2012 / 2013 CURRICULUM - SOFTWARE ENGINEERING

ENTRY FROM CEGEP   Total credits: 114

First (Fall) Semester — 15 credits

Code	Title	Credits
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 — 16 credits

Code	Title	Credits
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)

Third (Fall) Semester — 17 credits

Code	Title	Credits
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)

Fourth (Winter) Semester — 15 credits

Code	Title	Credits
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)

Fifth (Fall) Semester — 18 credits

Code	Title	Credits
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)

Sixth (Winter) Semester — 17 credits

Code	Title	Credits
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)

Seventh (Fall) Semester — 16 credits

Code	Title	Credits
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)
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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 meteorologydesigned 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 Intr oduction 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 Intr oduction 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 Intr oductory 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 Intr oductory 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 procaryotic cells. Basic principles of microbial genetics are also introduced.

PHYS 214 Intr oductory 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 percep-
tion as pitch, loudness, and timbre. Dissonance, consonance, and musical intervals
and tuning. Physics of sound propagation and reflection. Resonance. Acoustic