# Lab 1 – Product Description

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# 1 Introduction

Students often face challenges when trying to create a class schedule that meets degree requirements while molding it around busy lives of work, family, community, and personal responsibilities. When a required course is unavailable or clashes with other commitments, students can be forced to delay their graduation which increases both tuition cost and unnecessary stress. Academic advisors are also affected, as they spend a lot of time manually reviewing degree audits, each student's personal lives in an attempt to resolve scheduling conflicts.

Institutions rely on tools like DegreeWorks to track degree process. And while these tools are useful for audits, they often lack real-time course availability, conflict detection, and support for personal scheduling constraints. This results in students needing to manually piece together schedules across multiples systems like LeoOnline, DegreeWorks, and a flurry of note taking systems. This increases the likelihood of errors and missed requirements. Both students and advisors are held back by the limitations in the toolset and contribute to delayed graduation outcomes.

GradMap is proposed as as a solution to these challenges. GradMap is a web-based scheduling application designed to help students and advisors quickly generate conflict-free, degree-compliant schedules. By combining degree requirements, course availability, and personal scheduling constraints into a single location. GradMap hopes to reduce errors and keep students on the best track towards graduation.

# 2 Product Description

GradeMap is a web application that will assist college level students and academic advisors in planning academic schedules that align with degree requirements and personal availability. The primary object of Gradmap is to simplify the course planning process while ensuring students remain on the right track to graduate at the best time for them. The system will automatically generate personal schedule, highlight conflicts, provide recommendations, and support advisor review. GradMap will improve the efficiency and accuracy of academic planning while reducing friction for both students and advisors.

## 2.1 Key Product Features and Capabilities

**GradMap automatically builds personalized course schedules based on a student's degree requirement, course availability, and personal preferences. One of its most important features is real time conflict detection, which identifies overlapping class times, prerequisites issues, and credit overloads. GradMap also provides load-balancing recommendations to help students avoid overly demanding semesters. These features work together to reduce scheduling errors and support better academic decision making.**

## 2.2 Major Components (Hardware/Software)

**GradMap is being designed as a we-based system that operates across multiple platforms, including Windows, macOS, and Linux. The application is host on a web**

**server such as Apache, Nginx, or Microsoft IIS. A relational database, such as MySQL, stores student schedules and their degree requirements. Servers side logic is handled through java for scheduling algorithms and other core features. The system is accessed through a standard web browser , requiring no specialized hardware beyond a device that can access the internet.**

## 3 Identification of Case Study

GradMap is primarily developed for undergraduate and grad students who are having trouble planning schedules that work within both degree requirements and personal constraints. Academic advisors serve as a secondary user group since they review and approve of student schedules. The cast study group consists of a small sample of students and advisors who will use the prototype and provide feedback on its ease of use and effectiveness. In the future, GradMap may also be used by program directors or university admins to analyze enrollment trends and support institutional graduation goals.

## 4 Glossary

**Conflict Free Scheduling –** Creating a class schedule with no overlapping course times.

**Constraint Blocks –** Reserved time periods where classes cannot be scheduled due to personal commitments.

**Degree Compliance –** Ensuring that a student's schedule meets all degree requirements as well as prerequisite conditions.

**Load Balancing Recommendation –** A scheduling suggestion for distributing course difficulty or workload evenly across a semester

## 5 References

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