CS 410 Lab 1

Monarch Course Explorer Product Description

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Version 1.0

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1. Introduction

1.1 Problem Background

A. Students lack the information that is required to create a class schedule that fits around their personal or work schedule.

B. ODU students cannot view syllabi until they have already signed up for the course.

C. 81% of students in U.S work jobs while in college (Wan,2022)

D. Students may not know if the classes they signed up for are compatible with their personal schedules until the semester has already started.

1.2 Problem Description

A. ODU does not have a tool that faculty and students can use to create more customizable and productive learning experiences.

B. Faculty and students lack a way to communicate how classes are taught, as well as detailed information about what is taught, leading to poor feedback for professors and losses of time and money for students.

Current Process Flow

The flowchart shows the following process:

Identify Course → Open Banner (Instructor, Times, In person/online/asynchronous) → Ask Friends about instructor → Search Rate My Professor → Other Online Research (Reddit) → Register for a section → Wait for the first day of class → Does the syllabus match expectations and needs?

- Yes → Stick with course → Identify Course
- No → Choose a new section → Are there any seats available?
  - Yes → Successfully Register
  - No → Join a waitlist → Does a seat open up?
    - Yes → Successfully Register
    - No → Stick with original course
    - No → Take course another semester → Pick another course → Identify Course
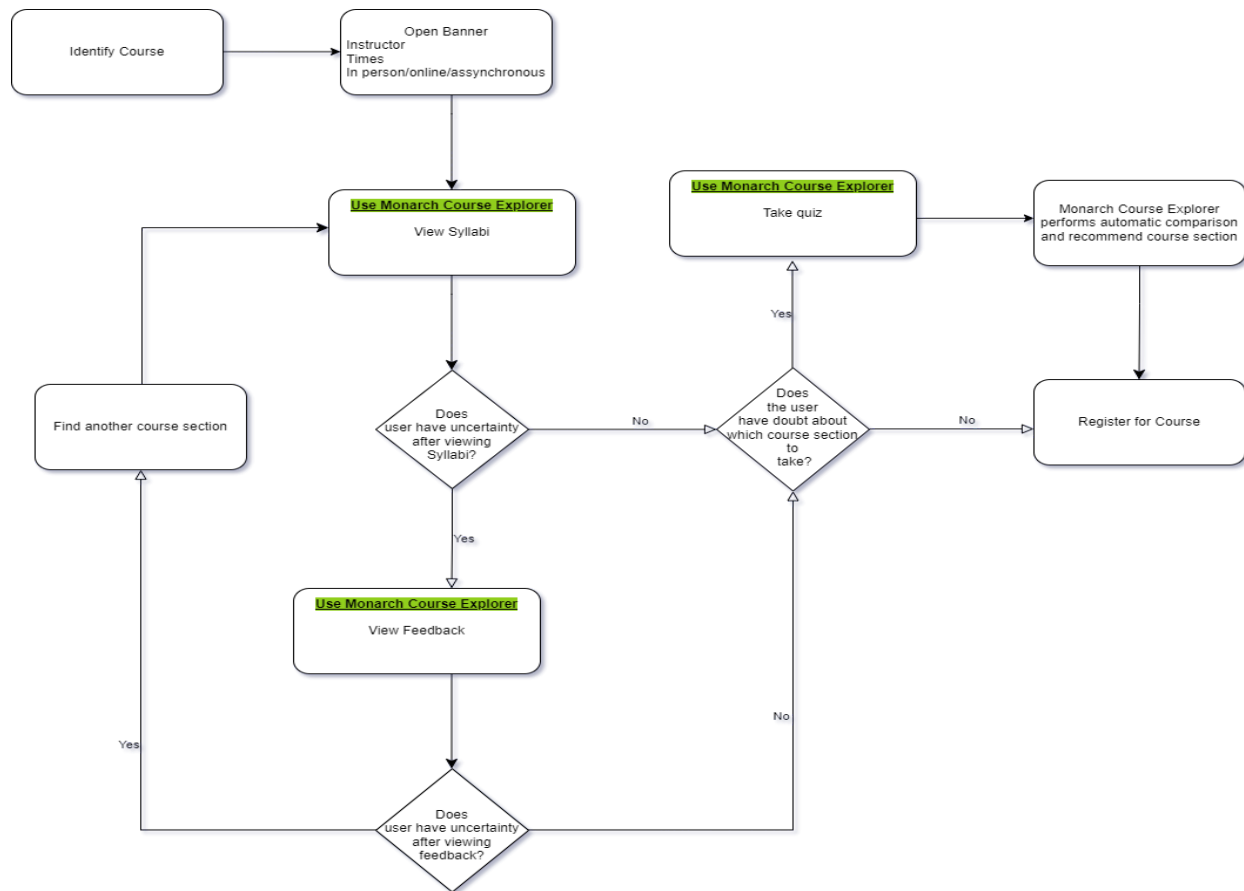
2. X Product Description

2.1 Solution

A. Monarch Course Explorer is a moderated platform where students can provide and view feedback about courses, view automatic comparisons between semesters and teachers, and access and upload syllabi.

2.2 Solution Characteristics

A. Central repository of course syllabi

B. Students can provide and view constructive feedback about classes, which can be sorted by semester and faculty.

C. Faculty can view and comment on feedback from students.

D. Faculty can make changes, if necessary, to their courses based on feedback from students.

E. Faculty can make their syllabi more accessible to students.

F. Aid curriculum review committee with evaluating course syllabi

Proposed Solution Flow

Identify Course → Open Banner
Instructor
Times
In person/online/assynchronous

Use Monarch Course Explorer
View Syllabi

Use Monarch Course Explorer
Take quiz

Monarch Course Explorer performs automatic comparison and recommend course section

Find another course section

Does user have uncertainty after viewing Syllabi?

Does the user have doubt about which course section to take?

Register for Course

Yes

No

Yes

No

Use Monarch Course Explorer
View Feedback

Does user have uncertainty after viewing feedback?

Yes

No

2.3 Key Product Features and Capabilities

2.3.1 Core product features

A. Provides access to course syllabi and syllabi comparisons

B. Provide a platform for verified ODU students to provide feedback on courses

C. Provide students with more information about courses to fit their learning style and schedule

D. Provide timely feedback for professors

E. Aid curriculum review committee with evaluating course syllabi

F. Provide advisors with a tool and resource to create a more personalized advising experience

2.3.2 What is unique

A. Comprehensive course information

B. Automatic comparisons between semesters or faculty

C. Verified ODU email

D. Customized recommendations

2.4 Major Components (Hardware/Software)

On the front end, users can view syllabi, compare syllabi, and view feedback without having to sign up. But other features such as uploading syllabi, giving feedback, and reporting feedback will require users to sign up. On the backend, syllabi will be scraped, normalized, analyzed, and stored in a database. Users will be authenticated with their MIDAS information.

Major Functional Component Diagram
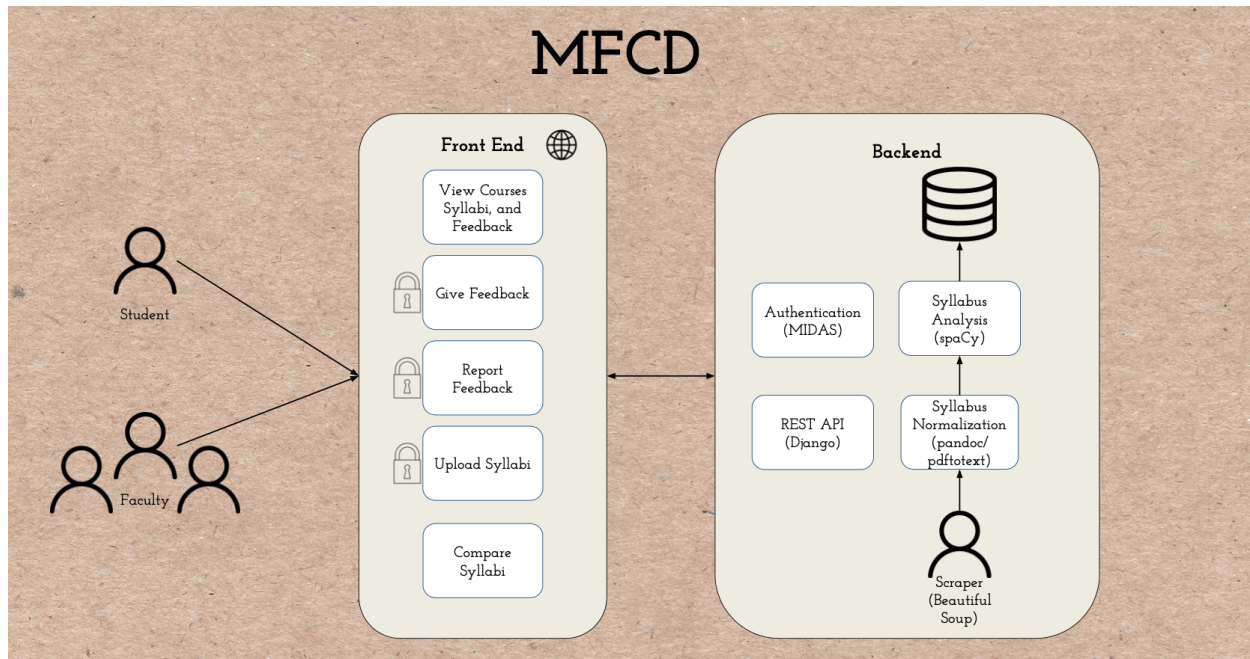
I. Website

    A. HTML - User display

    B. CSS - Formatting and design

    C. Javascript - User interaction

II. Python

    A. Beautiful Soup - Web scraping

    B. spaCy - NLP transformation of syllabi

    C. Django - Rest API

III. Databases

    A. PostgreSQL

IV. Authentication

    A. MIDAS

3. Identification of Case Study

3.1 Old Dominion University

A. A diverse student population, including non-traditional students and online distance learning students

B. Faculty

    a. Professors

    b. Advisors

    c. Curriculum Committee

3.2 Future Adoption

A. Other universities

4. X Product Prototype Description

Table of features and functionality, including comparisons between RWP and Prototype

Features	Student	Faculty: Professor	Faculty: Advisor	Faculty: Curriculum Committee Member	Real World Product	Prototype
Upload Syllabi		✓		✓	✓	✓
Scrape Syllabi		✓		✓	✓	✓
View Syllabi	✓	✓	✓	✓	✓	✓
Side-By-Side View	✓	✓	✓	✓	✓	✓
Analyze Syllabi in Different Formats					✓	Partial

Features	Student	Faculty: Professor	Faculty: Advisors	Faculty: Curriculum Committee Member	Real World Product	Prototype
Verify Inclusion of Required Sections				✓	✓	✓
View Report of Missing Sections				✓	✓	✓
Fitler by Sections	✓		✓	✓	✓	✓
Compare sections	✓		✓	✓	✓	✓

Features	Student	Faculty: Professor	Faculty: Advisor	Faculty: Curriculum Committee Member	Real World Product	Prototype
View Feedback	✓	✓	✓		✓	✓
Rate Feedback	✓	✓			✓	✓
Provide Feedback	✓	✓			✓	✓
Filter Feedback by Semester	✓	✓	✓		✓	✓

Features	Student	Faculty: Professor	Faculty: Advisor	Faculty: Curriculum Committee Member	Real World Product	Prototype
Authentication	✓	✓	✓	✓	✓	Partial
Take Quiz	✓				✓	✓
View Course Recommendation	✓				✓	✓

4.1. Prototype Architecture (Hardware/Software)

I. Hardware

    A. Computer with internet access

II. Software

    A. Website - HTML, CSS, Javascript

    B. Python

        a. Beautiful Soup for web scraping

        b. spaCy for NLP transformation of syllabi

        c. Django for rest API

    C. Databases - PostgreSQL

    D. Development Tools - VSCode, Github

4.2. Prototype Features and Capabilities

### 4.2.1 Analyze and extract information from syllabi

    A. Upload and scrape syllabi

    B. Partial implementation of analysis of syllabi in different formats

    C. Aid curriculum review committee with evaluating course syllabi

    D. Allow users to easily search and access syllabi for all courses

    E. Users can access original syllabi as well as normalized syllabi

    F. Users can filter syllabi by sections

    G. Users can compare sections of different syllabi
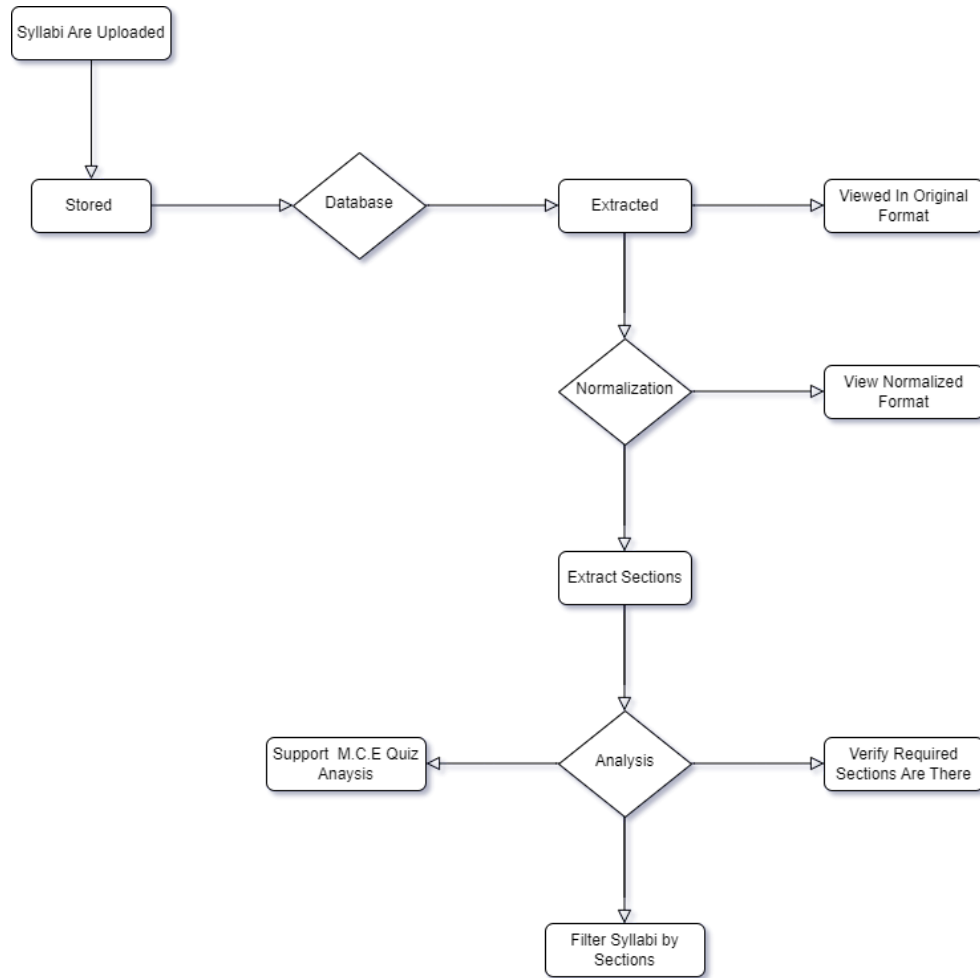
## 4.2.2 Feedback on courses

    A. Allow students to provide feedback on courses and filter feedback

    B. Allow professors to view, rate, respond to feedback, and filter feedback

    C. Allow advisors to view feedback and filter feedback
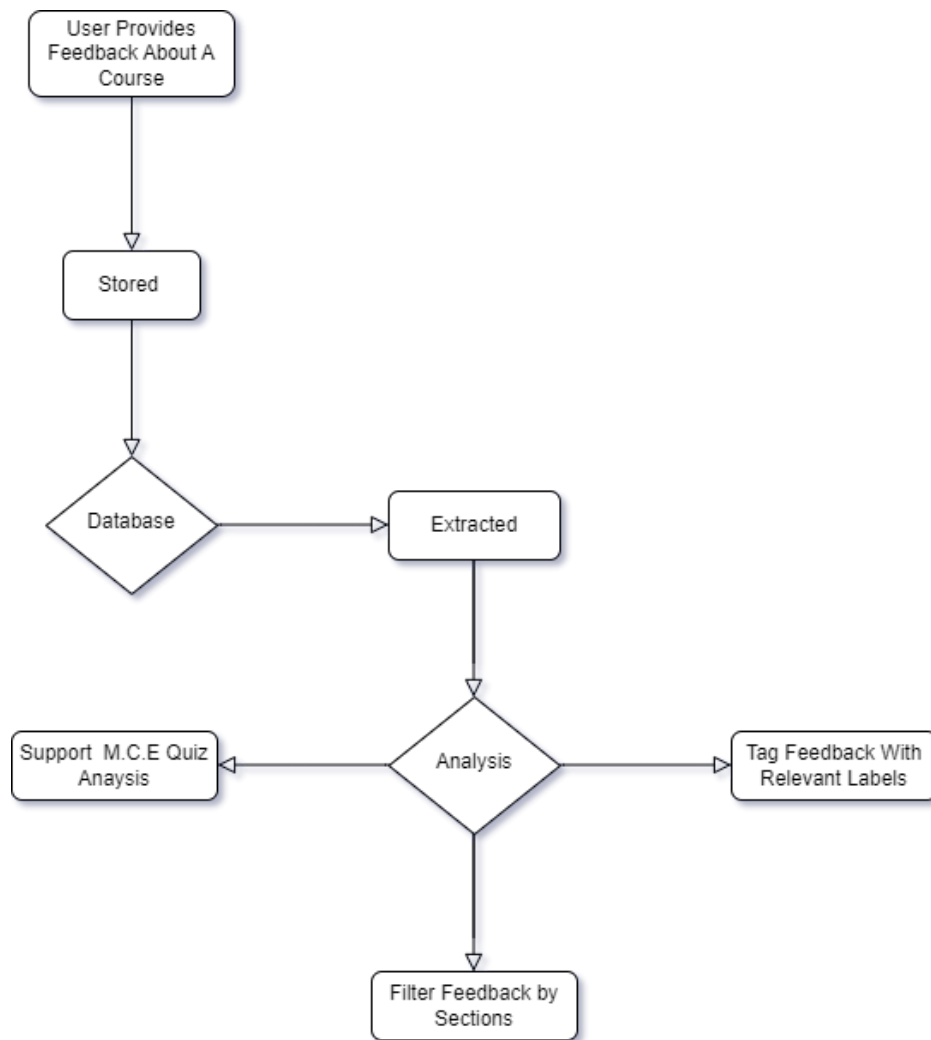
4.2.3 Assist students in finding courses that fit their learning style and personal schedule

A. Syllabi and feedback provided

B. Course recommendation - MCE quiz
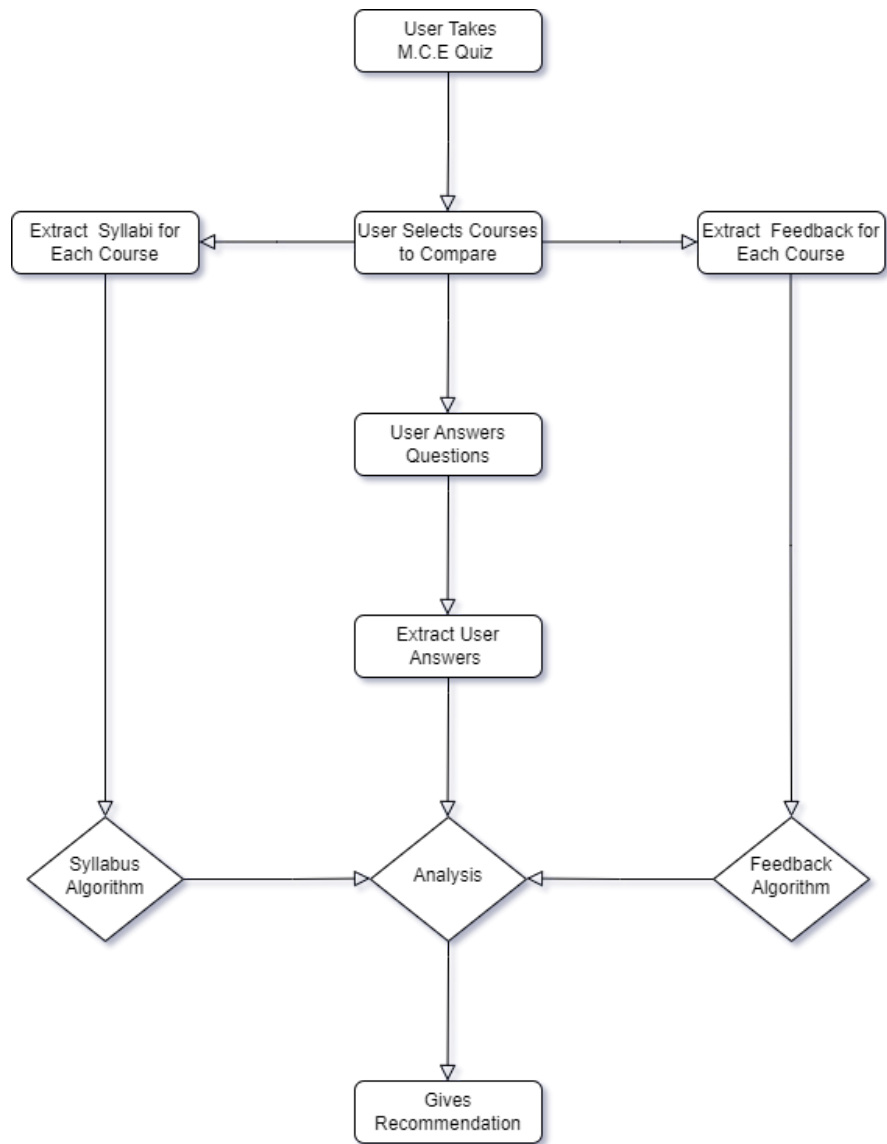
4.2.4 Authentication

A. Partial implementation

4.3. Prototype Development Challenges

4.3.1 Accuracy of NLP

    A. Syllabi analysis may be inaccurate

    B. Feedback analysis may be inaccurate

4.3.2 Data collection

    A. Obtaining syllabi that are not already online

    B. Motivating students to provide feedback for their courses

4.3.3 Normalization

    A. Normalization of syllabi may cause some information to be left out

4.4 Real World Product Risks

4.4.1 Customer Risks
    A. Risks
    B. Mitigations

4.4.2 Technical Risks

    A. Risks
    B. Mitigations

4.4.3 Security Risks

    A. Risks
    B. Mitigations

4.4.4 Legal Risks

    A. Risks
    B. Mitigations

5. Glossary

NLP - A subfield of computer science and artificial intelligence (AI) that focuses on the interaction between computers and humans in natural language.

RWP - Real World Product that will be developed and used

6. References

A. Anderson, K., & Chinowsky, G. (2020, January 30). Students should have access to course syllabi before classes begin. The GW Hatchet. Retrieved January 23, 2023, from https://www.gwhatchet.com/2020/01/30/students-should-have-access-to-course-syllabi-before-classes-begin/

B. Boccaccio, Eric. "Debunking Myths about RateMyProfessors.com and Course Evaluations." *Medium*, 18 April 2018, https://medium.com/@green4172/debunking-myths-about-ratemyprofessors-com-and-course-evaluations-dd91453535aa. Accessed 14 February 2023.

C. Cartwright, S. (2016, September 28). *Syllabi to be available online for students to preview before enrolling in classes*. The Lantern. Retrieved January 22, 2023, from https://www.thelantern.com/2016/09/syllabi-to-be-available-online-for-students-to-preview-before-enrolling-in-classes/

D. Park, Y., & Sprung, J. M. (2013). Work-School Conflict and Health Outcomes: Beneficial Resources for Working College Students. Journal of occupational health psychology, 18(4), 384-394. https://doi.org/10.1037/a0033614

E. Wan, M., Feng, L., Meng, X., Zhai, M., & Konopaske, R. (2022). Working College Students' Time Pressure and Work-School Conflict: Do Boundary Permeability and

Dispositional Mindfulness Matter? Psychological reports, 125(6), 3100-3125.

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