

2012 / 2013 CURRICULUM - SOFTWARE ENGINEERING

ENTRY FROM CEGEP Total credits: 114

First (Fall) Semester

COMP 202 Foundations of Programming (3 cr)
MATH 262 Intermediate Calculus (3 cr, P-MATH 141 & MATH 133 or equiv)
MATH 263 Ord. Differential Eqns. For Engineers (3 cr, C - MATH 262)
 XXXX xxx Basic Science Complementary 1*** (3 cr)
 XXXX xxx Humanities & Social Sciences * (3 cr)

Second (Winter) Semester

COMP 250 Introduction to Computer Science (3 cr)
ECSE 200 Electric Circuits 1 (3 cr, P - PHYS 142 or CEGEP Equivalent; C - MATH 263)
ECSE 221 Intro. to Computer Engineering (3 cr, P - COMP 202)
FACC 100 Intro. to the Engineering Profession (1 cr)
MATH 264 Advanced Calculus for Engineers (3 cr, P - MATH 262 or MATH 151 or MATH 152 or equiv; C - MATH 263)
MATH 270 Applied Linear Algebra (3 cr, P - MATH 263)

16 credits

Third (Fall) Semester

COMP 206 Introduction to Software Systems (3 cr, P - COMP 202 or COMP 250)
COMP 302 Prog. Languages & Paradigms (3 cr, P - COMP 250)
ECSE 210 Electric Circuits 2 (3 cr, P - ECSE 200)
ECSE 291 Electrical Measurements Lab (2 cr, C - ECSE 210)
ECSE 321 Intro. to Software Engineering (3 cr, P - COMP 202 or COMP 208)
ECSE 211 Design Principles and Methods (3 cr, C - ECSE 291, P - ECSE 200 & COMP 202)

17 credits

Fourth (Winter) Semester

ECSE 322 Computer Engineering (3 cr, P - ECSE 221 & ECSE 200 or MECH 383)
ECSE 306 Fundamentals of Signals & Systems (3 cr, P - ECSE 210 & MATH 270 or MATH 271)
CCOM 206 Communication in Engineering (3 cr)
MATH 363 Discrete Mathematics (3 cr, P - MATH 263 & MATH 264)
 XXXX xxx Impact of Technology on Society ** (3 cr)

15 credits

Fifth (Fall) Semester

COMP 251 Algorithms and Data Structures (3 cr, P - COMP 203 or COMP 250)
ECSE 305 Probability & Random Signals 1 (3 cr, P - ECSE 303 or ECSE 306)
ECSE 414 Intro. to Telecom Networks (3 cr, P - ECSE 304 or ECSE 306 & ECSE 322)
ECSE 429 Software Validation (3 cr, P - ECSE 321 or COMP 303)
FACC 300 Engineering Economy (3 cr)
 XXXX xxx t1 Technical Complementary 1 (3 cr)

18 credits

Sixth (Winter) Semester

COMP 421 Database Systems (3 cr, P - COMP 206, COMP 251 & COMP 302)
ECSE 323 Digital Systems Design (5 cr, P - CCOM 206, ECSE 211, ECSE 221 & ECSE 291)
ECSE 427 Operating Systems (3 cr, P - ECSE 322 or COMP 273)
ECSE 428 Software Engineering Practice (3 cr, P - ECSE 321 or COMP 335)
ECSE 456 ECSE Design Project 1 (3 cr, P - CCOM 206, COMP 302, ECSE 211, ECSE 306, ECSE 321, ECSE 322)

17 credits

Seventh (Fall) Semester

COMP 360 Algorithms Design (3 cr, P - COMP 251, MATH 240 or MATH 363)
ECSE 420 Parallel Computing (3 cr, P - ECSE 427)
ECSE 457 ECSE Design Project 2 (3 cr, P-ECSE 456)
 XXXX xxx

16 credits

Technical Complementaries (2 courses) 6-7 credits

COMP 330	Theory of Computation	(3 cr, P - COMP 251)
COMP 350	Numerical Computing	(3 cr, P - MATH 222, MATH 223 & one of COMP 202, COMP 208 or COMP 250 or equiv)
COMP 409	Concurrent Programming	(3 cr, P - COMP 251, COMP 302 & COMP 310 or ECSE 427)
COMP 424	Artificial Intelligence	(3 cr, P - COMP 206 or ECSE 321, COMP 251)
COMP 520	Compiler Design	(4 cr, P - COMP 273 & COMP 302)
COMP 557	Fundamentals of Computer Graphics	(3 cr, P - MATH 223, COMP 206 & COMP 251) *
COMP 566	Discrete Optimization 1	(3 cr, P - COMP 360 & MATH 223)
COMP 575	Fundamentals of Distributed Algorithms	(3 cr, P - COMP 310)
ECSE 404	Control Systems	(3 cr, C - ECSE 304 or ECSE 306)
ECSE 411	Communications Systems 1	(3 cr, P - ECSE 305 & ECSE 304 or ECSE 306)
ECSE 412	Discrete-Time Signal Processing	(3 cr, P - ECSE 304 or ECSE 306)
ECSE 413	Communications Systems 2	(3 cr, P - ECSE 411)
ECSE 421	Embedded Systems	(3 cr, P - ECSE 322 & ECSE 323)
ECSE 422	Fault Tolerant Computing	(3 cr, P - ECSE 322)
ECSE 424	Human-Computer Interaction	(3 cr, P - ECSE 322)
ECSE 425	Computer Org. & Architecture	(3 cr, P - ECSE 322 & ECSE 323)
ECSE 426	Microprocessor Systems	(3 cr, P - ECSE 323 & CCOM 206)
ECSE 504	Sampled Data Control	(3 cr, P - ECSE 304 or ECSE 306; C - ECSE 404)
ECSE 507	Optimization & Optimal Control	(3 cr, P - MATH 264 & MATH 270)
ECSE 523	Speech Communications	(3 cr, P - ECSE 412 or ECSE 512)
ECSE 529	Computer and Biological Vision	(3 cr, P - ECSE 304 or ECSE 306)
ECSE 530	Logic Synthesis	(3 cr, P - ECSE 323)

BASIC SCIENCE COMPLEMENTARY COURSES

The following is the list of approved basic science complementary courses.

ATOC 214, Introduction: Physics of the Atmosphere

(3) (Fall) (3 hours lectures) (Prerequisite: CEGEP Physics) An introduction to physical meteorology designed for students in the physical sciences. Topics include: composition of the atmosphere; heat transfer; the upper atmosphere; atmospheric optics; formation of clouds and precipitation; instability; adiabatic charts.

ATOC 215 Oceans, Weather and Climate

(3) (Winter) (3 hours lectures) (Prerequisite: CEGEP Physics or permission of the instructor) Laws of motion, geostrophic wind, gradient wind. General circulation of the atmosphere and oceans, local circulation features. Air-sea interaction, including hurricanes and sea-ice formation, extra-tropical weather systems and fronts, role of the atmosphere and oceans in climate.

ATOC 219 Introduction to Atmospheric Chemistry

(3) (Winter) (3 hours lectures) (Prerequisite: CHEM 110 and CHEM 120, and one of MATH 139 or MATH 140 or MATH 150, or a CEGEP DEC in Science, or permission of instructor. An introduction to the basic topics in atmospheric chemistry. The fundamentals of the chemical composition of the atmosphere and its chemical reactions. Selected topics such as smog chamber, acid rain, and ozone hole will be examined.

BIOL 200 Molecular Biology

(3) (Fall) (3 hours lecture, 1 hour optional tutorial) (Prerequisite: BIOL 112 or equivalent.) (Corequisite: CHEM 212 or equivalent) The physical and chemical properties of the cell and its components in relation to their structure and function. Topics include: protein structure, enzymes and enzyme kinetics; nucleic acid replication, transcription and translation; the genetic code, mutation, recombination, and regulation of gene expression.

BIOL 215 Introduction to Ecology and Evolution

(3) (Fall) (3 hours lecture) (Prerequisite: BIOL 111) (Restrictions: Not open to students who have taken BIOL 208, BIOL 304 or BIOL 305. Not open to students who have taken ENVR 200 and/or ENVR 202.) An introduction to the fundamental processes of ecology and evolution that bear on the nature and diversity of organisms and the processes that govern

EPSC 203 Structural Geology

(3) (Winter) (2 hours lectures, 3 hours laboratory) Primary igneous and sedimentary structures, attitudes of planes and lines, stress and strain, fracturing of rocks, faulting, homogeneous strain, description and classification of folds, foliation and lineation, orthographic and stereographic projections.

EPSC 210 Introductory Mineralogy

(3) (Fall) (2 hours lectures, 3 hours laboratory) Crystal chemistry and identification of the principal rock-forming and ore minerals. Elementary crystallography. Optional 2-day field trip.

ESYS 200 Earth System Processes

(3) (Winter) (3 hours lecture) Complex interactions among the atmosphere, biosphere, geosphere and hydrosphere. Biological, chemical and physical processes within and between each "sphere" that extend over spatial scales ranging from microns to the size of planetary orbits and that span time scales from fractions of a second to billions of years.

MIMM 211 Introductory Microbiology

(3) (Fall) (3 hours lecture) (Corequisite: BIOL 200) A general treatment of microbiology bearing specifically on the biological properties of microorganisms. Emphasis will be on prokaryotic cells. Basic principles of microbial genetics are also introduced.

PHYS 214 Introductory Astrophysics

(3) (Fall) (Prerequisite: Cegep physics or PHYS 102 or PHYS 142.) (Restriction: Not open to students who have taken or are taking PHYS 205 or PHYS 206.) An introduction to astrophysics with emphasis placed on methods of observation and current models. Stellar radiation and detectors, quasars, black holes. Galaxies, large scale structure of the universe, cosmology.

PHYS 224 Physics of Music

(3) (Fall) (3 hours lectures) Restriction: Not open to students who have taken PHYS 225. An introduction to the physics of music. Properties of sound and their perception as pitch, loudness, and timbre. Dissonance, consonance, and musical intervals and tuning. Physics of sound propagation and reflection. Resonance. Acoustic

