



## **Exchange Report**

**Host Institution:**

George Brown College

**Host Institution contact person:**

Kristina Miller

**Study period:**

September 2020 – December 2020

**By**

Alexander Nygaard

### **1. Where and when did you study abroad?**

- I studied abroad at George Brown College (GBC), in Toronto, Canada, between september and december 2020.

### **2. What KEA program did you attend at the time?**

- The Software Development program

### **3. What classes did you take during your semester abroad?**

- I participated in four different classes at George Brown:
  - Advanced data science
  - Advanced database development
  - Mobile Application development
  - Full stack development
- I added a full course overview of each class at the end of this document, if you want to learn more about the classes.

## **Academic Experience:**

### **4. How helpful was the receiving school in the process of choosing classes and settling you in?**

- It was smooth sailing from day one, I got three out of the four classes I wanted to participate in, and they were very helpful at guiding me towards the last class I needed.

### **5. What classes/study experiences did you find the most rewarding?**

- I found the mobile application development class the most rewarding, we learned a lot of new techniques in the mobile space, and got to test it with practical examples and projects. E.g. My team and I implemented a cross-platform mobile app for locale restaurants that used the google maps api to give directions and many more features that we had to present and showcase for the whole class.

**6. What classes/study experiences did you find least relevant or least valuable to you?**

- The advanced database development class was the least valuable experience, mostly because the class was way too big (+200 students) and the teacher had a hard time giving valuable feedback on your assignments and couldn't dedicate any time to guide or help most of the time.

**7. What classes would you advise other KEA students going to the receiving school to choose or not to choose?**

- I only had positive experiences with the classes I participated in, so I would recommend all of the classes and just hope that the classes aint that big, so you have a better chance at getting valuable feedback on your assignments/questions.

**Cultural/Personal Experience:**

**8. What challenges did you experience culturally while being a broad?**

- I had a hard time adapting to the school system, and how they were conducting assignments and tests all the time. You basically have to hand in 3-4 assignments/lab tests/quizzes each week for every class. That means you have around 12 or more things to hand in every week. Most of the time the assignments are true/false or multiple choice questions that cover very basic topics from your class. Luckily the assignments/quizzes etc. are very easy but they are extremely time consuming and really not that rewarding at all. I eventually got used to the new system, but I would much rather prefer the danish system, where it's a lot more analytical thinking and less remembering random stuff from a topic that you will eventually forget the next month.

**9. What was the best cultural/personal experience during your studies abroad?**

- I had a great study group that I spent a lot of time with during- and after class. We got along nicely and had a lot of common interests in programming and gaming as well. We arranged small hackathons and tournaments online to compete and had fun with each other, now that most of us were stuck at home because of corona.

**10. What advice would you give other KEA students going to study abroad at the receiving school?**

- I would encourage future students going abroad, to be very open minded and put on the famous yes hat, in any giving situation. Most of the time the host country/school will be doing things in a completely different way than what you are used to, but my experience was that I always got surprised in a positive way.

**Practical Experience:**

**11. How was the application process?**

- The application process was very straightforward, I simply followed the instructions from KEA's website and in a matter of weeks/month you will be on your way to your new host school.

**a. What did KEA help you with?**

- KEA helped me with the sign up process and getting in contact with my host school.

**b. What help did you receive from your school abroad?**

- George Brown College helped me find the right classes and put me in contact with the right people.

## **12. Did you have any practical difficulties settling down at your destination?**

- I've been abroad previously for a year in the US, and Canada and the US seem to be very much alike when it comes to the school system and any other thing for that matter.

### **a. How helpful was the receiving school in this process?**

- The receiving school was very helpful throughout the semester, a little slow at communicating at the beginning, but got much better as soon as the semester got going.

## **13. Where did you live?**

- I was supposed to live at a student residence in downtown Toronto called HOEM(<http://hoem.ca/>), but due to corona I had to cancel.

### **a. Was it difficult to find accommodation?**

- No it was very easy to find a place, a lot of different student residences in and around town, just a matter of price.

### **b. Was it expensive?**

- Downtown was very expensive, yes, but I would say it's worth it to be close to everything and especially your host school, so you don't have to spend time on commuting.

## **14. What kind of expenses did you have in general?**

- You will have the same expenses as you have in Denmark. It all depends on where you want to live and how much you want to go out and eat/do activities.

## Advanced database development:

Assessment Tool:	Description:	Outcome(s) assessed:	EES assessed:	Date/Week:	% of Final Grade:
Quiz 1	Multiples choice test that evaluates the concepts from the first chapters 2-5 of the textbook.	1, 2, 3	3, 4, 5, 10	Week 4	5
Quiz 2	Multiples choice test that evaluates the concepts from chapters 10, 11 and 13 of the textbook.	4, 5	3, 4, 5, 10	Week 12	5
Lab Test 1	Hands-On test conducted in one of the labs where students have to demonstrate their applied skills.	1, 2, 3	3, 4, 5, 10	Week 6	10

COURSE NAME: Advanced Database Development  
COURSE CODE: COMP2138

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Lab Test 2	Hands-On test conducted in one of the labs where students have to demonstrate their applied skills.	3, 4, 5	3, 4, 5, 10	Week 13	10
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Assignment 1	Take home individual assignment; Code various SQL statements based on a given scenario.	1, 2, 3	6, 7, 10, 11	Week 9 (due)	10
Assignment 2	Take home individual assignment; Code various PL/SQL statements based on a given scenario.	1, 4, 5, 6, 7, 8	6, 7, 10, 11	Week 14 (due)	15
Midterm Exam	Comprehensive multiple choice and fill-in-the-blank test on chapters 2 to 8.	1, 2, 3	3, 4, 5, 10	Week 7	20
Final Exam	Comprehensive multiple choice and fill-in-the-blank test on chapters 10, 11, 13, 15 and 16.	1, 4, 5, 6, 7, 8	3, 4, 5, 10	Week 15	25
				TOTAL:	100%

## Advanced data science development:

WEEK	Topic	Outcome(s)	Content	Chapter/ Reference
1		1, 2	<ul style="list-style-type: none"> <li>- Introduction to the field of Data Science and the relationship between AI, Machine Learning and Data Science</li> <li>- Historic overview</li> <li>- Overview of the book, tools and libraries used in the course</li> <li>- Introduction to IPython and Jupyter Notebooks</li> <li>- Administrative</li> </ul>	1
2		1, 2	<ul style="list-style-type: none"> <li>- Python recap:</li> <li>- Python data types</li> <li>- String parsing and formatting</li> <li>- Python loops, list comprehension, generators</li> <li>- Exceptions and error handling</li> </ul>	
3	1	1	<ul style="list-style-type: none"> <li>- Introduction to NumPy</li> <li>- Vectorized computation vs. Python loops</li> <li>- Two-dimensional arrays and NumPy broadcasting</li> <li>- Slicing NumPy arrays</li> <li>-</li> </ul>	1,2
4	2	1	<ul style="list-style-type: none"> <li>- Plotting data with Matplotlib</li> <li>- Scatter plots and correlation</li> <li>- Histograms and distributions</li> </ul>	4
5	3	1, 2	<ul style="list-style-type: none"> <li>- Introduction to Pandas</li> <li>- Working with public datasets, introduction to Kaggle</li> </ul>	3,4
6		1, 2	<ul style="list-style-type: none"> <li>- More on Pandas and visualization</li> <li>- Exploring data with descriptive statistics</li> <li>- Correlation and linear fitting</li> <li>-</li> </ul>	3,4
7	4	1, 2	<ul style="list-style-type: none"> <li>- Advanced DataFrame manipulations</li> <li>- Working with data from multiple sources</li> <li>- Handling Missing Data</li> </ul>	3
8			<b>Interession Week</b>	
9			<b>MID-TERM EXAM</b>	

			<ul style="list-style-type: none"> <li>- Linear regression as a simple example of supervised machine learning</li> <li>- K nearest neighbours (KNN) algorithm as both regression and classifier.</li> <li>- Introduction to scikit-learn API</li> </ul>	
12	7	5, 6	<ul style="list-style-type: none"> <li>- Dimensionality reduction for visualization</li> <li>- Recommender systems</li> </ul>	5
13	8	4, 5, 6	<ul style="list-style-type: none"> <li>- Model evaluation and comparison</li> <li>- Separation of test and training data</li> <li>- Overfitting and underfitting</li> <li>-</li> </ul>	5
14	9	2, 5, 6	<ul style="list-style-type: none"> <li>- Multidimensional regression</li> <li>- Regularization (Ridge and Lasso regression)</li> <li>- Feature engineering</li> <li>- Data pre-processing utilities in Sklearn</li> <li>- More on model evaluation</li> <li>- Overview of other related tools and resources with examples.</li> </ul>	5
15			<b>FINAL EXAM</b>	



## Mobile Application Development:

Assessment Tool:	Description:	Outcome(s) assessed:	EES assessed:	Date / Week:	% of Final Grade:
<b>Lecture quizzes</b>	Quizzes covering last topics discussed in the lecture and lab	1-7	1-7	Week 2-14	10
<b>Lab Exercises</b>	Grade calculated based on atKlass and submissions	1-7	1-10	Week 1-14	10
<b>Lab test 1</b>	In-class programming task	1-3, 7	2-5,7,10	Week 7	10
<b>Lab test 2</b>	In-class programming task	1, 4-7	2-5,7,10	Week 12	10
<b>Assignment 1</b>	Take-home assignment covering basic functionality in Android	1-3, 7	2-5,7,10	Week 3 (due week 5)	10
<b>Assignment 2</b>	Take-home assignment extending functionality of A1	1, 4-7	2-5,7,10	Week 5 (due week 9)	10
<b>Project</b>	Team project that covers multiple topics and requires incremental work.	1-7	1-11	Due week 14	20
<b>Final Exam</b>	Multiple choices, along with coding questions.	1-7	1-7	Week 15	20
<b>TOTAL:</b>					<b>100%</b>

## Full stack development:

Week	Topic	Outcome (s)	Content / Activities	Chapter / Reference
1	1		<ul style="list-style-type: none"> <li>- Administrative &amp; Course Outline</li> <li>- Introduction to Full Stack and MERN Stack</li> <li>- Review of JavaScript &amp; ES6 features</li> <li>- Enhanced Object Literals</li> </ul>	Ch 1
2	2	1	<ul style="list-style-type: none"> <li>- Arrow Functions</li> <li>- Classes/Subclasses</li> <li>- Callbacks</li> <li>- Promises</li> <li>- Async/await</li> </ul>	Class notes
3	3	3	<ul style="list-style-type: none"> <li>- Node.js</li> <li>- Introduction &amp; installation</li> <li>- Node package manager (NPM)</li> <li>- Versioning and package.json</li> <li>- Core Node API</li> <li>- Global Object</li> <li>- Modules, Export, Require</li> <li>- Intro to Events and Event Emitter</li> </ul>	Ch 1 <a href="https://nodejs.org/api/">https://nodejs.org/api/</a>
4	4	3	<ul style="list-style-type: none"> <li>- Node as a web server               <ul style="list-style-type: none"> <li>- Serving static files using http and file system module</li> </ul> </li> <li>- ExpressJS framework               <ul style="list-style-type: none"> <li>- Introduction to RESTful API</li> <li>- Using Routes (GET)</li> <li>- Working with route params &amp; query string</li> </ul> </li> </ul>	<a href="https://nodejs.org/api/">https://nodejs.org/api/</a>
5	5	6, 7	<ul style="list-style-type: none"> <li>- ExpressJS framework               <ul style="list-style-type: none"> <li>- Using Routes (POST/PUT/DELETE)</li> <li>- Serving static files with express</li> <li>- Express Router</li> </ul> </li> </ul>	Ch 3, 5, <a href="https://nodejs.org/api/">https://nodejs.org/api/</a> <a href="https://expressjs.com/">https://expressjs.com/</a>

6	6	4-5	<ul style="list-style-type: none"> <li>- MongoDB <ul style="list-style-type: none"> <li>- SQL vs No SQL</li> <li>- Local Installation &amp; cloud (MongoDB Atlas)</li> <li>- Mongoose</li> <li>- Intro to Mongoose schemas and datatypes</li> <li>- CRUD Operations with Mongoose</li> </ul> </li> </ul>	Ch 6
7	<b>MID-TERM EXAM</b> Mixed format test week 1-6			
8	<b>Intersession Week</b>			
9	7	2	<ul style="list-style-type: none"> <li>- React: <ul style="list-style-type: none"> <li>- Introduction to frontend tools</li> <li>- The architecture of React Application</li> <li>- Setting up React environment</li> <li>- JSX &amp; HTML view</li> <li>- Single Page Application scope and objectives</li> <li>- State</li> <li>- Props</li> </ul> </li> </ul>	Ch 1,3 <a href="https://reactjs.org">https://reactjs.org</a>
10	8	2	<ul style="list-style-type: none"> <li>- React continued <ul style="list-style-type: none"> <li>- Dev Tools and environment</li> <li>- DOM &amp; Component events</li> <li>- Life Cycle of React Components</li> <li>- Functional vs Class Components</li> </ul> </li> </ul>	Ch 4 <a href="https://reactjs.org">https://reactjs.org</a>
11	9	2-7	<ul style="list-style-type: none"> <li>- React Router and route parameters</li> <li>- React Forms</li> <li>- Form Element &amp; Validation</li> <li>- Submitting data to the backend using Axios</li> </ul>	Ch 9, 10 <a href="https://reactjs.org">https://reactjs.org</a>
12	10	2	<ul style="list-style-type: none"> <li>- Context API</li> </ul>	<a href="https://reactjs.org">https://reactjs.org</a>
13	11	2	<ul style="list-style-type: none"> <li>- Introduction to hooks <ul style="list-style-type: none"> <li>- useState,</li> <li>- useEffect</li> <li>- useRef</li> </ul> </li> </ul>	<a href="https://reactjs.org">https://reactjs.org</a>
14	12	2	<ul style="list-style-type: none"> <li>- Authentication</li> </ul>	Ch 14
15	<b>FINAL EXAM</b> Mixed format test week 1-14			