JAN 2021 - APRIL 2021

CMPT 450 · Project Proposal

VISUAL MACEWAN SCHOOL PLANNER

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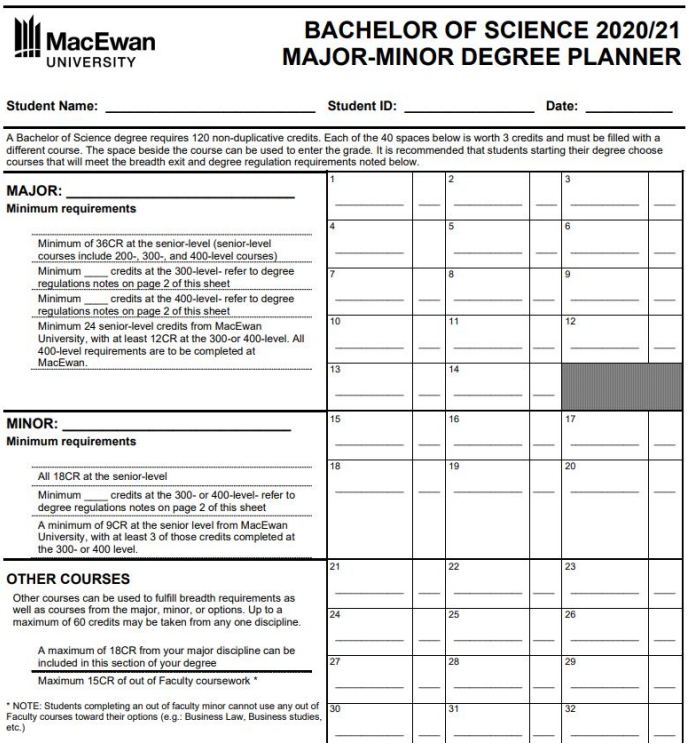
Introduction

CMPT 450 is a course on Information Visualization. For this course, we are to plan, design, and build our program. We will focus on using the Python language and libraries such as Plotly, Pandas, and Numpy.

MacEwan Student Planning

The normal route of planning a student's degree is a worksheet, fill-in-the-blank based. The current look of the planning sheets and length are **overwhelming** and **wordy**. It uses a table format to organize classes a student is currently taking, has taken, or will take.



MacEwan UNIVERSITY

BACHELOR OF SCIENCE 2020/21
MAJOR-MINOR DEGREE PLANNER

Student Name: _____ **Student ID:** _____ **Date:** _____

A Bachelor of Science degree requires 120 non-duplicative credits. Each of the 40 spaces below is worth 3 credits and must be filled with a different course. The space beside the course can be used to enter the grade. It is recommended that students starting their degree choose courses that will meet the breadth exit and degree regulation requirements noted below.

MAJOR: _____
Minimum requirements

- Minimum of 36CR at the senior-level (senior-level courses include 200-, 300-, and 400-level courses)
- Minimum ____ credits at the 300-level- refer to degree regulations notes on page 2 of this sheet
- Minimum ____ credits at the 400-level- refer to degree regulations notes on page 2 of this sheet
- Minimum 24 senior-level credits from MacEwan University, with at least 12CR at the 300-or 400-level. All 400-level requirements are to be completed at MacEwan.

MINOR: _____
Minimum requirements

- All 18CR at the senior-level
- Minimum ____ credits at the 300- or 400-level- refer to degree regulations notes on page 2 of this sheet
- A minimum of 9CR at the senior level from MacEwan University, with at least 3 of those credits completed at the 300- or 400 level.

OTHER COURSES

Other courses can be used to fulfill breadth requirements as well as courses from the major, minor, or options. Up to a maximum of 60 credits may be taken from any one discipline.

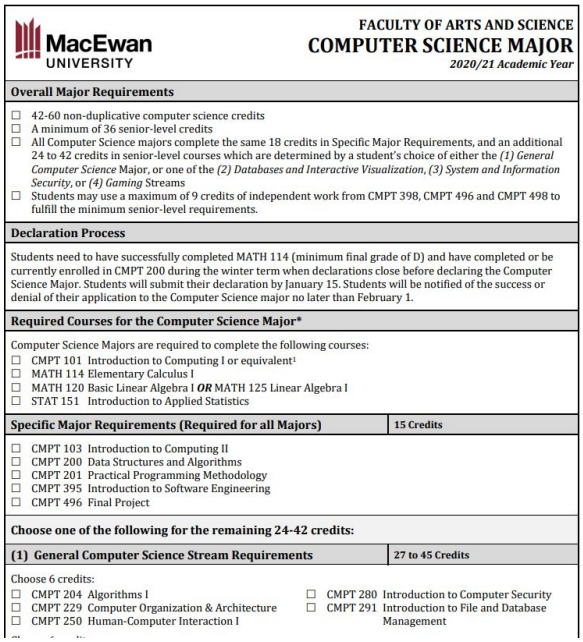
- A maximum of 18CR from your major discipline can be included in this section of your degree
- Maximum 15CR of out of Faculty coursework *

* NOTE: Students completing an out of faculty minor cannot use any out of Faculty courses toward their options (e.g.: Business Law, Business studies, etc.)

1 _____	___	2 _____	___	3 _____	___
4 _____	___	5 _____	___	6 _____	___
7 _____	___	8 _____	___	9 _____	___
10 _____	___	11 _____	___	12 _____	___
13 _____	___	14 _____	___		
15 _____	___	16 _____	___	17 _____	___
18 _____	___	19 _____	___	20 _____	___
21 _____	___	22 _____	___	23 _____	___
24 _____	___	25 _____	___	26 _____	___
27 _____	___	28 _____	___	29 _____	___
30 _____	___	31 _____	___	32 _____	___

This is the overall degree planner. This is the first thing an Academic Advisor will give or ask for when planning your degree. Like all the worksheet planners, it is table-based. It relies heavily on the student knowing exactly what they want to take. Also, lots of text to read.

The next 2 worksheets are a student's specific major and minor planner. MacEwan has one for each major and minor but is not highlighted on the website. Most current students don't know where to exactly find these worksheets; making students rely on Academic Advising. When a student makes an appointment with an Academic Advisor, it is most often full and doesn't have the most flexible hours. Their hours are usually when most classes take place making it difficult to meet with an advisor in person. This drives students to email advisors instead, which can take 1-5 business days to reply.



MacEwan UNIVERSITY

FACULTY OF ARTS AND SCIENCE
COMPUTER SCIENCE MAJOR
2020/21 Academic Year

Overall Major Requirements

- ☐ 42-60 non-duplicative computer science credits
- ☐ A minimum of 36 senior-level credits
- ☐ All Computer Science majors complete the same 18 credits in Specific Major Requirements, and an additional 24 to 42 credits in senior-level courses which are determined by a student's choice of either the *(1) General Computer Science* Major, or one of the *(2) Databases and Interactive Visualization*, *(3) System and Information Security*, or *(4) Gaming* Streams
- ☐ Students may use a maximum of 9 credits of independent work from CMPT 398, CMPT 496 and CMPT 498 to fulfill the minimum senior-level requirements.

Declaration Process

Students need to have successfully completed MATH 114 (minimum final grade of D) and have completed or be currently enrolled in CMPT 200 during the winter term when declarations close before declaring the Computer Science Major. Students will submit their declaration by January 15. Students will be notified of the success or denial of their application to the Computer Science major no later than February 1.

Required Courses for the Computer Science Major*

Computer Science Majors are required to complete the following courses:

- ☐ CMPT 101 Introduction to Computing I or equivalent[1]
- ☐ MATH 114 Elementary Calculus I
- ☐ MATH 120 Basic Linear Algebra I ***OR*** MATH 125 Linear Algebra I
- ☐ STAT 151 Introduction to Applied Statistics

Specific Major Requirements (Required for all Majors) — **15 Credits**

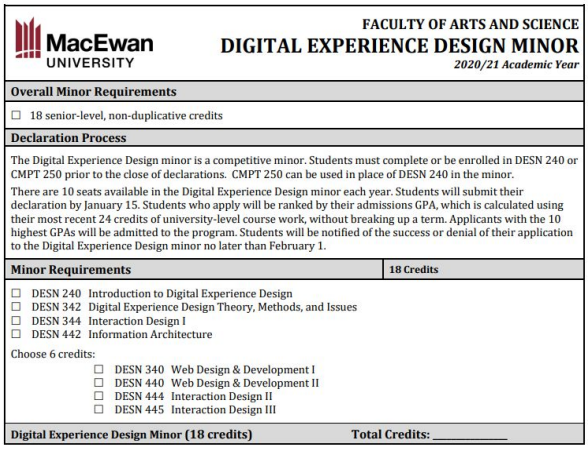
- ☐ CMPT 103 Introduction to Computing II
- ☐ CMPT 200 Data Structures and Algorithms
- ☐ CMPT 201 Practical Programming Methodology
- ☐ CMPT 395 Introduction to Software Engineering
- ☐ CMPT 496 Final Project

Choose one of the following for the remaining 24-42 credits:

(1) General Computer Science Stream Requirements — **27 to 45 Credits**

Choose 6 credits:

- ☐ CMPT 204 Algorithms I
- ☐ CMPT 229 Computer Organization & Architecture
- ☐ CMPT 250 Human-Computer Interaction I
- ☐ CMPT 280 Introduction to Computer Security
- ☐ CMPT 291 Introduction to File and Database Management



MacEwan UNIVERSITY

FACULTY OF ARTS AND SCIENCE
DIGITAL EXPERIENCE DESIGN MINOR
2020/21 Academic Year

Overall Minor Requirements

- ☐ 18 senior-level, non-duplicative credits

Declaration Process

The Digital Experience Design minor is a competitive minor. Students must complete or be enrolled in DESN 240 or CMPT 250 prior to the close of declarations. CMPT 250 can be used in place of DESN 240 in the minor.

There are 10 seats available in the Digital Experience Design minor each year. Students will submit their declaration by January 15. Students who apply will be ranked by their admissions GPA, which is calculated using their most recent 24 credits of university-level course work, without breaking up a term. Applicants with the 10 highest GPAs will be admitted to the program. Students will be notified of the success or denial of their application to the Digital Experience Design minor no later than February 1.

Minor Requirements — **18 Credits**

- ☐ DESN 240 Introduction to Digital Experience Design
- ☐ DESN 342 Digital Experience Design Theory, Methods, and Issues
- ☐ DESN 344 Interaction Design I
- ☐ DESN 442 Information Architecture

Choose 6 credits:

- ☐ DESN 340 Web Design & Development I
- ☐ DESN 440 Web Design & Development II
- ☐ DESN 444 Interaction Design II
- ☐ DESN 445 Interaction Design III

Digital Experience Design Minor (18 credits) **Total Credits: _____**

Problem Definition

University students have a hard time planning and tracking academic progress the "worksheet" way.

The worksheet way is using papers to write and track current student progress. It can also mean that if a student has to research further through contacting academic advisors or looking through the school website to find class information.

The current problem with MacEwan's planning method is that it doesn't explain itself enough that students have to seek advisors for help. This affects the effectiveness of student advising. Academic advisors have discreetly turned into academic planners rather than advisors.

Proposed Solution

A convenient solution for students is to go digital. By using technology to help plan a student's degree, they will be able to access, modify, and update their degree with less hassle. There are 3 main goals for this project:

1. Go digital
2. Go visual
3. Be flexible

By keeping these 3 things in mind, we can build a solution that lets students plan in around an hour instead of many hours or days.

This project will start small. It will concentrate on creating a planner for **Computer Science MacEwan students with a Major/Minor plan**.

Going Digital

By going digital it gives students the ability to undo and redo choices. It can lessen the time a student has to take to research school resources to find out requirements and information.

A Visual Approach

A visual approach creates a clearer picture of a student's degree plan. By making it visually clear, a student will be able to plan more confidently with less stress.

Flexibility

Because the project will use technology to build a visual planner, it can have flexible features and flexible to edit compared to planning a degree by hand. A future feature could allow students outside of MacEwan to input their own classes (feeding the program with data and can be used by other students in the future).

Desirable Program Features

- Node-based tree diagram of chosen classes
- Each node is a class
    - Show class information
    - Prerequisites
    - Classes you can take after taking this class
- Show any inconsistencies in a plan
    - Show if the student will graduate in time or
    - Will they graduate with their current plan

    - Do they satisfy major/minor requirements?
    - Can't take the class because of missing prerequisite classes
- Input their own data if the class isn't in the database
- Drag and drop editing
- Suggest classes to take
    - Influenced by current chosen classes
- Change language
    - Instead of saying 3 credits, say 1 class instead

Research

MacEwan Academic Planning
This is the official MacEwan website page to plan a degree in the Faculty of Arts & Science. Here is where FAQs are answered and planning sheets for each academic year.

MacEwan Academic Calendar
This is where a student can find all information about class information and their prerequisites. **This is the main source of data**. I will be web scraping this page to get information for each course.

Computer Science Major Requirements
Before Declaring
- ☐ Completed MATH 114
- ☐ Completed or enrolled in winter CMPT 200
- ☐ Declare before Jan 15

Overall Major
- ☐ 42-60 non-duplicative computer science credits
- ☐ A minimum of 36 senior-level credits
- ☐ 18 credits in Specific Major Requirements
    - ☐ 24 to 42 credits in senior-level courses (determined by a stream a student chooses)
- ☐ Can use at max 9 credits of independent work from CMPT 398, CMPT 496, and CMPT 498 for senior-level courses requirement.

Required Courses
- ☐ CMPT 101 Introduction to Computing I or equivalent1
- ☐ MATH 114 Elementary Calculus I
- ☐ MATH 120 Basic Linear Algebra I OR MATH 125 Linear Algebra I
- ☐ STAT 151 Introduction to Applied Statistics

Required Comp Sci Courses

- ☐ CMPT 103 Introduction to Computing II
- ☐ CMPT 200 Data Structures and Algorithms
- ☐ CMPT 201 Practical Programming Methodology
- ☐ CMPT 395 Introduction to Software Engineering
- ☐ CMPT 496 Final Project

Major/Minor Overall Requirements

- ☐ 2 ENGL 102 + another ENGL (not ENGL 111, 108 or 211)
- ☐ 2 CHEM or PHYS (has a lab)
- ☐ 2 BIO or EASC (has a lab)
- ☐ 1 MATH 114, 120 or 125
- ☐ 2 ANTH, ECON, LING, POLS, PSYC or SOCI
- ☐ 2 CLAS, COMP, HIST, HUMN, PHIL or a non-English course

Predicted Timeline