

# SOFTWARE DESIGN – SPECIALIZATION (COMPUTING) – BACHELOR OF COMPUTING (HONOURS)

**SODE-P-BCH** (Software Design)

**SODE-I-BCH** (Software Design with Professional Internship)

**Subject:** Administered by the School of Computing

**Plan:** Consists of 108.00 units as described below.

**Program:** The Plan, with sufficient electives to total 120.00 units, will lead to a Bachelor of Computing (Honours) Degree.

**Note:** Requirements for this program have been modified. Please consult the [2022-2023 \(https://www.queensu.ca/academic-calendar/archive/2022-2023/arts-science/Calendar\)](https://www.queensu.ca/academic-calendar/archive/2022-2023/arts-science/Calendar) for the previous requirements.

Code	Title	Units
<b>1. Core</b>		
<b>A. Complete the following:</b>		
CISC 121	Introduction to Computing Science I	3.00
CISC 124	Introduction to Computing Science II	3.00
<b>B. Complete 6.00 units from the following:</b>		<b>6.00</b>
CISC 102	Discrete Mathematics for Computing I & MATH 112 and Introduction to Linear Algebra	
CISC 102	Discrete Mathematics for Computing I & MATH 111 and Linear Algebra	
MATH 110	Linear Algebra	
<b>C. Complete 6.00 units from the following:</b>		<b>6.00</b>
MATH 120	Differential and Integral Calculus	
MATH 121	Differential and Integral Calculus	
MATH 123	Differential and Integral Calculus I & MATH 124 and Differential and Integral Calculus II	
<b>D. Complete 3.00 units from the following:</b>		<b>3.00</b>
STAT 263	Introduction to Statistics	
STAT 268	Statistics and Probability I	
STAT 351	Probability I	
STAT_Options		
<b>E. Complete the following:</b>		
CISC 203	Discrete Mathematics for Computing II	3.00
CISC 204	Logic for Computing Science	3.00
CISC 220	System Level Programming	3.00
CISC 221	Computer Architecture	3.00
CISC 223	Software Specifications	3.00
CISC 235	Data Structures	3.00
<b>F. Complete the following:</b>		
CISC 324	Operating Systems	3.00

CISC 360	Programming Paradigms	3.00
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CISC 365	Algorithms I	3.00
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**G. Complete the following:**

CISC 325	Human-Computer Interaction	3.00
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CISC 327	Software Quality Assurance	3.00
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CISC 422	Formal Methods in Software Engineering	3.00
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CISC 423	Software Requirements	3.00
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CISC 497	Social, Ethical and Legal Issues in Computing	3.00
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**H. Complete the following:**

CISC 498	Information Technology Project	6.00
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**2. Option**

**A. Complete 3.00 units from the following: 3.00**

CISC 322	Software Architecture	
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CISC 326	Game Architecture	
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**B. Complete 3.00 units from the following course list: 3.00**

SOFT\_Design at the 400-level or above

**C. Complete 6.00 units from the following course list: 6.00**

SOFT\_Design

**D. Complete 3.00 units from the following: 3.00**

PHIL 259	Critical Thinking	
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WRIT 125	Fundamentals of Academic Essay Writing	
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WRIT 175	Effective Writing II	
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**E. Complete 3.00 units from the following: 3.00**

APSC 221	Economic And Business Practice	
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COMM 200	Business Fundamentals	
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COMM 251	Organizational Behaviour	
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**F. Complete 3.00 units from the following course list: 3.00**

ASC\_Humanities\_Languages\_Social\_Sciences

**G. Any discipline other than APSC, CISC, COCA, COGS, 18.00 COMP, ELEC, MATH, MTHE, SOFT, STAT**

**Electives**

Elective Courses	12.00
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<b>Total Units</b>	<b>120.00</b>
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## 3. Substitutions

A. Students in the internship version of this Plan will substitute 3.00 units from COMP at the 300-level for requirement **1.H.** (CISC 498). In addition, the B.Cmp.(Hons.) Program requirements will be increased by 6.00 units from COMP at the 300-level, for a total of 126.00 units if the



student is taking a 12-month internship, or by 9.00 units from COMP at the 300-level, for a total of 129.00 units if the student is taking a 16-month internship.

## 4. Notes

A. Students with no programming experience should review the Introductory Courses (<https://www.queensu.ca/academic-calendar/arts-science/schools-departments-programs/computing/>) paragraph included on the School of Computing overview page in the *Calendar*.

B. In exceptional circumstances (such as a student who has transferred from another Faculty or institution), the distribution requirements in the complementary courses may be relaxed, at the discretion of the Chair of Undergraduate Studies. Alternative complementary courses may be selected in consultation with the School of Computing.

C. ELEC courses are offered by the Faculty of Engineering and Applied Science. Special permission may be required to register. All such courses will count as 3.00 units towards degree requirements in Arts and Sciences.

D. Option **2.D.** may be satisfied by any course with a significant writing component. Alternative courses may be selected in consultation with the School of Computing.

E. With the approval of the Undergraduate Chair, students who take CISC 500 working on a project directly related to Software Design may count 3.00 units towards SOFT\_Design.

F. A maximum of 6.00 units from courses offered by other Faculties and Schools may be counted toward the program and/or Plan requirements. This includes courses in BMED, COMM, GLPH, HSCI, LAW, NURS, and courses in the Faculty of Engineering and Applied Science.

## Software Design Course List

The following list contains courses offered through other Departments. In accordance with Academic Regulation **2.6** (Access to Classes), students do not have enrolment priority in all of these courses. Access to these courses may only be made available during the Open Enrolment period, and then only if space permits.

### ASC\_Humanities\_Languages\_Social\_Sciences

Code	Title	Units
ANIM		
ANSH		
ARAB		
ARTF		
ARTH		
BADR (formerly BISC)		

BLCK
CHIN
CLST
COCA
CWRI
DEVS
ECON (except ECON 250)
EMPR
ENGL
ENGX
ENIN
ENSC (except ENSC 201; ENSC 301; ENSC 307; ENSC 320; ENSC 407; ENSC 425; ENSC 471; ENSC 480)
FILM
FREN
FRST
GLPH 271; GLPH 385; GLPH 471; GLPH 482; GLPH 488; GLPH 487; GLPH 493;
GNDS
GPHY_Human Course List <sup>1</sup>
GREK
GRMN
HEBR
HIST
HLTH (except HLTH 230; HLTH 331)
IDIS
INTS
INUK
ITLN
JAPN
JWST
KNPE 167; KNPE 203; KNPE 237; KNPE 254; KNPE 265; KNPE 300; KNPE 331; KNPE 335; KNPE 336; KNPE 337; KNPE 338; KNPE 345; KNPE 346; KNPE 363; KNPE 365; KNPE 367; KNPE 397; KNPE 400; KNPE 430; KNPE 433; KNPE 436; KNPE 446; KNPE 463; KNPE 465; KNPE 473;
LANG
LATN
LING
LIBS
LLCU
MAPP
MOHK
MUSC
MUTH
PHIL



POLS (except POLS 285)
PORT
PPEC
PSYC 100; PSYC 101; PSYC 102; PSYC 331; PSYC 241; PSYC 235; PSYC 236; PSYC 251
PSYC_Clinical Course List; PSYC_Developmental Course List; PSYC_Social Course List <sup>1</sup>
QGSP
RELS
SOCY (except SOCY 210; SOCY 211)
SPAN
WRIT

GPHY 247	Introduction to Statistics	3.00
KNPE 251	Introduction to Statistics	3.00
NURS 323	Introduction to Statistics	3.00
POLS 285	Introduction to Statistics	3.00
PSYC 202	Statistics in Psychology	3.00
SOCY 211	Introduction to Statistics	3.00
STAM 200	Introduction to Statistics	3.00
STAT 263	Introduction to Statistics	3.00

<sup>1</sup> The GPHY and PSYC Course Lists noted here may be found in the Departments/Schools and Degree Plans section of this *Calendar*.

## SOFT\_Design

Code	Title	Units
<b>Software Design Application Courses</b>		
CISC 226	Game Design	3.00
CISC 271	Linear Data Analysis	3.00
CISC 282	Fundamentals of Web Development	3.00
CISC 320	Fundamentals of Software Development	3.00
CISC 332	Database Management Systems	3.00
CISC 335	Computer Networks	3.00
CISC 340	Digital Systems	3.00
CISC 352	Artificial Intelligence	3.00
CISC 425	Advanced User Interface Design	3.00
CISC 432	Advanced Data Management Systems	3.00
CISC 434	Distributed Systems	3.00
CISC 437	Performance Analysis	3.00
CISC 448	Software Reliability and Security	3.00
CISC 452	Neural and Genetic Computing	3.00
CISC 453	Topics in Artificial Intelligence	3.00
CISC 454	Graphics (A)	3.00
CISC 458	Programming Language Processors (S)	3.00
CISC 486	Game Development	3.00
ELEC 470	Computer System Architecture	3.00

## STAT\_Options

Code	Title	Units
<b>Statistic Course Options</b>		
BIOL 243	Introduction to Statistics	3.00
CHEE 209	Analysis Of Process Data	3.00
COMM 162	Managerial Statistics	3.00
ECON 250	Introduction to Statistics	3.00