvingmethods,algor

with development, program design, testing, debugging, and documentation of

CSC 240: Data Structures with C++

edits: 3 Prerequisites: MTH 101 Or MTH 103

Fundamental sof data structures as they are used for the efficient storag

eandmanipulationofdata. Topics include common data structures that are reus

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CSC 245: Introduction to Digital Logic

Credits: 3

Prerequisites: MTH 115 or MTH 290 and CSC 100 or CSC 115

An introduction to digital electronic circuits and techniqu

es. Boolean algebra, digital logic gates, registers, automata theory, and int

egraded circuits

Credits: 3

Prerequisites: MTH115 or MTH290

CSC 255: Computer Architecture

Introduction to computer organization and the basic

structure of a modern programmable computer. Topics covered include the von

Neumannarchitecture, theCPU, pipelining, memoryhierarchy, assembly/ma

chinelanguage, and the basic laws underlying performance evaluation. Concepts

3. Prerequisites: CS 240 and CS 245

...dy of algorithms, paradigms, including divide and conquer algorithms, gre

edymethods,dynamicprogramming,heuristics,andprobabilisticalgorith

Credits: 3

Prerequisites: CSC 240

CSC 301: Junior Internship

Practical experience through supervised internship. Students can

onduct the internship person-site, working under the supervision of computi

ng/automation/ITprofessionals, or one Internet

Credits: 3

Prerequisites:

CSC 310: Mathematical Foundations of Computer Science

Introduction to math

C[illegible]computer science, such as finite state auto

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Credits: 3

Prerequisites: CSC 265

CSC 320: Programming Languages

A study of programming languages, their data, paradigms, an

design and implementation issues. Topics include language representatio

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, information handling, encapsulation and static and dynamic types

Prerequisites: CSC340

[illegible] the theory of databases, database design, and database applic

ationdevelopment. Topics include database models such as relational, netw

ork, hierarchical, object-oriented, and distributed. Students will apply

this theory to the development of an actual database application. Co
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CSC 401: Senior Internship
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equal experience through a supervised internship. Students can conduct thei

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CSC 410: Data Communications and Networks

An introduction to the theory and p

ion/IT professionals, or one Interested in

Credits: 1-2

Prerequisites: CSC 100 and pe

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CSC 415: Numerical Analysis

Examination of error analysis, interp

, error detection, and handling. Credits: 3 Prerequisites: CSC 265 and CSC 310

olation, approximated differentiation, approximate integration, solutio

nstodifferentialequations, matrixmanipulation, andsolutionstosystem

software requirements. (Same as MTH 450) 3 credits. Prerequisites: MTH 300 and CSC

CSC 420: Operating Systems

An introduction to the component

1s and organization of operating systems. Batch, interactive and distribute

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CSC 450: Independent Study

Credits: 3 Prerequisites: CSC 265

Individual work on special topics in computer science. C

CSC 482: Special Topics in Computer Science

credits: 1-3 Prerequisites: Permission of instructor.

Study of selected topics in computer science. Prerequisites will vary.

Credits: 3