Okay, I have thoroughly analyzed the provided JavaScript and HTML code for the "Lyceum" application. Based on this analysis, here is a comprehensive user guide:

**Lyceum User Guide**

Welcome to Lyceum, your personal learning platform designed for both structured courses and flexible test generation! This guide will walk you through the features and how to use them effectively.

**1. Introduction: What is Lyceum?**

Lyceum combines two main functionalities:

- **Test Generation:** Create practice tests based on specific subjects and chapters you define (like "Fundamentals of Physics"). Track your progress, identify weak areas, and manage studied content.

- **Structured Courses:** Enroll in pre-defined courses with video lectures, PDF materials, assignments, exams, and progress tracking towards a final grade and certificate.

It also includes features like AI-powered explanations, note-taking, document management, and communication tools.

**2. Getting Started**

- **Login/Signup:**

  - Access Lyceum via the main index.html file.

  - You'll be presented with a Login/Sign Up section.

  - **Login:** Enter your registered Email/Username and Password.

  - **Sign Up:** Provide a unique Username (3-20 letters, numbers, underscores), a valid Email, and a Password (min. 6 characters).

  - **Google Sign-in:** You can also sign in or sign up using your Google account by clicking the "Sign In with Google" button.

- **Onboarding (First-Time Users):**

  - If you're a new user, you might see an onboarding screen after signing in.

  - You'll be asked to select an **Initial Subject** for the Test Generation feature (e.g., "Fundamentals of Physics") OR you can choose to **Browse Courses** immediately.

  - Selecting a subject completes the initial setup for Test Generation. Choosing to browse courses will take you to the course catalog. You can always manage subjects and enroll in courses later.

**3. Main Interface Overview**

Once logged in (and past onboarding), you'll see the main application interface:

- **Sidebar (Left):** Your main navigation hub. Contains links to different sections. It dynamically switches between:
    - **Standard Navigation:** Access Home, Test Generation features, Course Browsing, Profile, Inbox, etc.
    - **Course Navigation:** Appears when you enter a specific course, providing links relevant to that course (Dashboard, Study Material, Assignments, etc.).
    - **Mobile:** On smaller screens, the sidebar is hidden by default. Tap the menu icon (☰) in the top-left to open/close it.
- **Header (Top):**
    - **Mobile:** Shows the menu button and Lyceum title.
    - **Desktop:** Shows the currently selected **Subject** (for Test Generation) or **Course** context and your **User Profile** (picture, name, admin indicator if applicable).
- **Main Content Area (Center/Right):** This is where the main content for the selected feature (Dashboard, Test Generation, Course Material, etc.) is displayed.

**4. Core Features: Test Generation (Standard Mode)**

This section focuses on generating practice tests based on subjects you manage.

- **Accessing Test Generation:**
    - From the **Home Dashboard**.
    - Via the **TestGen Dashboard** dropdown in the sidebar. Click "Generate Test".
- **Managing Subjects (ui_subjects.js, ui_core.js -> sidebar-standard-nav):**
    - Go to **TestGen Dashboard** > **Manage Subjects**.
    - **View:** See a list of your current subjects (e.g., "Fundamentals of Physics").
    - **Select:** Choose the subject you want to work with for test generation. The selected subject appears in the header.
    - **Add:** Define a new subject, giving it a name and specifying the **Markdown Filename** (e.g., Quantum_Mechanics.md) where its chapter/question structure is defined. Crucially, this .md file must exist in the application's root folder. Set the default maximum questions per test.
    - **Edit:** Modify the name, filename, max questions, MCQ/Problem ratio, and default duration for an existing subject. Changing the filename will reload chapter data from the new file.
    - **Delete:** Remove a subject and all its associated progress data (irreversible). You cannot delete the last subject.
- **Managing Studied Chapters (ui_studied_chapters.js):**

- Go to **TestGen Dashboard** > **Studied Chapters**.

- Check the boxes next to chapters you've already studied for the currently selected subject.

- This list is used when you select the "Test Studied Chapters Only" option. Changes are saved automatically.

- **Generating a Test (ui_test_generation.js):**

  - From the **TestGen Dashboard** (or Home), click:

    - **Test Studied Chapters Only:** Creates a test based on chapters marked as studied.

    - **Test Specific Chapters:** Allows you to manually select chapters for the test via checkboxes.

  - **Choose Format:** After selecting chapters, choose:

    - **Online Test:** Take the test interactively within Lyceum.

    - **PDF Test:** Download .pdf and .tex files for the questions and solutions to take offline.

- **Taking an Online Test (ui_online_test.js):**

  - A dedicated interface appears with a timer.

  - Navigate using **Previous/Next** buttons.

  - Answer MCQs by selecting radio buttons or type answers/steps for Problems in the text area. Your answers are saved as you go.

  - Submit the test using the **Submit Test** button (appears on the last question) or the **Submit Now** button (appears in the last 5 minutes or if forced).

  - Time's up? The test auto-submits.

- **Viewing Exam Results & Review (exam_storage.js, ui_exams_dashboard.js):**

  - Go to **TestGen Dashboard** > **Exams Dashboard**.

  - **Completed Exam History:** Lists your past TestGen exams for the current subject.

  - Click **Review** (or **Details** for older PDF exams) to see:

    - Overall score and percentage.

    - AI-generated overall feedback (strengths, weaknesses, recommendations).

    - A question-by-question breakdown showing your answer, the correct answer (for MCQs), AI marking feedback (for problems), and points awarded.

- **Explain (AI):** Click this button on a question to get a detailed step-by-step explanation from the AI tutor. You can ask follow-up questions in the explanation panel.
- **Report Issue:** If you find an error in the question, marking, or explanation, use this button to send a report to the admin.

- **Entering PDF Exam Results (ui_exams_dashboard.js):**
  - If you generated a PDF test, it appears in the **Pending PDF Exams** list on the Exams Dashboard.
  - Click **Enter Results**.
  - Input the number of questions you got **WRONG** for each chapter covered in the PDF test.
  - Submit the results. This updates your chapter progress statistics.

- **Tracking TestGen Progress (ui_progress_dashboard.js):**
  - Go to **TestGen Dashboard** > **Progress (Test Gen)**.
  - View charts showing your performance across chapters for the currently selected subject:
    - Difficulty Score (%)
    - Consecutive Mastery (tests without errors)
    - Questions Attempted
    - Wrong Answers

- **Import/Export (ui_import_export.js):**
  - Go to **TestGen Dashboard** > **Import / Export**.
  - **Export:** Download a JSON backup file containing only your Test Generation data (subjects, progress, history) for the logged-in user.
  - **Import:** Upload a previously exported JSON file. **WARNING:** This completely OVERWRITES your current Test Generation data. Course data is unaffected. Use with caution! Imported data is re-synced with the latest chapter definitions from the Markdown files.

## 5. Core Features: Structured Courses

This section covers enrolling in and progressing through structured courses.

- **Browsing Courses (ui_courses.js):**
  - Click **Browse Courses** in the sidebar.
  - Search for courses by name, tag, or description.

- View the list of available courses (only 'approved' courses are shown unless you are an Admin).
- Click on a course title or **View Details** to learn more about its content, chapters, and status.

- **Enrolling in a Course (ui_course_enrollment.js):**
  - From the course details page or browse list, click **Enroll**.
  - Choose your **Enrollment Mode**:
    - **Full Enrollment:** Enables all features - assignments, exams, progress tracking, grading, certificate eligibility.
    - **Viewer Mode:** Provides read-only access to study materials (videos, PDFs, notes). Assignments, progress, and certificates are disabled.
  - If choosing Full Enrollment, select your desired **Learning Pace** (Compact, Mediocre, Lenient, or Custom days). This influences your daily objectives.
  - Click **Enroll & Start Learning**.

- **My Courses Dashboard (ui_course_dashboard.js):**
  - Click **My Courses** in the sidebar.
  - See a list of all courses you are enrolled in.
  - Each card shows the course name, status, grade (if applicable), progress bar (if applicable), and attendance. Viewer mode courses are indicated.
  - Click **Enter Course** (or **View Materials** for viewers) to go to the specific course dashboard.

- **Course Dashboard (ui_course_dashboard.js):**
  - Appears when you enter a specific course. The sidebar changes to **Course Navigation**.
  - Displays the course name.
  - Shows **Today's Objective** (e.g., "Study Chapter 5", "Complete Assignment 3") based on your pace and progress (not shown in Viewer Mode).
  - Provides **Quick Links** to:
    - **Study Material:** Access the full chapter list and materials.
    - **Next Lesson:** Jumps directly to the study material for the chapter you should be working on based on your pace (or the chapter list if viewer).
    - **Assignments & Exams:** View and start available daily assignments, weekly/midcourse/final exams (disabled for viewers).
    - **Notes & Documents:** Manage your personal notes and uploads for the course.

- **Detailed Progress:** View your scores, charts, and potential certificate (disabled for viewers).
- Includes an **Unenroll** button (use with caution - deletes progress).
- **Viewing Study Material (ui_course_study_material.js, ui_course_content_menu.js):**
  - Access via the **Study Material** or **Next Lesson** links.
  - Initially shows a **Content Menu** listing all chapters. Click a chapter to view its materials.
  - **Chapter View:**
    - **Video Player:** Watch embedded YouTube lectures. Navigate between multiple videos for the chapter if available.
    - **Transcription:** View the video transcript (if available). Click lines to jump to that part of the video. Expand/collapse the view.
    - **PDF Viewer:** Read associated PDF documents page by page. Navigate using Prev/Next buttons.
    - **Chapter Tools:**
      - **Explain Selection (AI):** Select text in the transcription and click to get an AI explanation.
      - **Ask AI (Transcript):** Ask the AI a question about the entire video transcript.
      - **Ask AI (Page):** (PDF Viewer) Ask the AI about the currently visible PDF page (uses image analysis).
      - **Ask AI (Doc):** (PDF Viewer) Ask the AI about the entire PDF document content.
      - **Formulas/Summary (AI):** Generate a formula sheet or chapter summary based on the available PDF/transcription content. Download options are provided.
    - **Progress Tracking (Full Enrollment):** Your watch time for videos and pages viewed in PDFs contribute to your chapter completion percentage, visible in the content menu.
- **Taking Course Assignments & Exams (ui_course_assignments_exams.js):**
  - Access via the **Assignments & Exams** link from the course dashboard or sidebar.
  - Lists available Daily Assignments, Weekly Exams, Midcourse Exams, and Final Exams based on your progress and the course schedule.
  - Click **Start** next to an available activity.
  - This launches the **Online Test UI** (same interface as Test Generation).

- Complete and submit the test. Results are automatically recorded in your course progress.

- **Skip Exams (ui_course_study_material.js):**

  - On the **Study Material** (content menu) page, each chapter (if not yet studied and content exists) has a **Take Skip Exam** button.

  - Clicking this generates an MCQ-based exam for that chapter.

  - Passing this exam (typically >=70-75%) marks the chapter as studied, potentially letting you skip watching videos/reading PDFs for it.

- **Viewing Course Progress (ui_course_progress.js):**

  - Access via the **Detailed Progress** link.

  - See your **Overall Grade** (calculated based on component weights defined in config.js), **Attendance**, and **Pace**.

  - View **Performance Trend Charts** for assignments, weekly exams, midcourse exams, and skip exam attempts.

  - See a **Score Breakdown** table summarizing average scores for each component.

  - **Certificate:** If you've completed the course with a passing grade (not 'F'), a preview of your certificate will be generated. You can download it as a PNG or PDF.

- **Notes & Documents (ui_notes_documents.js):**

  - Access via the **Notes & Documents** link.

  - Select a chapter from the menu.

  - **Your Notes:**

    - **Add Note:** Create text notes for the selected chapter.

    - **Upload File:** Upload files (.txt, .md, .pdf, .tex, images) associated with the chapter. Text/PDF content may be extracted for viewing/AI actions.

    - **View/Edit/Delete:** Manage your notes and uploads.

    - **AI Actions (on Text/LaTeX Notes):**

      - **Review Note (AI):** Get feedback on your note compared to the chapter's source material. Generates a new "AI Review" note.

      - **Improve with AI:** Ask the AI to enhance clarity, structure, and add relevant equations (appends suggestions).

      - **Convert to LaTeX (AI):** Transform your text note into LaTeX format.

    - **AI Actions (on Image Uploads):**

- **OCR & LaTeX (AI):** Use AI Vision to extract text/math from an uploaded image and convert it into a new LaTeX note.
  - **Download:** Download LaTeX notes as .tex files. Download Text, LaTeX, or AI Review notes as .pdf. Preview/Print LaTeX notes.

## 6. Account Management

- **Your Profile (ui_user_profile.js, ui_profile_picture.js):**
  - Access via the **Your Profile** link in the sidebar or by clicking your name/picture in the header (desktop).
  - **Update Display Name:** Change the name shown throughout the application.
  - **Update Profile Picture:** Click the picture area, select an image file (max 5MB), crop it using the circular cropper, and click "Crop & Use".
  - **View Badges:** See badges awarded for completing courses.
  - **View Basic Info:** See your Username (read-only after signup), Email, and User ID.
  - **Log Out:** Sign out of your Lyceum account.
- **Inbox (ui_inbox.js):**
  - Access via the **Inbox** link in the sidebar. A red dot/number indicates unread messages.
  - View messages from the Admin.
  - Click a message summary to expand and read the full content. Unread messages are marked as read automatically when expanded.
  - **Contact Admin:** Send a message directly to the administrator.
  - **Reply to Admin:** Reply to a specific message received from the Admin.
  - **Delete:** Remove messages from your inbox.

## 7. Admin Panel (Administrators Only)

- If your account has Admin privileges (matches ADMIN_UID in config.js), an **Admin Panel** link appears in the sidebar.
- Provides tools to:
  - View and reply to user feedback and exam issue reports.
  - Manage courses (approve, reject, edit, delete reported courses, add new courses).
  - Manage user course progress (view enrollments, manually set status/grade).
  - Manage user badges (view, add, remove).
  - Manage admin tasks/errors.

- Assign YouTube videos from playlists to specific course chapters.
- Delete specific generated content (formula sheets, summaries) for users.
- List and view details of all users.
- Change usernames.

**8. Tips for Use**

- **Subject Management:** Ensure the Markdown (.md) files specified for your Test Generation subjects exist and are correctly formatted (### Chapter X, numbered questions).
- **Course Content:** Course creators (or Admins) need to ensure video playlists, PDF paths, and transcription files are correctly linked in the course definition for materials to load properly.
- **AI Features:** AI-generated content (summaries, formulas, explanations, marking) is helpful but may occasionally contain errors. Use it as a study aid, not a definitive source. Report issues if you find them!
- **Data Backup:** Regularly use the **Export** feature (TestGen Dashboard > Import/Export) to back up your Test Generation progress.
- **Pace Yourself:** Use the pace selection in courses to set realistic goals. Your "Today's Objective" will guide you.
- **Notes:** Utilize the notes feature to consolidate your learning from videos, PDFs, and your own thoughts. The AI review can provide valuable feedback.

This guide covers the primary functionalities based on the code provided. Explore the different sections to get the most out of Lyceum!