



Lakehead University Faculty of Engineering

REQUEST REPORT

Request Tracking Number: 2014-ENG-3074
Request Title: Software Eng. Prog. Changes

[DeAcTerm[EffectiveDate]] [DeAc[RequestEffectiveDate]]
Request Status: In Workflow
Request can't be split

Request Contents

Type	Title
1. New Version of a Degree	Bachelor of Engineering (Software Engineering)

Request History

Workflow Step	Workflow Action	User	Change Made	Comments	Date
Initiator	Approved	Laura Parker	Yes	Submitted to workflow	01/30/2014
Dean and Faculty Council Review Stage	Approved	David Barnett	No	approved	01/30/2014

Supporting Documents

File Name	Uploaded By	Upload Date	Size
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Supporting Documents Audit Trail

File Name	User	Date	Action
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Notes

Date	User	Note
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1.	New Version of a Degree	BENDIP.SOFT - Bachelor of Engineering (Software Engineering)
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Degree Details

CURRENT VERSION	PROPOSED VERSION
BENDIP.SOFT - Bachelor of Engineering (Software Engineering) Start Term: Fall 2013 End Term: No Specified End Date	BENDIP.SOFT - Bachelor of Engineering (Software Engineering) Start Term: Fall 2013 2014 End Term: No Specified End Date

<u>Required Information</u>	
CURRENT VERSION	PROPOSED VERSION
Institution Unit Faculty of Engineering	Institution Unit Faculty of Engineering
Degree Type BENG	Degree Type BENG
Major SOFT	Major SOFT
Minor	Minor
Specialization	Specialization
Rationale 1. The Winter term course had only Software Engineering Students resulting in low enrolment.2. Content in ENGI 4632 is similar to ENGI 4559 which is a core course for Software students.3. Remove ENGI 0577 from Option Electives - not offered by Department of Chemical EngineeringAlso,2013-SCI-457 PHYS 1070 associated change to BEng (Software).	Rationale 1. The Winter term course had only Software Engineering Students resulting in low enrolment.2. Content in ENGI 4632 is similar to ENGI 4559 which is a core course for Software students.3. Remove ENGI 0577 from Option Electives -- not offered by Department of Chemical EngineeringAlso,2013-SCI-457 PHYS 1070 associated change to BEng (Software). Chemical/Civil/Mechanical options are being removed due to low or no enrolment. NOTE: Course name changes are Comp/Elec Eng courses previously submitted.
Requirements Four Year program Note: At this point, all students are required to apply to graduate with an Engineering Technology	Requirements Four Year program First Year: Fall Term
Printed: 02/03/2014	2

Diploma in Software Engineering.

~~Lec~~

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*For information regarding complementary studies elective courses contact the Chair of the Department.
**Physics 1070, 2331 and/or Physics 2332 may be replaced with other science course(s) with permission of the Chair of the Department.

program

YEAR 1 - FALL TERM

OPTION ELECTIVE COURSES

Students must do a minimum of two Option Elective courses specific to their Software Engineering option.

Lec

Chemical Engineering Option

Lab

- Engineering 0339 - Process Optimization
- Engineering 3070 - Material and Energy Balances
- Engineering 3338 - Mass Transfer Separations I
- Engineering 3434 - Chemical Engineering Thermodynamics
- Engineering 3438 - Mass Transfer Separations II
- Engineering 3453 - Heat Transfer Design
- Engineering 4150 - Chemical Reactor Design
- Engineering 4152 - Process Control

Engineering 1236

-

Civil Engineering Option

Electric Circuit Theory I

~~3~~

- Engineering 0136 - Environmental Control
- Engineering 0235 - Water Resources and Hydropower Development
- Engineering 0338 - Structural Analysis II
- Engineering 0553 - Traffic Engineering
- Engineering 0572 - Modeling in Water Resources
- Engineering 0652 - Timber and Masonry Design
- Engineering 1533 - Mechanics of Materials II
- Engineering 1630 - Theory of Structures
- Engineering 2136 - Steel Design
- Engineering 2138 - Highway Design
- Engineering 2431 - Water Supply and Waste Systems
- Engineering 3056 - Mechanics of Solids
- Engineering 3335 - Structural Analysis I
- Engineering 3435 - Steel Structures
- Engineering 3452 - Finite Element Methods
- Engineering 3738 - Hydrology
- Engineering 4052 - Open Channel Flow

3

1.5

Engineering 1252

-

<p>Electrical Engineering Option</p> <p>Engineering 0138 - Advanced Controls II Engineering 0557 - Introduction to Robotics Engineering 0573 - Fuzzy Logic Expert Systems Engineering 0578 - Wireless Personal Communications Engineering 3334 - Advanced Controls I Engineering 4054 - VLSI Circuit Design</p>	<p>Electrical Measurements and</p> <p>Measuring Instruments 2-3</p> <p><i>Measuring Instruments</i></p>
<p>Mechanical Engineering Option</p> <p>Engineering 0450 - Finite Element Method in Mechanical Engineering Engineering 0557 - Introduction to Robotics Engineering 1533 - Mechanics of Materials II Engineering 2033 - Heat Transfer Engineering 2333 - Machine Design Engineering 3055 - Intermediate Mechanics of Materials Engineering 3337 - Fluid Dynamics Engineering 3436 - Engineering Thermodynamics Engineering 3454 - Applied Heat Transfer Engineering 4436 - Mechanical Vibrations</p>	<p>2</p> <p>3</p> <p>Computer Science 1411</p> <p>-</p>
<p>Open Elective Courses</p> <p>Engineering 0655 - Topics in Software Engineering</p>	<p>Computer Programming I</p> <p>34</p>
<p>Computer Science</p> <p>Computer Science 4471 - Topics in Computer Graphics Computer Science 4475 - Topics in Artificial Intelligence Computer Science 4476 - Cryptography and Network Security Computer Science 4478 - Object-Oriented Design and Methodology</p>	<p>3</p> <p>1</p> <p><i>Mathematics 1210</i></p> <p><i>Calculus I</i></p> <p>3</p>
<p>Printed: 02/03/2014</p>	
<p>4</p>	

1

Mathematics 1071

~~+~~

Vectors and Matrices

~~-3-2Mathematics 1210 – Calculus I 3 1+ Students who have completed Gr. 12U Calculus and Vectors with a minimum grade of 60% are not required to take Mathematics 1071. First Year: Winter Term – Lec~~

3

2

Physics 1070

~~** Semiconductor Physics 3 1 Chemical Engineering Option: Engineering 1135 – Introduction to Chemical Engineering Calculations 3 1.5 Civil/Mechanical Engineering Options: Engineering 1230 – Statics 3 1~~

Total hours: Chemical 20/11; Civil 20/10.5; Electrical 17/9.5; Mechanical 20/10.5

Semiconductor Physics

3

1

Total

17

9.5

YEAR 1 - WINTER TERM

Lec

Lab

Computer Science 1431

-

Computer Programming II

~~3-1 Mathematics 1230 - Calculus II 3-1 - Chemical Engineering Option: Engineering 1635 - Fluid Mechanics 3-1.5 Engineering 3014 - Engineering Chemistry 4-0 Civil/Mechanical Engineering Options: Engineering 1111 - Dynamics I 3-1 Engineering 1635 - Fluid Mechanics 3-1.5 Electrical Engineering Option: -~~

3

1

Mathematics 1230

Calculus II

3

1

Engineering 1536

Electric Circuit Theory II

3

1.5

Engineering 1552

-

Principles of Engineering Mechanics

~~4~~

4

0

Engineering 1634

~~-~~

Electronics I

~~3~~

3

1.5

Total

~~hours: Chemical 13/3.5; Civil 12/4.5; Electrical~~

16

~~4~~

5

~~; Mechanical 12/4.5~~

-

~~Second Year: Fall Term Lec~~

YEAR 2 - FALL TERM

Lec

Lab

Engineering 1637

-

Computer Logic Circuits

~~3~~

3

1.

~~5~~

5

Engineering 2254

-

Data Management and Information Systems

~~3~~/td>4

3

1.

5

5

Computer Science 2412

-

Data Structures

~~3~~4

3

1

Mathematics 2050

-

Applied Analysis I

~~3~~4

3

1

English 1238

-

Technical Writing II

~~3.0 Chemical Engineering Option: Engineering 2330
Applied Chemical Thermodynamics 3.1 Engineering
2331 Unit Operations II 3.1.5 Civil Engineering
Option: Engineering 1233 Mechanics of Materials-
I 3.1 Engineering 3015 Engineering
Thermodynamics and Heat Transfer 4.0 Electrical
Engineering Option: </td></tr> Engineering 2132~~

3

0

Engineering 2132

Electronics II

3

1.5

Engineering 3015

-

Engineering Thermodynamics and Heat Transfer

~~4-0 Mechanical Engineering Option: Engineering 4233—Mechanics of Materials I 3-1 Engineering 2032—Applied Thermodynamics 3-1.5~~
~~Total hours: Chemical 21/7.5; Civil 22/6; Electrical 22/6.5; Mechanical 21/7.5~~
~~—Second Year: Winter Term Lec Lab Engineering 4232—Introduction to Microprocessors 3-1.5 Engineering 2332—Engineering Management and Economics 3-0 Engineering 2453—Computer Communications and Networking 3-1.5 Computer Science 2476—Introduction to Operating Systems 2-2 Mathematics 2070—Applied Analysis II 3-1—Chemical Engineering Option: Engineering 4552—Principles of Engineering Mechanics 4-0 Civil/Electrical/Mechanical Engineering Options: Engineering 3014—Engineering Chemistry 4-0 Total hours: Chemical 18/6; Civil 18/6; Electrical 18/6; Mechanical 18/6~~

4

0

Total

22

6.5

YEAR 2 - WINTER TERM

Lec

Lab

Engineering 1232

Introduction to Microcontrollers

3

1.5

Engineering 2453

Computer Communications and Networking

3

1.5

Engineering 2332

Engineering Management and Economics

3

0

Computer Science 2476

Introduction to Assembly Language and Operating Systems

2

2

Mathematics 2070

Applied Analysis II

3

1

Engineering 3014

Engineering Chemistry

4

1

Total

18

7

Note:
At this point, all students are required to apply to graduate with an Engineering Technology Diploma in Software Engineering.

~~Third Year: Fall Term Lec~~
YEAR 3 - FALL TERM

Lec

Lab

Engineering 3655

~~4~~
Principles of Operating Systems

~~3~~
3

1.5

Physics 2331

Modern Physics I

3

1

Engineering 3670

~~Mathematics 3071~~

Software Engineering

~~3-1~~

3

1

Mathematics 4030

Probability and Statistics

3

0

Mathematics 3071

Discrete Mathematics for Engineers

~~3-1 Mathematics 4030 - Probability and
Statistics 3-0 Physics 2331** - Modern Physics I 3-1~~

3

1

One complementary studies

*
elective course

-
*

3

~~0 18~~
0

Total

18

4.5

~~Third Year: Winter Term Lec~~
YEAR 3 - WINTER TERM

Lec

Lab

Engineering 3050

-

Software Engineering Design I

~~4~~

1.5

~~3~~

3

Engineering 3255

~~4~~

Software Design and Testing

~~3~~

3

1.5

Engineering 3558

~~4~~

Numerical Methods and Modeling

~~3~~

3

1.5

Physics 2332

Modern Physics II

3

1

Engineering 3675

~~4~~

Database Systems

~~3~~

3

1.5

~~Physics 2332** Modern Physics II 3 4~~
One complementary studies

~~*~~

elective course

-

*

3

-
0

-
Total

16.5

-8
8.5

~~–Fourth Year: Fall Term Lec Lab Engineering 3051–
Software Engineering Design II 1.5 3 Engineering
4557– Digital Communications 3 1.5 Engineering
4559– Signal Processing for Software
Engineers 3 1.5 Engineering 4969– Degree
Project 3 0 One complementary studies* elective
course 3 0 One half course from Option Courses list
3 0 16.5 6~~

~~–Fourth Year: Winter Term Lec Lab Engineering
3336– Economics Analysis for
Engineers 3 0 Engineering 3350– Performance
Analysis of Software 3 1.5 Engineering 4539–
Professional Practice and Law 3 0 Engineering 4969–
Degree Project 3 0 One complementary studies*
elective course 3 0 Two half courses from Option
Courses list 6 0 21 1.5~~

YEAR 4 - FALL TERM

Lec

Lab

Engineering 4969

Degree Project

3

0

Engineering 4559

Signal Processing for Software Engineers

3

1.5

Engineering 4557

Digital Communications

3

1.5

Engineering 3051

Software Engineering Design II

1.5

3

One half course from Elective Course List

3

0

One complementary studies elective course

3

0

Total

16.5

6

YEAR 4 - WINTER TERM

Lec

Lab

Engineering 3336

Economics Analysis for Engineers

3

0

Engineering 4539

Professional Practice and Law

3

0

Engineering 4969

Degree Project

3

0

Engineering 3350

Performance Analysis of Software

3

1.5

Two half courses from Elective Course List

6

0

One complementary studies elective course

3

0

Total

21

1.5

Elective course LIST

Stream A:

COMP 4471 Computer Graphics

COMP 4475 Topics in Artificial Intelligence

COMP 4476 Cryptography and Network Security

COMP 4478 Games Design Patterns

Stream B:

ENGI 0573 Fuzzy Logic Expert Systems

ENGI 0578 Wireless Communications

ENGI 4054 Digital VLSI Circuit Design

ENGI 0655 Topics in Software Engineering

Students must take a minimum of two Elective courses from Stream B. Not all elective courses in this list will be offered every year. Engineering elective course descriptions are available in the Lakehead University Calendar.

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Engineering 4150—Chemical Reactor Design
Engineering 4152—Process Control~~

~~Civil Engineering Option~~

~~Engineering 0136—Environmental Control
Engineering 0235—Water Resources and Hydropower Development
Engineering 0338—Structural Analysis II
Engineering 0553—Traffic Engineering
Engineering 0572—Modeling in Water Resources
Engineering 0652—Timber and Masonry Design
Engineering 1533—Mechanics of Materials II
Engineering 1630—Theory of Structures
Engineering 2136—Steel Design
Engineering 2138—Highway Design
Engineering 2431—Water Supply and Waste~~

	<p>Systems Engineering 3056 – Mechanics of Solids Engineering 3335 – Structural Analysis I Engineering 3435 – Steel Structures Engineering 3452 – Finite Element Methods Engineering 3738 – Hydrology Engineering 4052 – Open Channel Flow</p> <p>Electrical Engineering Option</p> <p>Engineering 0138 – Advanced Controls II Engineering 0557 – Introduction to Robotics Engineering 0573 – Fuzzy Logic Expert Systems Engineering 0578 – Wireless Personal Communications Engineering 3334 – Advanced Controls I Engineering 4054 – VLSI Circuit Design</p> <p>Mechanical Engineering Option</p> <p>Engineering 0450 – Finite Element Method in Mechanical Engineering Engineering 0557 – Introduction to Robotics Engineering 1533 – Mechanics of Materials II Engineering 2033 – Heat Transfer Engineering 2333 – Machine Design Engineering 3055 – Intermediate Mechanics of Materials Engineering 3337 – Fluid Dynamics Engineering 3436 – Engineering Thermodynamics Engineering 3454 – Applied Heat Transfer Engineering 4436 – Mechanical Vibrations Open Elective Courses Engineering 0655 – Topics in Software Engineering Computer Science 4471 – Topics in Computer Graphics Computer Science 4475 – Topics in Artificial Intelligence Computer Science 4476 – Cryptography and Network Security Computer Science 4478 – Object Oriented Design and Methodology</p>
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<u>Budgetary Considerations</u>	
CURRENT VERSION	PROPOSED VERSION
Student Enrolment No	Student Enrolment No
Student Enrolment Other Units Yes - Department of English	Student Enrolment Other Units Yes – Department of English No

Additional Resources No	Additional Resources No
Teaching Loads No	Teaching Loads No
TeachingSupport Services No	TeachingSupport Services No
Outside Support No	Outside Support No