

# BSA: Bachelor of Engineering (Software Engineering)

Version 56

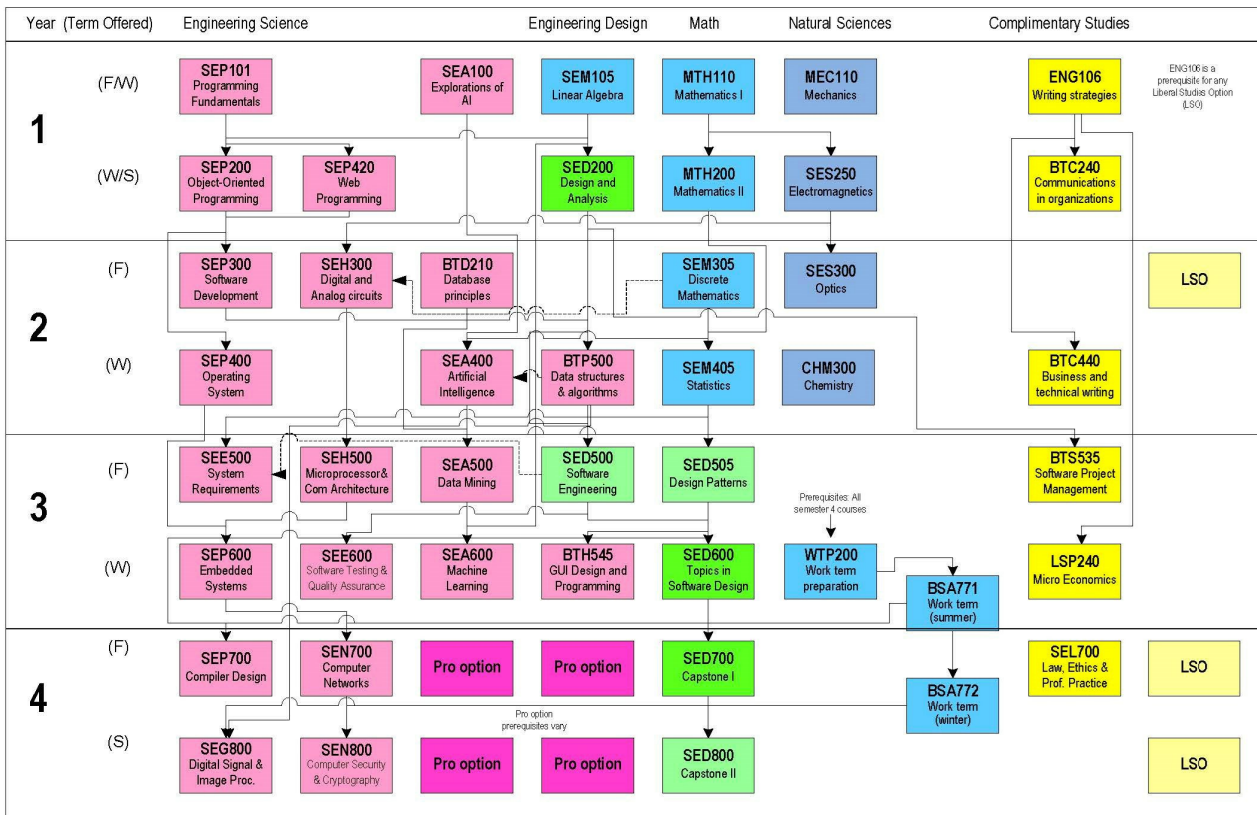
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Program Code:	BSA
Credential Awarded:	Bachelor of Engineering (Software Engineering)
Campus:	Newnham
Duration:	4 years (8 academic semesters)
Starts In:	January and September

Program Map

## Software Engineering (BSA) Curriculum

Entry Date: September 2023 or later | Effective Date: September 2023



F - Fall (September to December), W - Winter (January to April), S - Summer (May to August)

Seneca College - School of Software Design and Data Science - September 2023 - <https://students.senecacollege.ca/spaces/15/school-of-software-design-data-science/home>

Program Curriculum

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Semester 1		
Course Code	Course Name	Pre-requisites
MTH110	Mathematics I	N/A
SEM105	Linear Algebra	N/A
SEP101	Programming Fundamentals	N/A
SEA100	Exploration of Artificial Intelligence	N/A
MEC110	Mechanics	N/A
SOA001	Mechanics Tutorial	N/A
ENG106	Writing Strategies	N/A

Semester 2		
Course Code	Course Name	Pre-requisite
MTH200	Mathematics II	MTH110
SES250	Electromagnetics	MTH110
SEP200	Object-Oriented Programming	SEP101

SED200	Design and Analysis	SEP101
SEP420	Web Programming and Scripting	SEP101
BTC240	Interpersonal Communications in Organizations	ENG106

Semester 3		
Course Code	Course Name	Pre-requisite
SEM305	Discrete Mathematics	N/A
SES300	Optics	SES250
SEH300	Digital and Analog Circuits	SES250, co-req: SEM305
BTD210	Database Design Principles	N/A
SEP300	Software Development and Deployment	SEP200, SEP420
LSO	Liberal studies option	N/A

Semester 4		
Course Code	Course Name	Pre-requisite
SEM405	Statistics	MTH200
SEP400	Operating Systems	SEP200
CHM300	Chemistry	N/A
BTP500	Data Structures and Algorithms	SEP300
SEA400	Artificial Intelligence	SEA100, SEM305, co-req: BTP500
BTC440	Business and Technicals Writing	ENG106

Semester 5		
Course Code	Course Name	Pre-requisite
SEA500	Introduction to Data Mining	SEA400, SEM405, BTD210
SEH500	Microprocessors and Computer Architecture	SEH300
SED500	Introduction to Software Engineering	BTP500, SED200
SED505	Design Patterns	BTP500
SEE500	Systems Requirements Engineering	BTP500, co-req: SED500
BT5535	Software Project Management	SED200

Semester 6		
Course Code	Course Name	Pre-requisite
SED600	Topics in Software Design	SED500, SED505
SEA600	Introduction to Machine Learning	SEM105, SEA500
SEP600	Embedded Systems	SEH500, SEP400
SEE600	Software Testing and Quality Assurance	SED500
BTH545	Principles of GUI Design and Programming	SED505
LSP240	Micro Economics-Theory & Practice	ENG106
WTP200	Work Term Preparation	SEP400, SEA400, BTP500, SEM405, BTC440

	BSA 771: Work-term (Summer)	WTP200
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Semester 7		
Course Code	Course Name	Pre-requisite
SED700	Capstone I	SED600
SEP700	Compiler Design	SED505, BSA771
SEN700	Computer Networks	SEP600, BSA771
Pro-option		N/A
Pro-option		N/A
SEL700	Law, Ethics, and Professional Practice	N/A
Liberal Studies Option		N/A

	BSA772: Work-term (Winter)	BSA771
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Semester 8		
Course Code	Course Name	Pre-requisite
SED800	Capstone II	SED700
SEG800	Digital Signal and Image Processing	BTP500, BSA772
SEN800	Computer Security and Cryptography	SEN700, BSA772
Pro-option		N/A
Pro-option		N/A
Liberal Studies Option		N/A

#### Program Learning Outcomes

As a graduate, you will be prepared to reliably demonstrate the ability to:

1. Apply mathematics, natural sciences, and engineering fundamentals to solve engineering problems.
2. Create software engineering solutions that satisfy technical and business requirements.
3. Design an optimal solution using artificial intelligence, data mining, and machine learning tools for complex and open-ended problems.
4. Employ interpersonal, team building, and leadership skills to solve problems independently and in diverse teams.
5. Communicate complex engineering problems and solutions to fellow software engineers and designers as well as non-technical audiences.
6. Act ethically and responsibly with public welfare and environmental protection as a guiding professional practice.
7. Plan and manage the scope, cost, timing, and quality of the project for success as defined by the project stakeholders.
8. Utilize investigative practices and self-awareness techniques to identify and pursue lifelong learning opportunities within their field of study and

more broadly.

[Further Information About This Program from Seneca's Website](#)

tags : bsa, degree, sdds