Assignment M1

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Abstract—Personally, course registration is a stressful period where getting into popular courses is a race that takes preparation and skill. The current interface, OSCAR, offers little in the way of easing this process and unnecessarily makes the task more complex and difficult. To gain better understanding of the problem, context, and the users, the purpose of this paper is to compile a plan for the initial needfinding. The needfinding methods will include participant observation, surveys, and interviews.

1 Problem Space

The problem is not the existing OSCAR interface. The real problem is how do we design for a smooth course registration process? To answer this question, we must first look at the problem space.

The context in which course registration occurs differs based on the individual circumstances. For some, it is a leisurely process that happens hours or days after their time ticket starts. For others, it is a race to land in a course of their choice before others fill up the waitlist. The context we will focus on is the latter with consideration for the former.

1.1 Motivation & Goal

The motivation for registering early is about getting a preferred outcome for the courses the student planned on taking. The outcomes from most preferred to least is generally the following:

1) Getting into the preferred courses
2) Getting into the waitlist early
3) Getting into the waitlist late or getting into a second or third choice
4) Not being able to even waitlist for the preferred courses

1.2 Time Tickets

Time tickets specify what time that a student can start registering for courses. Students with more courses finished have earlier time tickets. Historically, time tickets had started early in the morning between 8 - 10 am in 15 minute increments. This has been changed to 24 hour increments, drastically increasing the time before the next wave of students register. Despite the change, pressure still exists to get priority for popular and required courses because they fill up quickly. Even with the change, the time tickets still start in the morning when most people are at work or heading into work. This means registration happens during work hours which presents challenges in the student's attention and availability.

1.3 User Needs

Taking a broader look beyond how course registration is currently implemented, students need to be able to register to courses. Details such as first come first serve, time tickets, and waitlists are all implementations of how the current interface attempts to fulfill the need. Without fixating on the implementations, I hope to better serve the need in a manner that is fair and less stressful.

2 User Types

This project will focus on students who are in Georgia Tech's OMSCS program. Within this category, there are several subcategories, some of which may overlap.

2.1 Novice Users

Students just starting OMSCS have the latest time tickets as well as the least experience in the process. The challenges these users face are:

1) Navigating something new - Figuring out the interface
2) Uncertainty - Lowest priority means more likely that their courses are full
3) Mental model gaps - Translating waitlist size to probability of getting in

These users need the interface to be clear and easy to understand.

2.2 Expert Users

Students that have been in the program for a while have advantages in experience and priority.

1) Familiar with the interface
2) Low uncertainty - Likely to get into courses anyways due to graduation priority

These students just need a usable interface that functions.

2.3 Busy Users

Many students in this program work full time jobs or are busy in other ways. These students have little to no time or attention to actively participate in a registration race. These students would prefer a streamlined interface or one that can be done at a more convenient time.

3 Needfinding Plan 1 - Surveys

3.1 Target Audience

The target audience for the surveys will be fellow students in this class as well as other OMSCS students I have worked with in the past. The survey will be created in SurveyMonkey and sent out via a link.

3.2 Survey Questions

1) How many courses have you completed so far (not including this semester)?
2) How many semesters have you completed so far (not including this one)?
3) Of the semesters, how many semesters have you gone into course registration and was unable to get the exact course(s) you wanted?
4) What research do you do to prepare for course registration?
5) What devices have you used to register for courses?
    a) ☐ - Desktop computer or laptop (including chromebooks)
    b) ☐ - Tablet
    c) ☐ - Smartphone
    d) ☐ - Other: _____
6) Which method do you use to register for courses?
    a) Typing in the CRN numbers in "Add or Drop Classes"

    b) Selecting courses and clicking “Register” in “Look Up Classes”
    c) Both
7) How would you rate the difficulty of the course registration process in OSCAR?
    a) 1 - Difficult
    b) 2 - Somewhat difficult
    c) 3 - Moderate
    d) 4 - Somewhat easy
    e) 5 - Easy
8) What, if any, specific difficulties do you have with course registration on OSCAR?
9) What, if any, hacks or workarounds do you use for course registration that OSCAR does not provide?
10) What, if any, slips or mistakes have happened during course registration?
11) What timezone do you live in?
12) Do you try to register at the very start of your time ticket? If so, how do you accomplish that?
13) What other obligations do you have?
    a) ☐ - Full time job
    b) ☐ - Childcare
    c) ☐ - Other: _____
14) Where are you physically when you register for courses?
    a) Work
    b) Home
    c) Other: _____
15) What, if any, distractions are competing for attention while registering for courses?
16) What do you think about the fairness of the current system?
17) How would you rate the course registration user experience?
    a) 1 - Unpleasant
    b) 2 - Somewhat unpleasant
    c) 3 - Neither pleasant nor unpleasant
    d) 4 - Pleasant
    e) 5 - Very pleasant

3.3 Data Inventory

The goal of this survey is to collect information on the following items using relevant survey questions:

1) Who are the users? (Questions: 1,2,3, and 12)
2) Where are the users? (Questions: 10 and 13)
3) What is the context of the task? (Question: 14)
4) What do they need? (Question: 5)
5) What are their tasks? (Questions: 4, 6, and 9)

3.4 Potential Biases

1) Confirmation Bias - Since I want to believe that OSCAR isn't good, I may have confirmation bias when analyzing the results. I will try to avoid this bias by being open to being wrong.
2) Observer Bias - The hypothesis is that OSCAR is not efficient in handling course registration. To avoid influencing the participants, the questions were worded carefully to avoid implying this.
3) Recall Bias - This is a big one because it has been a long time since the most recent registration and recalling prior ones are even further back. I will cover for this by doing the other needfinding methods.

4 Needfinding Plan 2 - Participant Observation

4.1 OSCAR

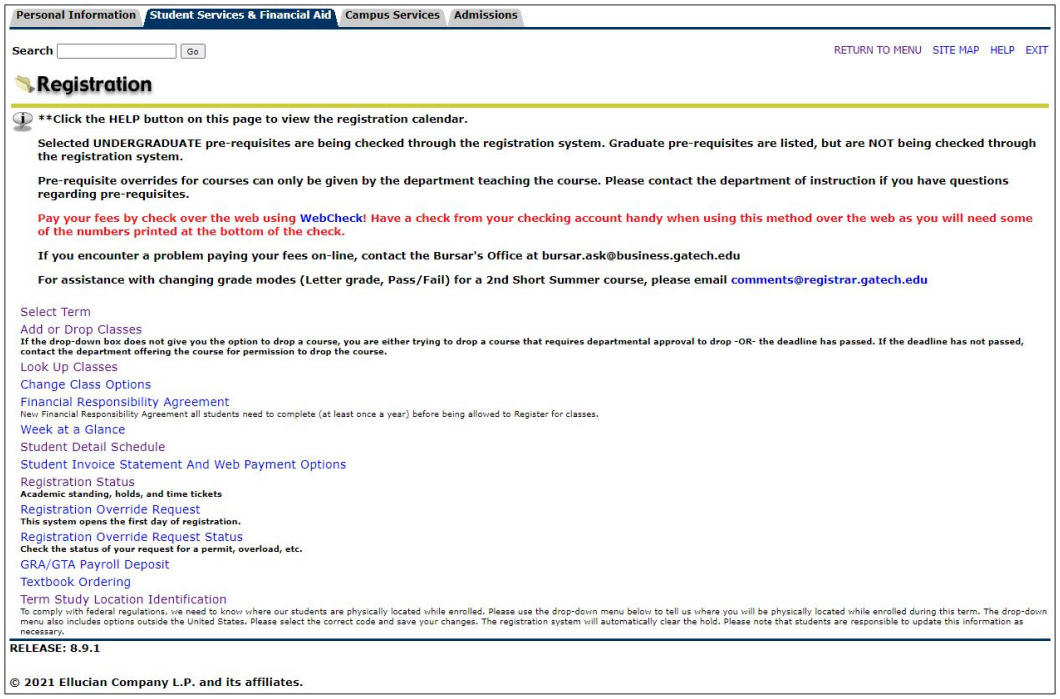


Figure 1—Registration menu © 2021 Ellucian Company L.P. and its affiliates. https://oscar.gatech.edu/bprod/bwcklibs.P_StoreTerm Screenshot by author.

OSCAR is the existing user interface that allows users to register for courses. OSCAR can be found in Buzzport. There are two ways for users to register for courses, "Look Up Courses" and "Add or Drop Courses" (See Appendix 5.1)

4.2 Plan

1) The task is defined as registering for courses
2) The performance measures that will be tracked are qualitative feedback and the number of page navigations and actions required. The criteria will be on efficiency and satisfaction.
3) The experiment will be done hypothetically based on experience and leverage references such as recorded video

These steps will be followed for both methods, as well as variations where I simulate a situation when a course is put on a waitlist. The biggest limitation to this method is that I have to simulate time tickets, waitlists, and adding courses. However, since I have done this process five times, I have enough memory of the

process, as well as video recordings of the process. Using the results of this observation will help me form better questions for the interviews.

4.3 Data Inventory

Since I will be evaluating the interface, I will have the answers to all the questions in the data inventory but with a sample size of one.

4.4 Potential Biases

1) Confirmation Bias - There are quantitative measure of efficiency that I can use to avoid this
2) Recall Bias - Since this requires recalling past events, there may be discrepancies

5 Needfinding Plan 3 - Interviews

Interviews are useful in gathering what the user is thinking while they are engaging in a task. I will conduct interviews on previous colleagues.

5.1 Plan

These interviews will be set in a similar way to the participant observation. The purpose is to get feedback from other people.

The structure of the interview will be a think-aloud as they go through the task and subtasks on OSCAR. I will try to determine the gulfs of execution and evaluation.

The questions will be asked before and while they are working on the task:

1) How many courses have you completed?
2) How many semesters have you completed?
3) What is your goal?
4) Is it clear what steps to take to accomplish your goal?
5) What steps are you taking to accomplish your goal? (As they go through the process)
6) What information do you find useful?
7) What information do you see unnecessary?
8) What other resources do you use?
9) Which method do you use?
10) What would you do if you were waitlisted for a course?

11) Is it clear that a course is full?
12) What did you expect to see when you took that action?

5.2 Data Inventory

The goal of this survey is to collect information on the following items using relevant interview questions:

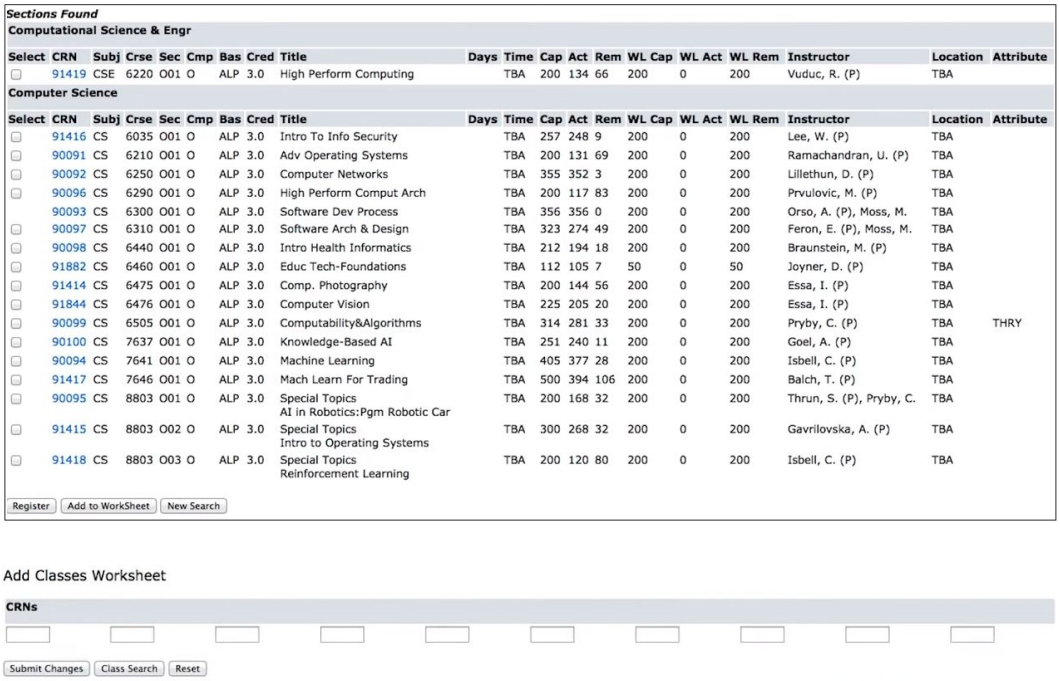
1) Who are the users (Questions 1 and 2)
2) What are their goals (Question 3)
3) What do they need (Questions 6 and 8)
4) What are their tasks (Question 5)
5) What are their subtasks (Question 5)

5.3 Potential Biases

1) Observer Bias - During the interview, some questions may be phrased in ways that may influence their answers. To limit this, I will be reviewing and rehearsing the questions to make them as neutral as possible.
2) Social Desirability Bias - It may be clear that I am looking for flaws in the current system and the participants may skew their answers to support me. To limit this, I will mix in questions where I am looking for both pros and cons of the current system. I will also refrain from mentioning any ideas of improving the systems.

6 APPENDICES

6.1 Appendix: Two methods of registering for courses



Sections Found

Computational Science & Engr

Select	CRN	Subj	Crse	Sec	Cmp	Bas	Cred	Title	Days	Time	Cap	Act	Rem	WL Cap	WL Act	WL Rem	Instructor	Location	Attribute
☐	91419	CSE	6220	O01	O	ALP	3.0	High Perform Computing		TBA	200	134	66	200	0	200	Vuduc, R. (P)	TBA	

Computer Science

Select	CRN	Subj	Crse	Sec	Cmp	Bas	Cred	Title	Days	Time	Cap	Act	Rem	WL Cap	WL Act	WL Rem	Instructor	Location	Attribute
☐	91416	CS	6035	O01	O	ALP	3.0	Intro To Info Security		TBA	257	248	9	200	0	200	Lee, W. (P)	TBA	
☐	90091	CS	6210	O01	O	ALP	3.0	Adv Operating Systems		TBA	200	131	69	200	0	200	Ramachandran, U. (P)	TBA	
☐	90092	CS	6250	O01	O	ALP	3.0	Computer Networks		TBA	355	352	3	200	0	200	Lillethun, D. (P)	TBA	
☐	90096	CS	6290	O01	O	ALP	3.0	High Perform Comput Arch		TBA	200	117	83	200	0	200	Prvulovic, M. (P)	TBA	
	90093	CS	6300	O01	O	ALP	3.0	Software Dev Process		TBA	356	356	0	200	0	200	Orso, A. (P), Moss, M.	TBA	
☐	90097	CS	6310	O01	O	ALP	3.0	Software Arch & Design		TBA	323	274	49	200	0	200	Feron, E. (P), Moss, M.	TBA	
☐	90098	CS	6440	O01	O	ALP	3.0	Intro Health Informatics		TBA	212	194	18	200	0	200	Braunstein, M. (P)	TBA	
☐	91882	CS	6460	O01	O	ALP	3.0	Educ Tech-Foundations		TBA	112	105	7	50	0	50	Joyner, D. (P)	TBA	
☐	91414	CS	6475	O01	O	ALP	3.0	Comp. Photography		TBA	200	144	56	200	0	200	Essa, I. (P)	TBA	
☐	91844	CS	6476	O01	O	ALP	3.0	Computer Vision		TBA	225	205	20	200	0	200	Essa, I. (P)	TBA	
☐	90099	CS	6505	O01	O	ALP	3.0	Computability&Algorithms		TBA	314	281	33	200	0	200	Pryby, C. (P)	TBA	THRY
☐	90100	CS	7637	O01	O	ALP	3.0	Knowledge-Based AI		TBA	251	240	11	200	0	200	Goel, A. (P)	TBA	
☐	90094	CS	7641	O01	O	ALP	3.0	Machine Learning		TBA	405	377	28	200	0	200	Isbell, C. (P)	TBA	
☐	91417	CS	7646	O01	O	ALP	3.0	Mach Learn For Trading		TBA	500	394	106	200	0	200	Balch, T. (P)	TBA	
☐	90095	CS	8803	O01	O	ALP	3.0	Special Topics AI in Robotics:Pgm Robotic Car		TBA	200	168	32	200	0	200	Thrun, S. (P), Pryby, C.	TBA	
☐	91415	CS	8803	O02	O	ALP	3.0	Special Topics Intro to Operating Systems		TBA	300	268	32	200	0	200	Gavrilovska, A. (P)	TBA	
☐	91418	CS	8803	O03	O	ALP	3.0	Special Topics Reinforcement Learning		TBA	200	120	80	200	0	200	Isbell, C. (P)	TBA	

Register | Add to WorkSheet | New Search

Add Classes Worksheet

CRNs

Submit Changes | Class Search | Reset

Figure 6.1—Look Up Courses (top) Add Classes Worksheet (bottom) © 2021 Ellucian Company L.P. and its affiliates. Screenshot by author