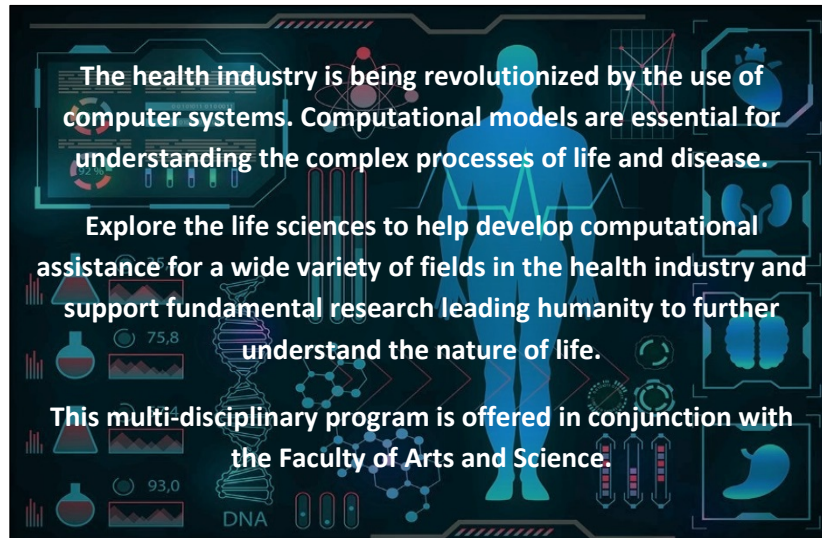


# Department of Computer Science and Software Engineering

## Bachelor of Computer Science in Health and Life Sciences



### Courses

#### Computer Science Core

COMP 228	System Hardware
COMP 232	Mathematics for Computer Science
COMP 233	Probability and Statistics for Computer Science
COMP 248	Object-Oriented Programming I
COMP 249	Object-Oriented Programming II
COMP 335	Introduction to Theoretical Computer Science
COMP 346	Operating Systems
COMP 348	Principles of Programming Languages
COMP 352	Data Structures and Algorithms
COMP 354	Introduction to Software Engineering

#### Health and Life Sciences Core

BIOL 261	Molecular and General Genetics
BIOL 266	Cell Biology
BIOL 367	Molecular Biology
BIOL 479	Computational Biology
BIOL 481	Genome Structure
CHEM 212	Analytical Chemistry
CHEM 221	Introductory Organic Chemistry I
CHEM 271	Biochemistry I

#### Complementary Core

ENCS 282	Technical Writing and Communication
ENCS 333	Research Methods, Ethics, Law and Regulation for Computational Biology

#### Health and Life Science Electives (see p.2)


#### Mathematics Electives (see p.2)


#### General Electives (see p.3)


## Electives Lists

### Health and Life Science Electives

BIOL 226	Biodiversity and Ecology
BIOL 364	Cell Physiology
BIOL 368	Genetics and Cell Biology Laboratory
BIOL 422	Advanced Statistics for Biological Sciences
BIOL 461	Advanced Genetics
BIOL 466	Advanced Techniques in Molecular Biology
BIOL 475	Biological Computing and Synthetic Biology
BIOL 480	Bioinformatics
BIOL 482	Functional Genomics
BIOL 484	Industrial and Environmental Biotechnology
BIOL 485	Agriculture and Agri-Food Biotechnology
BIOL 486	High-throughput Instrumentation
COEN 432	Applied Evolutionary and Learning Algorithms
COEN 433	Biological Computing and Synthetic Biology
COEN 434	Microfluidic Devices for Synthetic Biology
COMP 339	Combinatorics
COMP 353	Databases
COMP 361	Elementary Numerical Methods
COMP 465	Design and Analysis of Algorithms
COMP 472	Artificial Intelligence
COMP 478	Image Processing
COMP 479	Information Retrieval and Web Search
COMP 493	Computational Biology Team Project
ENGR 213	Applied Ordinary Differential Equations
ENGR 411	Special Technical Report
SOEN 287	Web Programming
SOEN 387	Web-Based Enterprise Application Design

### Mathematics Electives

COMP 339	Combinatorics
COMP 361	Elementary Numerical Methods
COMP 367	Techniques in Symbolic Computation
ENGR 213	Applied Ordinary Differential Equations
ENGR 233	Applied Advanced Calculus
MAST 218	Multivariable Calculus I
MAST 219	Multivariable Calculus II
MAST 234	Linear Algebra and Applications I
MAST 235	Linear Algebra and Applications II
MAST 324	Introduction to Optimization
MAST 332	Techniques in Symbolic Computation
MAST 334	Numerical Analysis
MATH 251	Linear Algebra I
MATH 252	Linear Algebra II
MATH 339	Combinatorics
MATH 392	Elementary Number Theory

Department of Computer Science and Software Engineering (CSSE):  
<https://www.concordia.ca/ginacody/computer-science-software-eng.html>

# General Electives Lists

## Computer Science Electives

COMP 326	Computer Architecture
COMP 333	Data Analytics
COMP 335	Introduction to Theoretical Computer Science
COMP 339	Combinatorics
COMP 345	Advanced Program Design with C++
COMP 346	Operating Systems
COMP 348	Principles of Programming Languages
COMP 352	Data Structures and Algorithms
COMP 353	Databases
COMP 354	Introduction to Software Engineering
COMP 361	Elementary Numerical Methods
COMP 367	Techniques in Symbolic Computation
COMP 371	Computer Graphics
COMP 376	Introduction to Game Development
COMP 425	Computer Vision
COMP 426	Multicore Programming
COMP 428	Parallel Programming
COMP 432	Machine Learning
COMP 442	Compiler Design
COMP 444	System Software Design
COMP 445	Data Communication and Computer Networks
COMP 451	Database Design
COMP 465	Design and Analysis of Algorithms
COMP 472	Artificial Intelligence
COMP 473	Pattern Recognition
COMP 474	Intelligent Systems
COMP 475	Immersive Technology
COMP 476	Advanced Game Development
COMP 477	Animation for Computer Games
COMP 478	Image Processing
COMP 479	Information Retrieval and Web Search
COMP 490	Computer Science Project I
COMP 492	Computer Science Project II
COMP 495	Honours Seminar

## Social Sciences Electives

ANTH 202	Introduction to Culture
ECON 201	Introduction to Microeconomics
ECON 203	Introduction to Macroeconomics
EDUC 230	Introduction to Philosophy of Education
ENCS 483	Innovation and Crit. Thinking in Science and Technology
ENCS 484	Development and Global Engineering
GEOG 203	Canadian Environmental Issues
GEOG 204	Global Environmental Issues
GEOG 210	Geography of Global Change
GEOG 220	The Human Environment: Place, Space, and Identity
INST 250	Introduction to Library Research Practices
LING 222	Language and Mind: The Chomskyan Program
LING 300	Sociolinguistics
POLI 202	Introduction to Political Science
RELI 214	Religions of the West
RELI 215	Religions of Asia
RELI 216	Encountering Religions
RELI 310	Self and Other
RELI 312	Justice and Social Conflict in a Globalized World
RELI 374	Religion and Science
SCPA 201	Introduction to Public Policy and the Public Interest
SCPA 215	Economics for Public Policy and Community Develop.
SOCI 203	Introduction to Society
URBS 230	Urbanization: Global and Historical Perspectives
WSDB 290	Introduction to Women's Studies I
WSDB 291	Introduction to Women's Studies II

## Humanities Electives

ARTH 353	Technology and Contemporary Art
ARTH 354	Studies in Interdisciplinarity in the Visual Arts
COMS 360	Mass Communication
ENGL 224	The Creative Process
ENGL 233	Critical Reading
FLIT 230	Introduction à la culture francophone
FLIT 240	Introduction à la littérature francophone
FMST 214	English-Canadian Film
FMST 215	Le cinéma québécois
HIST 202	Modern Europe
HIST 205	History of Canada, Post-Confederation
HIST 281	Film in History
HIST 283	The 20th Century: A Global History
LBCL 201	Great Books: Western History and Thought from Antiquity through the Renaissance
LBCL 202	Great Books: Western Culture and Expression from Antiquity through the Renaissance
LBCL 203	Great Books: Western History and Thought from the Reformation through Modernity
LBCL 204	Great Books: Western Culture and Expression from the Reformation through Modernity
PHIL 201	Problems of Philosophy
PHIL 210	Critical Thinking
PHIL 232	Introduction to Ethics
PHIL 233	Applied Ethics: Moral Sensitivity and Hum. Well-Being
PHIL 235	Biomedical Ethics
PHIL 275	From Modern to Postmodern: Philosophical Thought and Cultural Critique
PHIL 330	Contemporary Ethical Theory
THEO 202	Introduction to Biblical Studies
THEO 204	Introduction to Christian Ethics
THEO 233	Religious Pluralism in a Secular Culture

## Other Complementary Studies

ADMI 201	Introduction to Administration
ADMI 202	Perspective on Canadian Business
MANA 201	Introduction to Business and Management
MANA 202	Human Behaviour in Organizations
MANA 300	Entrepreneurship: Launching Your Business
MARK 201	Introduction to Marketing

## Basic Science Electives

BIOL 206	Elementary Genetics
BIOL 261	Molecular and General Genetics
CHEM 217	Introductory Organic Chemistry
CHEM 221	Introductory Organic Chemistry I
CIVI 231	Geology for Civil Engineers
ELEC 321	Introduction to Semiconductor Materials and Devices
ENGR 242	Statics
ENGR 243	Dynamics
ENGR 251	Thermodynamics I
ENGR 361	Fluid Mechanics I
MECH 221	Materials Science
PHYS 252	Optics
PHYS 284	Introduction to Astronomy
PHYS 385	Astrophysics