

# **Bachelor of Science in Computer Science**

Data Science Cognate

2022-2023 Degree Completion Plan

Important: This degree plan is effective for those starting this degree program in fall 2022 through summer 2023. This degree plan will remain in effect for students who do not break enrollment or who do not change degree programs, concentrations or cognates.

#### **GENERAL EDUCATION/**

	NAL SKILLS REQUIREMENTS (46-4	Juouis	_						
Course		Hrs	Sem	Grade	Course		Hrs	Sem	Grade
Communicatio	on & Information Literacy (13 hours) <sup>1</sup>		<u> </u>	<u> </u>	Major Founda	ational Courses (0-20 hours)			
ENGL 101	Composition & Rhetoric	3			BUSI 240	Organizational Behavior I <sup>4</sup>	3		
INQR 101	Inquiry 101	1			CSCN 110	Introduction to Computer Sciences <sup>4</sup>	3		
	Communications Elective	3			CSCN 111	Programming in C++ Beginner <sup>4</sup>	3		
	Information Literacy Elective	3			ENGR 270	Technical Communication <sup>4</sup>	3		
	Information Literacy Elective	3			MATH 131	Calculus & Analytical Geometry I <sup>4</sup>	4		
					PHYS 201	General Physics I <sup>4</sup>	4		
Technological	Solutions & Quantitative Reasoning (5-	8 hours)	$)^1$			•			
UNIV 101	Foundational Skills	1			<b>MAJOR</b>				
MATH	Math Elective (MATH 114 or higher)	4				Core (42 hours)			
	Technology Competency <sup>2</sup>	0-3			CSCN 112	Programming in C++ Advanced <sup>5</sup>	3		
				<u> </u>	CSCN 215	Data Structures & Algorithms Using C++5	3		
Critical Thinking (8 hours) <sup>1</sup>			CSCN 230	Business Data Communications & Networks	5 3				
RLGN 105	Intr Bwvw/Contemp Moral Issues <sup>3</sup>	2			CSCN 326	Database Design & Management <sup>5</sup>	3		
RSCH 201	Research 201	3			CSCN 342	Computer Architecture <sup>5</sup>	3		
	Critical Thinking Elective	3			CSCN 345	Linux Operating Systems <sup>5</sup>	3		
	-			<u> </u>	CSCN 352	Windows System Administration <sup>5</sup>	3		
Civic & Globa	l Engagement (5 hours) <sup>1</sup>				CSCN 355	Network Architecture, Protocols, & Theory <sup>5</sup>	3		
EVAN 101	Evangelism & Christian Life <sup>3</sup>	2			CSCN 434	Program Language Design & Comp Theory <sup>5</sup>	3		
	Cultural Studies Elective	3			CSCN 443	Operating Systems Design <sup>5</sup>	3		
					CSCN 461	Aspects of Computer Security - Defensive <sup>5</sup>	3		
Social & Scientific Inquiry (7 hours) <sup>1</sup>					CSCN 471	Software Engineering Management <sup>5,6</sup>	3		
	Natural Science Elective	4			CSCN 481	Computer Science Practicum I <sup>5,6</sup>	3		
	Social Science Elective	3			CSCN 482	Computer Science Practicum II <sup>5,6</sup>	3		
Christianity &	Contexts (8 hours) <sup>1</sup>					Cognate (12 hours)			
BIBL 105	Old Testament Survey	2			CSCN 321	Python & R for Data Science <sup>5</sup>	3		
BIBL 110	New Testament Survey	2			CSCN 322	Data Engineering <sup>5</sup>	3		
THEO 201	Theology Survey I <sup>3</sup>	2			CSCN 323	Data Visualization <sup>5</sup>	3		
THEO 202	Theology Survey II <sup>3</sup>	2			CSCN 421	Applied Machine Learning			
11120 202	incology survey if	-			or CSCN 422	Artificial Intelligence <sup>5</sup>	3		
						Quantitative Studies Courses (13 hours)			
					MATH 128	Elem. Functions & Coordinate Geometry <sup>7</sup>	4		
					MATH 211	Introduction to Statistical Analysis	3		-
					MATH 211 MATH 250	Introduction to Statistical Arraysis  Introduction to Discrete Mathematics	3		
							3		
					MATH 350	Discrete Mathematics	3		-
						<u>Lab Sciences Courses</u> (4 hours)			
						Lab Science Elective <sup>8</sup>	4		
Notes				]		Technical Elective Courses (3 hours) <sup>9</sup>			
All applicable prerequisites must be met						_			

Refer to the list of approved general education electives at <a href="www.liberty.edu/gened">www.liberty.edu/gened</a> before enrolling in foundational skills requirements.

<sup>2</sup>All students must pass the Computer Assessment OR complete applicable INFT course; refer to www.liberty.edu/computerassessment for more information.

<sup>3</sup>Students transferring in 45 or more UG credit hours will have the requirements of RLGN 105 & EVAN 101 waived; Students transferring in 60 or more UG credit hours will also have the requirements of THEO 201 & THEO 202 waived.

<sup>4</sup>Courses may also fulfill select General Education Requirements. Please refer to the list of approved general education electives at <a href="https://www.liberty.edu/gened">www.liberty.edu/gened</a>

<sup>5</sup>Students are required to take these courses residentially in support of ABET accreditation Exceptions may be made on a case by case basis, and require ABET coordinator review and Department Chair approval.

<sup>6</sup>Course requires Department Chair approval for registration.

'Any student entering the major directly into MATH 131 will require a 4 credit MATH Elective to substitute in place of MATH 128 (for example, MATH 132 may sub for credit).

8Choose any science course which includes a lab component. If choosing a Physics course, it must be PHYS 202 and 202L, or a higher level Physics course. PHYS 101 and 103 are not allowable.

9Choose from: BUSI 300, 301, 313, 424, 427, any 200-400 level Computer Science course, any 200-400 level Engineering course (except ENGR 210), or any Advanced Math course (must be MATH 132 or higher) not already required by the degree.

Suggested Course Sequence on second page

### Graduation Requirements

- 120 Total Hours
- 2.0 Overall grade point average
- 30 Hours must be upper-level courses (300-400 level)

Grade of 'C' Minimum required for <u>all</u> courses in the major, quantitative studies, lab science, technical elective, and major foundational sections

25% Of major, core, and cognate taken through Liberty University

30 Hours must be completed through Liberty University

**Grad App** Submission of Degree Completion Application must be completed within the last semester of a student's anticipated graduation date

CSER All requirements must be satisfied before a degree will be awarded

Revised: 12.16.2022 Effective: Catalog Term 2023-20

### SUGGESTED COURSE SEQUENCE

## FRESHMAN YEAR

First Semester		Second Semester						
ENGL 101	3	BIBL 105	2					
EVAN 101	2	RSCH 201	3					
INQR 101	1	UNIV 101	1					
RLGN 105	Information Literacy Elective <sup>1</sup> [CSCN 1	111] 3						
Information Literacy Elective <sup>1</sup> [CSCN 110]	3	Math Elective <sup>1</sup> [MATH 131]	4					
Technology Competency <sup>2</sup>	0-3	CSCN 230	3					
MATH 128 <sup>3</sup>	4	CSER	<u>0</u>					
CSER	<u>0</u>		Total 16					
Te	otal15-18							
S	OPHOMOR	E YEAR						
BIBL 110	2	Social Science Elective <sup>1</sup> [BUSI 240]	3					
Communications Elective <sup>1</sup> [ENGR 270]	3	CSCN 215	3					
CSCN 112	3	CSCN 352	3					
CSCN 345	3	CSCN 355	3					
MATH 250	3	MATH 350	3					
CSER	<u>0</u>	CSER	<u>0</u>					
Te	otal 15		Total 15					
JUNIOR YEAR								
Natural Science Elective <sup>1</sup> [PHYS 201]	4	CSCN 322	3					
CSCN 321	3	CSCN 323	3					
CSCN 342	3	CSCN 326	3					
CSCN 461	3	CSCN 471	3					
MATH 211	3	Lab Science Elective <sup>4</sup>	4					
CSER	<u>O</u>	CSER	<u>0</u>					
To	otal 16		Total 16					
	SENIOR Y	EAR						
THEO 201	2	THEO 202	2					
CSCN 421 or 422	3	Critical Thinking Elective <sup>1</sup>	3					
CSCN 434	3	Cultural Studies Elective <sup>1</sup>	3					
CSCN 443	3	CSCN 482	3					
CSCN 481	3	Technical Elective <sup>5</sup>	3					
CSER	<u>0</u>	CSER	<u>0</u>					
To	otal 14		Total 14					

#### Notes

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<sup>&</sup>lt;sup>2</sup>All students must pass the Computer Assessment OR complete applicable INFT course; refer to <a href="www.liberty.edu/computerassessment">www.liberty.edu/computerassessment</a> for more

<sup>&</sup>lt;sup>3</sup>Any student entering the major directly into MATH 131 will require a 4 credit MATH Elective to substitute in place of MATH 128 (for example, MATH 132 may sub for credit)

<sup>&</sup>lt;sup>4</sup>Choose any science course which includes a lab component. If choosing a Physics course, it must be PHYS 201 and 202L, or a higher level Physics course. PHYS 101 and 103 are not allowable.

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ENGR 210), or any Advanced Math course (must be MATH 132 or higher) not already required by the degree.