Automated Transfer Credit Evaluator (ATCE)

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Goal

Our goal is to develop a full stack web application that demonstrates the complete web development process specifically frontend design, backend functionality, user authentication and security implementation.

The application allows users to register log in and securely access a protected tool (/atce) a simulated transfer credit evaluator. This tool allows the user to upload a TXT or PDF file for evaluation showcasing how web applications hande user interaction authentication, file processing and security best practices.

Motivation

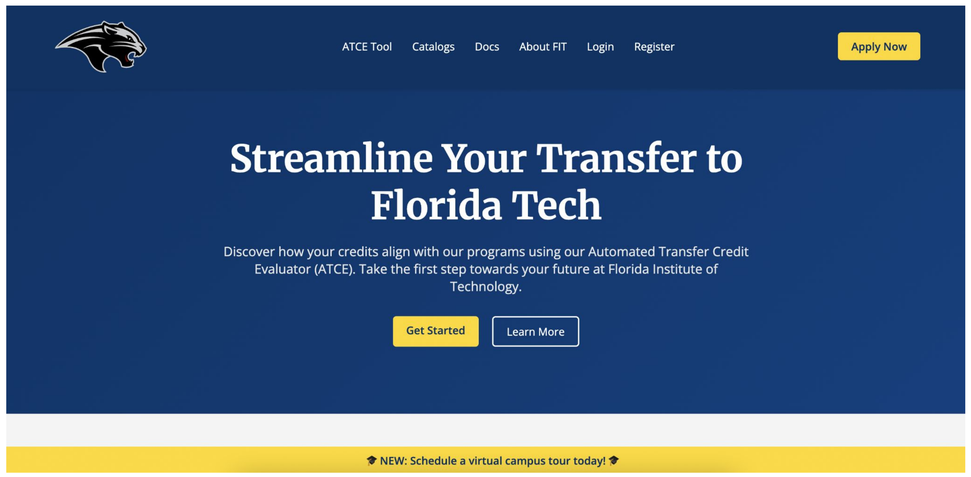
This project highlights the key components of secure web application development by integrating user-management, authentication mechanisms and data protection.

Security measures such as password hashing, session management, input validation and additional built in Flask protections will be used to safeguard the user data and prevent common web application vulnerabilities.

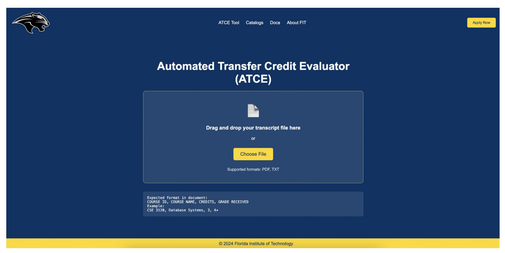
By building both the frontend and backend we aim to provide a hands on demonstration of how real world web applications are built and ensure authenticated/secure access to specialized tools and services.

UI

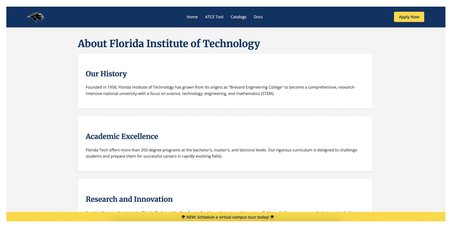
Homepage (/index)



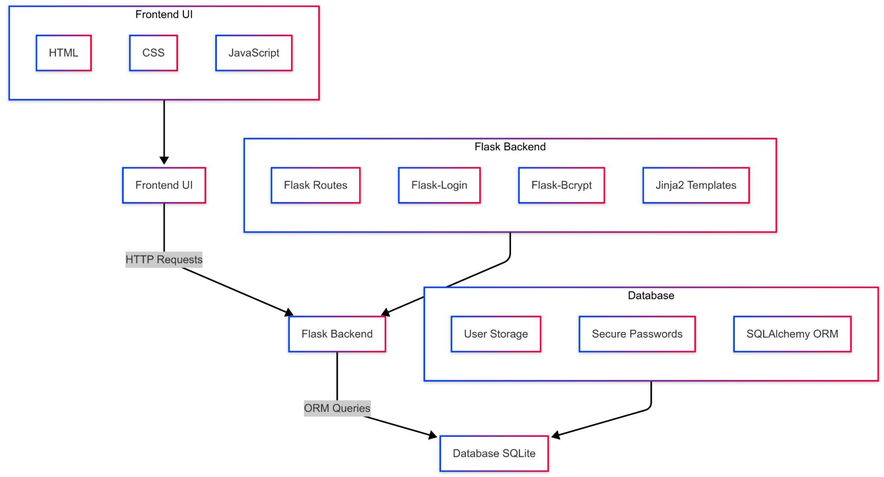
ATCE Tool (/atce)



About (/about)



System Architecture



Features

Frontend (HTML, CSS, JavaScript)
- **Six-page website built with HTML, CSS, and JavaScript**
- **Jinja2 templating for dynamic content insertion**
- **Responsive and visually appealing design**
- **Interactive elements (ex. form validation, dynamic content updates)**

Backend (Flask & Python)
- **Flask web framework for routing request handling and database integration.**
- **Flask-Login for user authentication, session management and access control**
- **Flask-Bcrypt for secure password hashing**
- **Flask-SQLAlchemy as an ORM for database interactions**

Databases (SQLite)
- **Stores user credentials (usernames, emails, encrypted passwords)**
- **SQLAlchemy for defining database models and executing queries without raw SQL**

ATCE Tool (Automated Transfer Credit Evaluator)
- **Runs directly in the browser, built with HTML, CSS, and JavaScript**
- **Allows users to upload a TXT or PDF files with transcript data**
- **Processes files using JavaScript libraries like PDF.js**
- **Extracts course information and provides an evaluation report**

User Authentication System
- **Secure login and registration with bcrypt password hashing**
- **Remember Me functionality for persistent logins**
- **Protected routes requiring authentication using @login_required**
- **Session management with Flask-Login**

Security & Access Control
- **Encrypted password storage for enhanced security**
- **Client side from validation for improved user experience**
- **Error handling and user feedback mechanisms**
- **Restricted access to protected pages for authenticated users**