

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
THE UNIVERSITY OF TEXAS AT ARLINGTON**

**PROJECT CHARTER
CSE 4316: SENIOR DESIGN I
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**INTERACTIVE DEGREE PLANNER
ACORN INTERACTIVE SYSTEMS**

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CONTENTS

1 Vision	5
2 Mission	5
3 Success Criteria	5
4 Background	6
5 Related Work	6
6 System Overview	6
7 Roles & Responsibilities	6
8 Facilities & Equipment	7
9 Cost Proposal	7
9.1 Preliminary Budget	7
9.2 Current & Pending Support	7
10 Documentation & Reporting	7
10.1 Project Charter	7
10.2 Product Backlog	7
10.3 Sprint Planning	7
10.3.1 Sprint Goal	7
10.3.2 Sprint Backlog	7
10.3.3 Task Breakdown	8
10.4 Sprint Burndown Charts	8
10.5 Sprint Retrospective	8
10.6 Individual Status Reports	8
10.7 Engineering Notebooks	8
10.8 Closeout Materials	8
10.8.1 System Prototype	9
10.8.2 Project Poster	9
10.8.3 Web Page	9
10.8.4 Demo Video	9
10.8.5 Source Code	9
10.8.6 Source Code Documentation	9
10.8.7 Hardware Schematics	10
10.8.8 CAD files	10
10.8.9 Installation Scripts	10
10.8.10 User Manual	10

LIST OF FIGURES

1	Example sprint burndown chart	8
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1 VISION

Create tentative schedules that takes into consideration the difficulty of classes so that students can make use of it once they have decided on a major. These schedules take into consideration the difficulty of the classes. The consideration of the difficulty result in a balanced schedule that allow the students to advance in their major while reducing the burden of having to research the classes they want to take.

2 MISSION

Provide a desktop application that can be used by students majoring in any of the three fields offered by the Computer Science and Engineering department at the University of Texas at Arlington. The desktop application helps students reduce the burden of having to research the classes they want to take by creating balanced schedule for each semester.

3 SUCCESS CRITERIA

The success of this application will be demonstrated through the following:

- The application successfully passes all the tests.
- Demonstration at the end of CSE-4317 (Senior Design II).
- Application that can be downloaded via the teams Github account.

4 BACKGROUND

This idea was generated from the need of students to plan their academic schedule in a way that allows them to advance in the major while reducing the difficulty of each semester. New students in particular will benefit from this application since it will provide them with a guide on how to structure their academic work through each semester. Both students that decide to take the classes suggested by the application, and those that have not used the schedule will benefit from its suggestions and hopefully understand how to create their own schedule.

5 RELATED WORK

Several applications exist that allow students to create a semester schedule such as:

- Semester plan template by Algonquin College [1]
- Semester-by-Semester Planner by Baylor University [2]
- Term Planning Calendars by Biola University [3]
- Semester-by-Semester Planning Worksheet by Penn State University [4]

These applications and templates allow students to create their semester schedule. They give them a visual representation of what their semester workload is going to be by letting the students input their class names and scheduled meeting times. However these applications do not take class difficulty into consideration.

6 SYSTEM OVERVIEW

Interactive degree planner is a course scheduling system that helps students manage the list of classes they need to take throughout their entire undergraduate degree. This includes setting up each semesters schedule, analyzing which classes to take together, knowing the requirements needed to transition to another semester and completing their Bachelors degree in the time period they desire. The system functions as a desktop based application (compatible with windows) that is accessible to students in the computer science and Engineering department of UT-Arlington.

7 ROLES & RESPONSIBILITIES

Everyone on the team has a certain list of duties in place in order to operate the project. The following are the list of designated roles depending on the capability and experience of each team member.

- Project sponsor (N/A for us)
- Subject matter expert (N/A for us)
- Product owner: All team members
- Scrum master: Ben Pham
- Project manager: Natnael Kebede
- Technical lead: Julian Cisneros
- GUI developer: Jacovo Fernandez
- Software developer: All team members
- Software tester: Octavio Garcia
- User acceptance tester: Octavio Garcia

8 FACILITIES & EQUIPMENT

The system will be developed both at the Lab and outside of the lab depending on the task to be completed. Additionally, the team will make use of the white board and desktops at our designated lab space.

9 COST PROPOSAL

The total cost estimated for the project including any purchased items is within the range of the default budget available for the team.

9.1 PRELIMINARY BUDGET

A high level budget of approximately \$300 is estimated to be spent for using services such as collaboration application, software development platforms, repositories, database subscriptions and project management tools.

9.2 CURRENT & PENDING SUPPORT

The team plans to get all the funds needed from the computer science and engineering department since it will be sufficient to complete the project.

10 DOCUMENTATION & REPORTING

Besides the engineering notebooks maintained by individual team members, below are documentation and reporting methods used throughout the design project.

10.1 PROJECT CHARTER

The project charter is to be produced once at the end of first sprint with specific project documentation method, progress tracking, and reporting layout.

10.2 PRODUCT BACKLOG

The design projects are managed through Trello online project management service in which the product features are broken down into components, described, and recorded with specific information about the priority, deadline, and time to complete. This document will be updated weekly.

10.3 SPRINT PLANNING

Sprint is to be divided into 3 units in this semester with the duration of 2 weeks per sprint. The design team will meet weekly with the sprint presentations occurring at the end of each sprint period.

10.3.1 SPRINT GOAL

Goal of each sprint will be specified by product owner; however, the final decision can be based on design team discretion through voting. The mandatory documents at the end of each sprint are: sprint 1 - Project charter, sprint 2 - SRS, and sprint 3 - ADS.

10.3.2 SPRINT BACKLOG

Sprint backlog is to be maintained and updated as often as necessary. It contains a list of tasks identified by the Scrum team to be completed during the Scrum sprint. Excel spreadsheet will be used to record all sprint activities, tracking time lines, monitor progress, and produce report. Any team member can add to or pull item(s) from the product backlog after discussing with design team. If there are dependencies lower in the backlog, team members pull them too.

10.3.3 TASK BREAKDOWN

Tasks are assigned by team through discussion between members based on individual expertise, in connection with team productivity and efficiency of time use.

10.4 SPRINT BURNDOWN CHARTS

Sprint burndown charts will document how much time is put into completing tasks each day. the example below shows the ideal amount of time that each task will take to complete versus the actual time required to complete the task. Burndown charts will be documented and updated every two weeks according to the ongoing sprints.

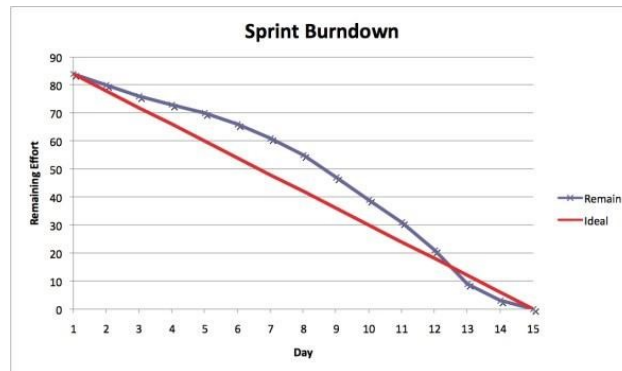


Figure 1: Example sprint burndown chart

10.5 SPRINT RETROSPECTIVE

The sprint retrospective will be based on all the scrum documentation. The team will first look at the backlog to gain a perspective on what tasks need to be completed. After that, the sprint cycles will be reviewed to know what has been completed and how much time and effort was required to complete each task. This will be continuous throughout the project to maintain retrospective throughout the completion of the product. By reviewing the backlog and the time it takes to complete each task, the team can make decisions on what features of the product will take priority and what needs to be put on hold. If a task needs to be completed by a deadline but is blocked by pre-requisite tasks, then the team will know exactly where to start to complete the product in an efficient and timely manner.

10.6 INDIVIDUAL STATUS REPORTS

Status Reports will be completed and submitted at the end of each sprint cycle. This is to show documented progress as well as answer important questions such as what has been completed, what needs to be completed, and what barriers are preventing the task from being completed. Each team member can review status reports so that all progress is monitored, and accountability is maintained.

10.7 ENGINEERING NOTEBOOKS

The engineering notebooks will contain information based on the current work progress, ideas, as well as goals to complete for the interactive degree planner product. Once the work is complete and ready to be signed off, the team will have the product owner sign off on the notebooks for approval.

10.8 CLOSEOUT MATERIALS

Once the project is complete, there will be a set of closeout materials that will be considered the final deliverable to the customer. The closeout materials will include the following: system prototype, project poster, a web page if applicable, a demo video, source code, source code documentation, installation

scripts, and a user manual. The following below goes in depth, explaining each individual closeout material.

10.8.1 SYSTEM PROTOTYPE

A copy of the executable will be provided when submitting the product. Upon opening the executable, A menu will prompt the user to enter their user-name and password. The user then selects their current degree plan: Computer Science, Computer Engineering, or Software Engineering. Once the degree plan is chosen, the program will proceed to open an interactive user interface. The student will be given a list of all classes related to the major so that they may plan out their semesters towards graduation. Each class will have a difficulty rating, as well as their listed prerequisite. When adding classes to each semester, there will be a section titled, *Semesters Remaining Until Graduation*, which will simply list the minimum total semesters required to graduate. Once the user is satisfied with their selection, they may choose to save their information for the next time they decide to reopen the application at a later date.

10.8.2 PROJECT POSTER

The poster will contain information based on the interactive degree planner. There will be three sections which include: Computer Science, Computer Engineering, and Software Engineering. In each section, there will be examples from the product that show how a student can create their entire degree plan based on schedules and difficulty. The poster will demonstrate full degree plan examples as well as provide a set date for graduation with each major.

10.8.3 WEB PAGE

The web page will be an HTML file that contains a detailed summary of the overall project. It will go into detail similarly to the poster. There will be sections which explain what the project is about, the purpose of the project and what has been completed. The file will contain examples and images from the project as well. This will inform the user why the project was created and what it is meant to represent.

10.8.4 DEMO VIDEO

Our demonstration video will be a pre-recorded walkthrough of our program describing every aspect which can be utilized throughout the software. The walkthrough will be an example of how a user is intended to use the program, but there will also be a commentary of the developers describing the purpose of the functions used. Commentary will also point out any helpful functionalities which are not required but can be of use to certain users.

10.8.5 SOURCE CODE

The source code provided will be utilizing multiple languages. The source code will be submitted with their original file formats, and any other dependency files that are linked to those files. Readme text file will also be provided along with certain files if there are further instructions necessary to understand their purpose and execution.

10.8.6 SOURCE CODE DOCUMENTATION

Throughout the source code within each individual file, there will be notes on specific portions of the code which describe its intended purpose and links to other portions. We will be using Doxygen in addition to a higher level of source code documentation that will be provided on the Github notes filed when revisions are made to the program. There will also be notes on source code within our engineering notebooks which can be transcribed into a text file if deemed necessary

10.8.7 HARDWARE SCHEMATICS

There are no intentions of adding any hardware implementations to our project. The entire project can be completed utilizing strictly software programs and code. There will be documentation on what operating systems and computer hardware are necessary for execution of the software.

10.8.8 CAD FILES

CAD files do not apply to this project because our program will not utilize the AutoCAD software.

10.8.9 INSTALLATION SCRIPTS

Our program is intended to be executed using only an executable file along with any necessary files to run the executable file. There will not be any installation scripts. If plans change in the future, installation scripts will be provided as well as necessary files required for installation.

10.8.10 USER MANUAL

There will be user manual provided with all the source code and submitted material which will describe how to use the program and provide an overview of all the functionalities in the software. The user manual will be provided in a text readme file and will be provided within the software for the user to access while he/she is running the program. The user manual will be updated and revised along with any major updates to the software which might contradict the already posted material.

REFERENCES

- [1] Algonquin College. Subject guides: Essential study skills: Creating a semester plan, May 2012.
- [2] Baylor University. Semester by semester planner | university advisement | baylor university, Mar 2009.
- [3] Biola University. Term planning calendars, Aug 2017.
- [4] PennState University. Undergraduate advising handbook, Feb 2016.