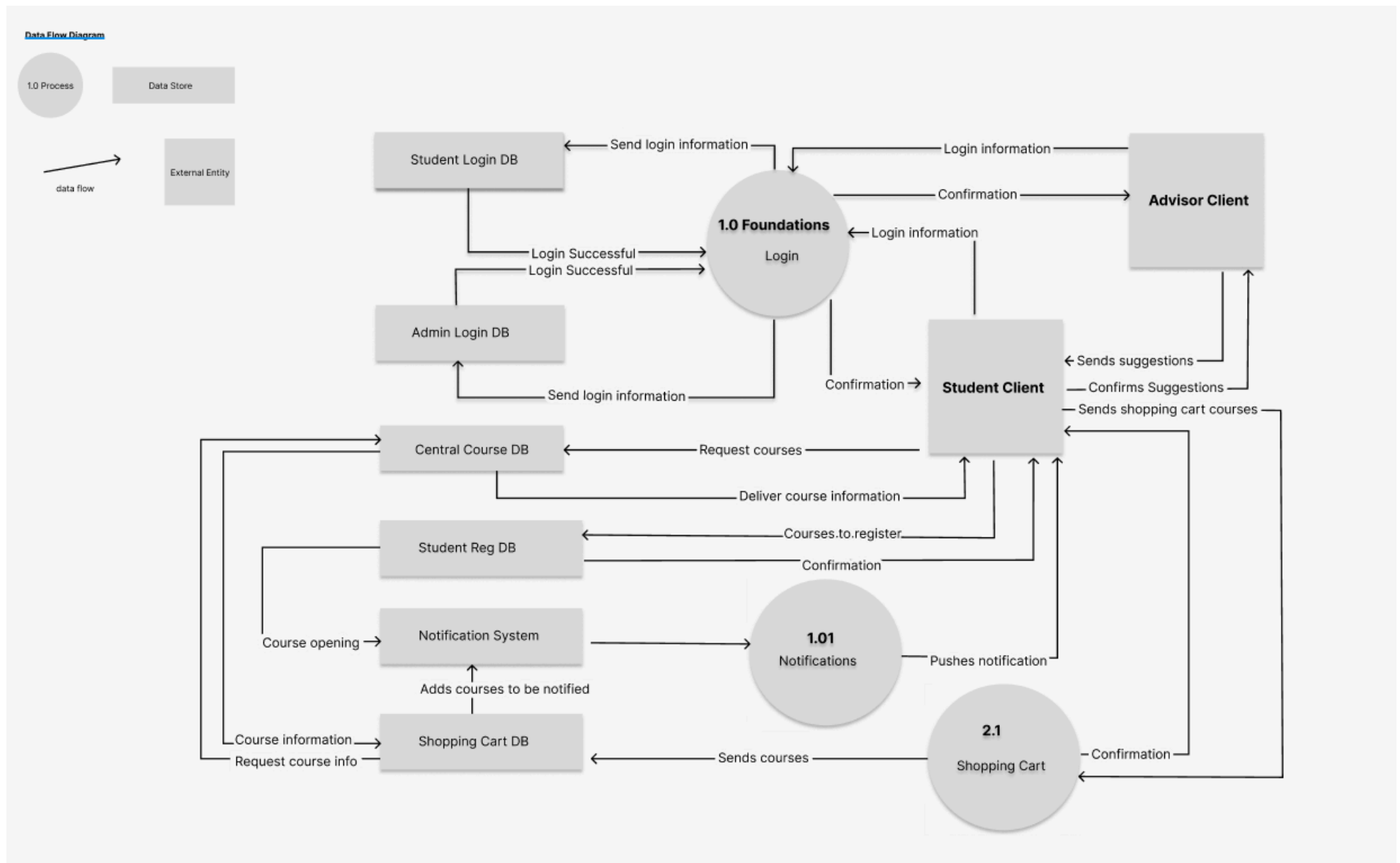


Data Flow

Last updated by | Melaya La Madrid | Mar 9, 2025 at 11:27 PM PDT



Waitlist Workflow

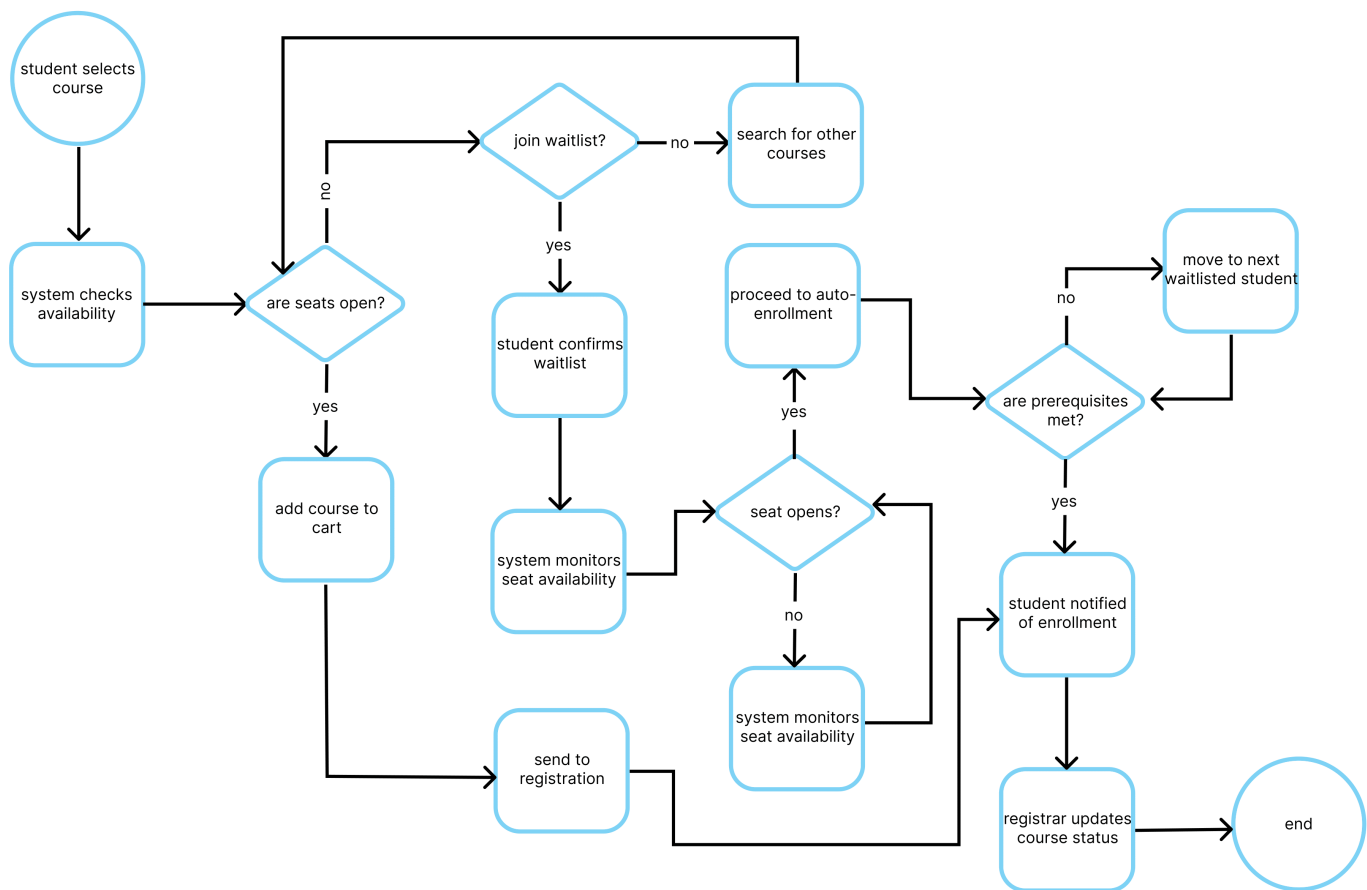
Last updated by | Danae Rivas | Mar 9, 2025 at 11:55 PM PDT

Overview

This workflow diagram represents the Secure User Authentication Process within the course registration system. It outlines how students and faculty securely log in to their accounts while ensuring compliance with high-security standards. The process includes multi-factor authentication (MFA), session tracking, and secure logouts to enhance both security and system performance. This automation minimizes unauthorized access risks and reduces administrative intervention.

Diagram Link

[Frame 1.pdf](#)



Key Steps:

1. **Student selects a course** – The student attempts to enroll in a desired class.
2. **System checks seat availability** – The system verifies whether seats are open.
3. **If seats are available** – The student can add the course to their cart and proceed to registration.
4. **If the class is full** – The system asks whether the student wants to join the waitlist.
5. **If the student joins the waitlist** – The system continuously monitors seat availability.

6. **If a seat opens** – The system checks if the student meets prerequisites.
7. **If prerequisites are met** – The student is auto-enrolled, and a confirmation notification is sent.
8. **If prerequisites are not met** – The system moves to the next waitlisted student.
9. **If the student chooses not to waitlist** – They are directed to search for other available courses.

Alignment with Epic:**Epic: High System Performance & Security Compliance**

- Ensures system stability and prevents crashes during peak usage times.
- Protects sensitive student and faculty data through secure authentication.
- Automates performance scaling to enhance system efficiency.
- Implements security monitoring to detect and prevent threats in real-time.

System Security Workflow

Last updated by | Danae Rivas | Mar 9, 2025 at 11:56 PM PDT

Overview

This workflow diagram illustrates the login authentication and security verification process in the system, ensuring compliance with high-performance security standards. It outlines the steps involved in securely granting user access while tracking activity and maintaining data integrity.

Diagram Link

[Frame 2.pdf](#)

Key Steps

1. **User Initiates Login** – The user provides a username and password to access the system.
2. **Account Verification** – The system checks if the account exists.
 - If the account does not exist, an error message is displayed.
3. **Multi-Factor Authentication (MFA)** – If the account exists, the user must complete an MFA check.
 - If MFA fails, the user is prompted to retry.
 - If MFA succeeds, the login proceeds.
4. **Successful Login** – The system logs the user in and tracks session activity.
5. **Session Management** – User session activity is continuously monitored.
6. **Logout & Data Tracking** – When the user logs out, the system logs the event, closes the session, and securely stores login activity.

Alignment with Epic:

Epic: High System Performance & Security Compliance

- Ensures strong authentication methods to protect sensitive student and faculty data.
- Reduces unauthorized access risks by enforcing MFA and credential validation.
- Maintains system performance by efficiently handling login attempts and session management.
- Supports compliance with security standards by tracking logins and monitoring suspicious activities.

Mobile Workflow

Last updated by | Livia Lazaga | Mar 9, 2025 at 11:21 PM PDT

Overview:

This workflow diagram represents the **Mobile-Friendly UI** process in the course registration system. It highlights how students can seamlessly navigate the registration process on a mobile device, ensuring accessibility and ease of use. The goal is to streamline the experience for mobile users by making key actions—browsing, selecting, and registering for classes—intuitive and efficient.

Diagram Link

[Flowchart.pdf](#)

Key Steps:

1. **Student logs into the system** – The student enters credentials to access the registration portal.
2. **System verifies login** – If login is unsuccessful, the student is prompted to reset their password and try again.
3. **Student browses available classes** – The system presents course listings with filtering and sorting options.
4. **Student adds courses to the cart** – Selected classes are placed in the shopping cart for review.
5. **System prompts confirmation** – The student reviews the selected courses and confirms registration.
6. **If a scheduling conflict exists** – The system alerts the student and provides options to adjust selections.
7. **If registration is successful** – The system sends a confirmation email and displays the updated schedule.
8. **If registration fails** – The student is redirected to adjust their schedule or find alternative classes.

Alignment with Epic:

Epic: Mobile-Friendly UI

- Ensures a smooth and intuitive course registration process on mobile devices.
- Enhances accessibility by adapting to different screen sizes and input methods.
- Reduces registration time by **30%** through optimized mobile workflows.
- Improves student engagement by allowing flexibility in when and where they register.

User Interface Wireframes

Last updated by | Livia Lazaga | Mar 14, 2025 at 10:22 PM PDT

Mobile Responsiveness

1 Mobile Friendly UI | New

Mobile Interface

1

GSU

2

3

Q Math 20X

4

5

Filters

Online In-Person AM

Results

MATH 207

MATH 209

MATH 208

All Results

6

MATH 207

Differential Equations

Online AM

Meets Major Requirement

7

MATH 209

Linear Analysis

In-Person AM

Meets Major Requirement

CONFLICT: PSYCH 100

8

Profile

Search

My Courses

Blue Key

1

Condensed navigation menu appears as a hamburger icon to save screen space

2

Search bar spans full width of screen for easy tap access

3

Full filters hidden behind filter button icon to save screen space

4

Large filter option icons for readability and touch compatibility

5

'All Results' button to save on screen space

6

Results appear in a single-column card format for better readability on smaller screens

7

Bottom navigation bar for easy tap access between pages

Tablet Interface

1

GSU

2

3

Q Math 20X

4

5

Filters

Online In-Person AM

Results

MATH 207

MATH 209

MATH 208

All Results

6

MATH 207

Differential Equations

Online AM

Meets Major Requirement

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Linear Analysis

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Meets Major Requirement

CONFLICT: PSYCH 100

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Results appear in a single-column card format for better readability on smaller screens

7

Bottom navigation bar for easy tap access between pages

Desktop Interface

1

GSU

2

Schedule Search Profile

3

4

Q Math 20X

5

6

Filters

Location Online In-Person

Time AM PM

Days MWF TTh

Credits 1-2 3-4

7

MATH 207

Differential Equations

Online AM MWF

3-4

Meets Major Requirement

8

MATH 207

Differential Equations

Online AM TTh

3-4

Meets Major Requirement

9

MATH 209

Linear Analysis

Online AM MWF

1-2

Meets Major Requirement

CONFLICT: PSYCH 100

10

MATH 209

Linear Analysis

Online AM TTh

1-2

Meets Major Requirement

CONFLICT: PSYCH 100

11

Profile

Search

My Courses

Red Key

1

Expanded, full-width navigation bar displays all key menu items for quick access

2

Enlarged search bar for visibility on screen size, but does not take up full width for readability

3

Advanced filtering options on full display, utilizing increased screen space

4

Search button included with more screen space, allows to further define search before entering

5

Results appear in 2 column grid to maximize data visibility for users

6

Course cards display advanced filtering options and matches; more informative records

7

Enlarged cards to fit screen size and allow for easy readability

The mobile interface is designed to meet the needs of students who prefer mobile-first interactions for on-the-go registration. This interface features clear navigation, large touch-friendly buttons, and concise course details to ensure students can efficiently add, update, or delete courses from their cart. The mobile phone interface enhances the user experience with improved efficiency while maintaining functionality.

The tablet interface offers a balance between mobility and larger screen space, catering to users who prefer this form of device. This interface includes touch interactions while also utilizing the additional space to

https://dev.azure.com/Group17INFO380/Group Project/_wiki/wikis/INFO-380-GRP-17.wiki/32/User-Interface-Wireframes

1/4

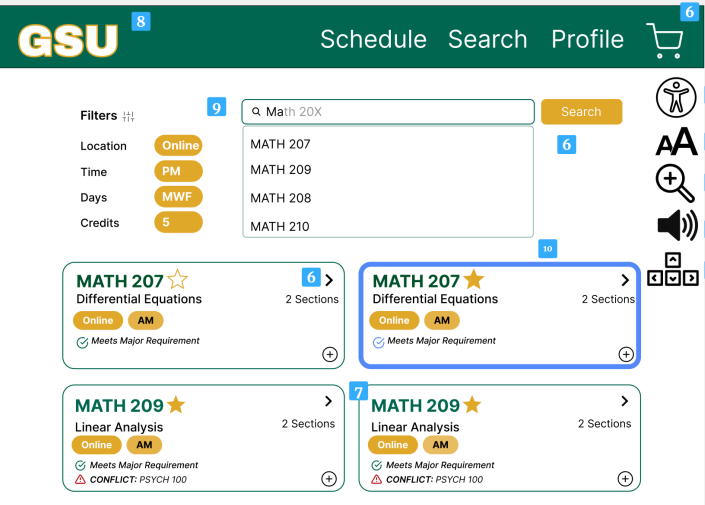
provide more course details.

The desktop interface is tailored to display detailed data on courses and more advanced filtering options, which might be used by IT staff, academic advisors, and other faculty that must manage large data sets of course information.

Accessibility Features

22 Accessible and Inclusive UX | New

Accessibility Interface (Desktop)



Key

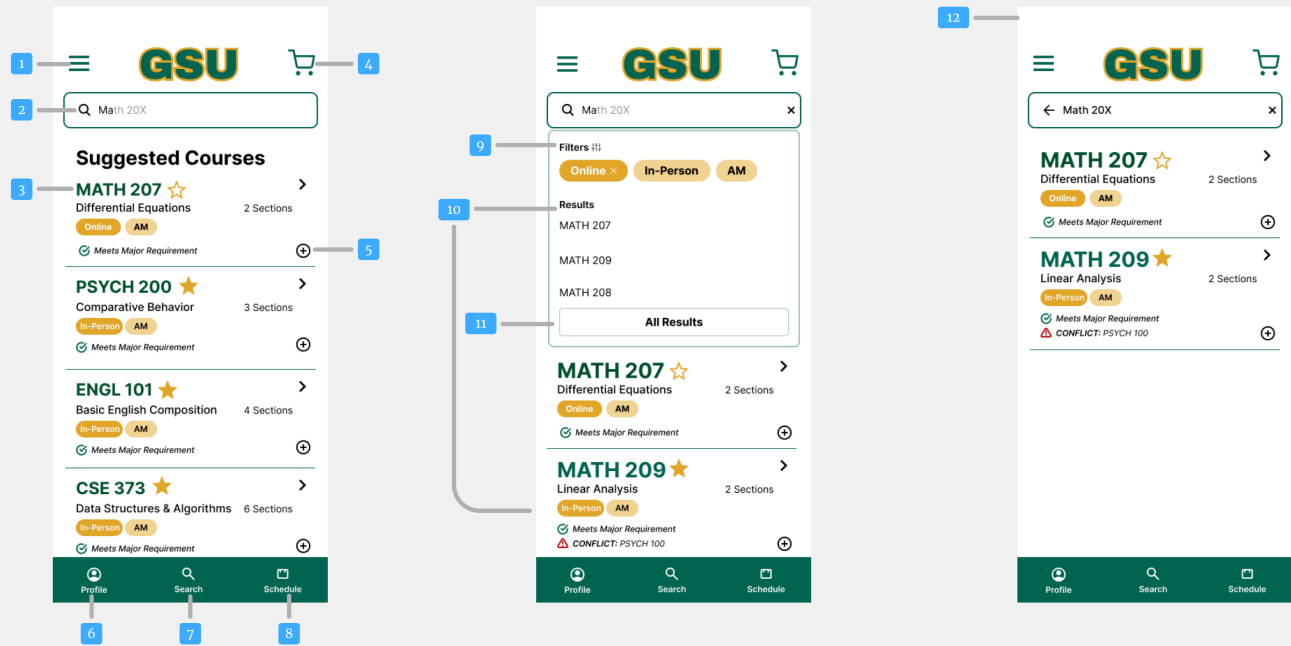
- 1 Icon indicating accessibility mode is active
- 2 Text size adjustment icon allows users to toggle between standard, large, and extra-large text sizes. Changes apply dynamically across all text elements without breaking layout
- 3 Magnify tool icon next to text size toggle, both tools for visually impaired users. Allows users to zoom in on content areas.
- 4 Text-to-speech activation icon; activates screen reader support, reading aloud key content and following ARIA labels and structure
- 5 Keyboard navigation activation icon; activates keyboard shortcuts to navigate page such as 'Tab' to move through elements, 'Enter' to select options, and 'Esc' to close menus
- 6 All buttons, links, and icons include ARIA labels describing their purpose for screen readers; e.g., 'Search Button', 'View Course Details Link', 'Access Cart'
- 7 Course cards feature clear heading structures (<h2>, <h3>) and labeled content sections to guide screen reader navigation)
- 8 Alternative (alt attributes) provided for all icons, buttons, and images; e.g. "GSU logo"
- 9 All interactive elements (buttons, inputs, links) are reachable via keyboard tabling
- 10 Focus indicators (outlines) highlight active elements when using keyboard navigation

The accessibility version of the interface prioritizes inclusivity, ensuring students with disabilities can effectively interact with the system. Key accessibility features include text sizing options, a magnify tool, text-to-speech and screen reader support, and keyboard navigation for non-mouse users. Additionally, proper color contrast, clear visual hierarchy, and intuitive icons are featured across all interfaces. These enhancements align with Web Content Accessibility Guidelines (WCAG), ensuring a positive and equitable experience for all users.

Smart Course Search and Recommendations

24 Smart Course Search and Reccomendations | New

Smart Course Search and Recommendations



Annotation Notes

- 1 Condensed navigation menu appears as a hamburger icon to save screen space. Allows access to accessibility settings.
- 2 Search Bar that provides predictive suggestions as users type. When tapped, expands to show Filters [9] and Auto suggested Results [10]
- 3 Course listing summarizes important information about the course including
 - Course Code
 - Course Title
 - Course Preferences (Online, In Person, AM, PM)
 - Major Requirements
 - Number of Sections offered
 - Option to favorite the course
- 4 Shopping Cart icon allows access to the user's cart where they can send their selected courses to registration
- 5 Plus icon, when tapped, adds the corresponding course to the Cart
- 6 Profile tab of the navigation bar, when tapped, navigates to the Profile page of the GSU registration app.
- 7 Search tab of the navigation bar, when tapped, navigates to the Suggested Courses and main Search page of the GSU registration app.
- 8 Schedule tab of the navigation bar, when tapped, navigates to the My Courses and Waitlist Status page of the GSU registration app.
- 9 In the search dropdown (appears when condensed search bar is tapped), this Filter button gives filter and preference options such as times, days, credits, etc. Applied filters appear below the filter button
- 10 the Smart course suggestions and predictive algorithm provides suggested search results
- 11 All Results button populates all results related to the inputted search [12]
- 12 When All Results button is tapped, a page with all related courses to the inputted search is generated

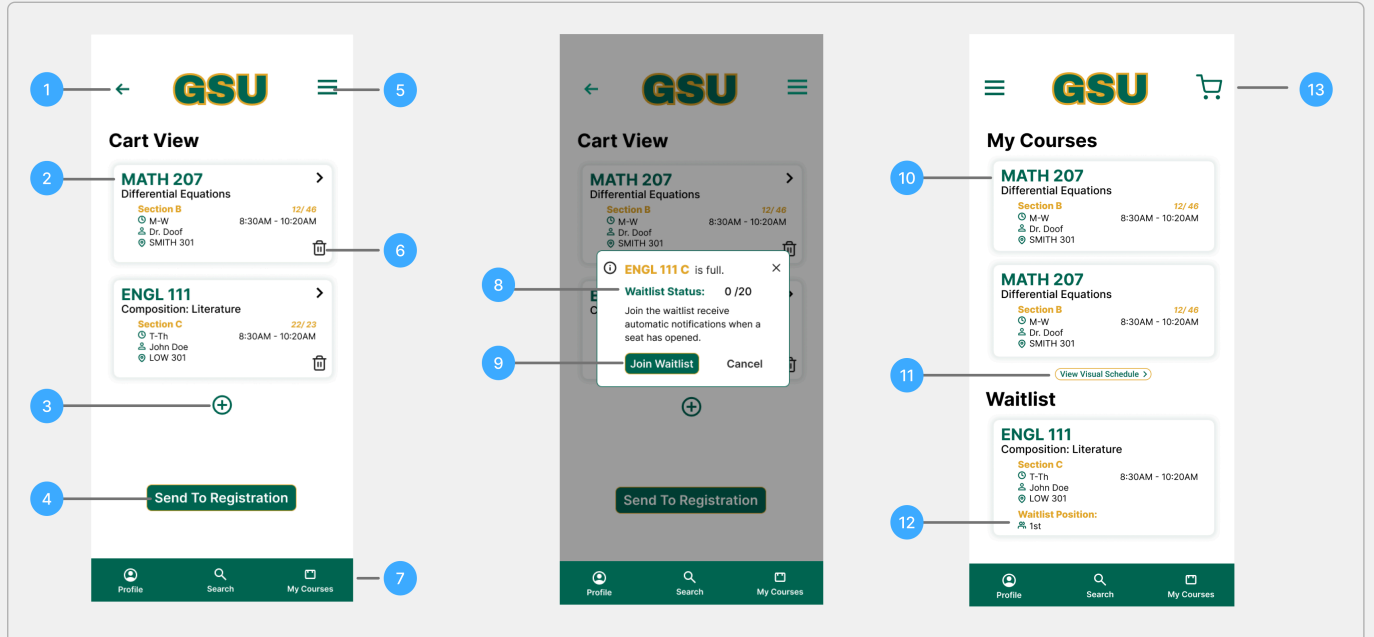
The GSU registration app interface is designed to simplify course discovery through an intelligent search and recommendation system. The predictive search bar provides real-time autofill suggestions as users type, helping them quickly find relevant courses. Specialized course suggestions leverage past enrollment data, major requirements, and real-time availability to present personalized options. Advanced filtering options allow students to refine their search based on time, credits, and course format, ensuring they find the best-fit courses efficiently. With seamless navigation, a streamlined shopping cart, and smart recommendations, the system minimizes registration errors and enhances the overall student experience.

Shopping Cart Enrollment and Automated Waitlist

26 Automated Waitlist and Enrollment Management

New

Shopping Cart Enrollment



Annotation Notes

- 1 Back button. When clicked, the user is navigated back to the previous page they were on.
- 2 Course selection within the cart view. Includes information about the time, days, location, section, professor, and real-time capacity updates for the course.
- 3 This plus icon leads users back to the course search page, allowing them to find more courses to add to their cart.
- 4 Send to registration button, when tapped, takes all of the courses in the cart and sends them directly to the university registrar, enrolling them in the course. If the course is full when they send to registration, they will receive the notification shown in [8]
- 5 Condensed navigation menu appears as a hamburger icon to save screen space. Allows access to accessibility settings.
- 6 The trash icon allows users to remove a course selection from their cart easily, allowing users to manage and edit their course selections before finalizing their enrollments
- 7 The navigation bar, which appears at the bottom of every screen in the app, provides direct navigation to this user's profile, the search page, and the courses they are currently enrolled in or waitlisted for.
- 8 When a student attempts to enroll in a full course, they receive a notification that explains that the course is full, and displays the real-time waitlist status
- 9 A set of buttons that allows students to either confirm joining the waitlist or cancel joining the waitlist. The Join Waitlist button is filled in green, highlighting the main option and differentiating the action clearly from the cancelation button.
- 10 The course listing for a course a student is enrolled in, appearing under the subheading "My Courses". This course card shows the course code, section, capacity status, day, time, professor, and location.
- 11 A button that leads students to a time schedule weekly overview of their courses.
- 12 A course card listing that shows the course code, name, section, time, professor, and location for a course a student is waitlisted for. This card also displays the student's real-time course position status.
- 13 Cart icon button navigates students to their cart view page.

The GSU registration app interface is designed to streamline the course enrollment process with an intuitive shopping cart and auto waitlist feature. The shopping cart allows students to easily add, review, and manage their selected courses before registration. When a course is full, the auto waitlist feature automatically places students on a waitlist, ensuring they are notified of any available spots. The cart also provides real-time updates on course availability and waitlist status, keeping students informed throughout the registration process. With its user-friendly design and seamless integration, the system enhances course enrollment efficiency and minimizes the chance of missing out on desired courses.