

# Online Learning Platform using MERN

- **Abstract**

This project report presents an Online Learning Platform – CodeVector designed to enable flexible, accessible education for students while providing instructors with a robust set of tools to manage courses. The OLP offers login and course management for instructors, course enrollment and certification for students, and an admin console for overall oversight. Developed with React, Bootstrap, Express, and Node, the platform integrates secure access, video storage via Cloudinary, and email notifications using Nodemailer.

- **Introduction**

- **Purpose of the Platform:** The purpose of the OLP in promoting accessible, flexible, and high-quality online learning.
- **Problem Statement:** The platform addresses the need for an integrated learning environment where students and instructors can interact, share knowledge, and track learning progress in a secure, user-friendly application.

- **Key Features of the Online Learning Platform**

- **User Roles and Access Control**
  - **Instructor:** Instructors can log in, create and manage courses, and view enrolled students.
  - **Student:** Students can sign up, view courses, enroll, track progress, and receive certifications.
  - **Admin:** The Admin has access to student and instructor data, can view course listings, and manage platform content.

- **Instructor Functionalities**

- **Course Creation:** Instructors can create courses with banner images, prerequisites, and multiple sections.
- **Content Upload:** Video content is stored on Cloudinary, optimizing media management and streaming.
- **Student Management:** Instructors can view the list of students enrolled in each course, facilitating student monitoring and engagement.
- **Course Management:** Instructors can edit and delete courses, ensuring the platform remains updated and relevant.

- **Student Functionalities**

- **Course Exploration and Enrollment:** Students can browse available courses, view course details, and enroll in courses.
- **Course Progress and Certification:** Upon course completion, students are presented with a certificate that includes their name, course name, and date of issue.
- **Discussion Forum:** Each course includes a discussion section where students can initiate or join threads, fostering a collaborative learning environment.
- **Profile Management:** Students can edit their profile data, enhancing personalization within the platform.

- **Admin Console**

- **User Management:** Admins can view detailed profiles of students and instructors.
- **Course Oversight:** Admins can monitor all courses' basic details and delete any course that violates platform policies or becomes obsolete.

- **Technical Architecture**

- **Frontend**

- **Framework:** React is used for building a responsive and interactive user interface.
    - **UI Components:** Bootstrap is used alongside custom CSS to create a user-friendly and visually appealing interface.
    - **Protected Routes:** All sensitive pages are protected using JWT tokens to ensure secure access control.

- **Backend**

- **Framework:** Node.js and Express handle server-side logic, API integration, and secure communication between client and server.
    - **Authentication and Security:** JWT tokens are used for authentication, ensuring that only authorized users can access protected routes.
    - **File and Media Storage:** Cloudinary is integrated to store video files, enabling efficient media handling for course sections.
    - **Email Integration:** Nodemailer is used to send email notifications, including password recovery and account verification.

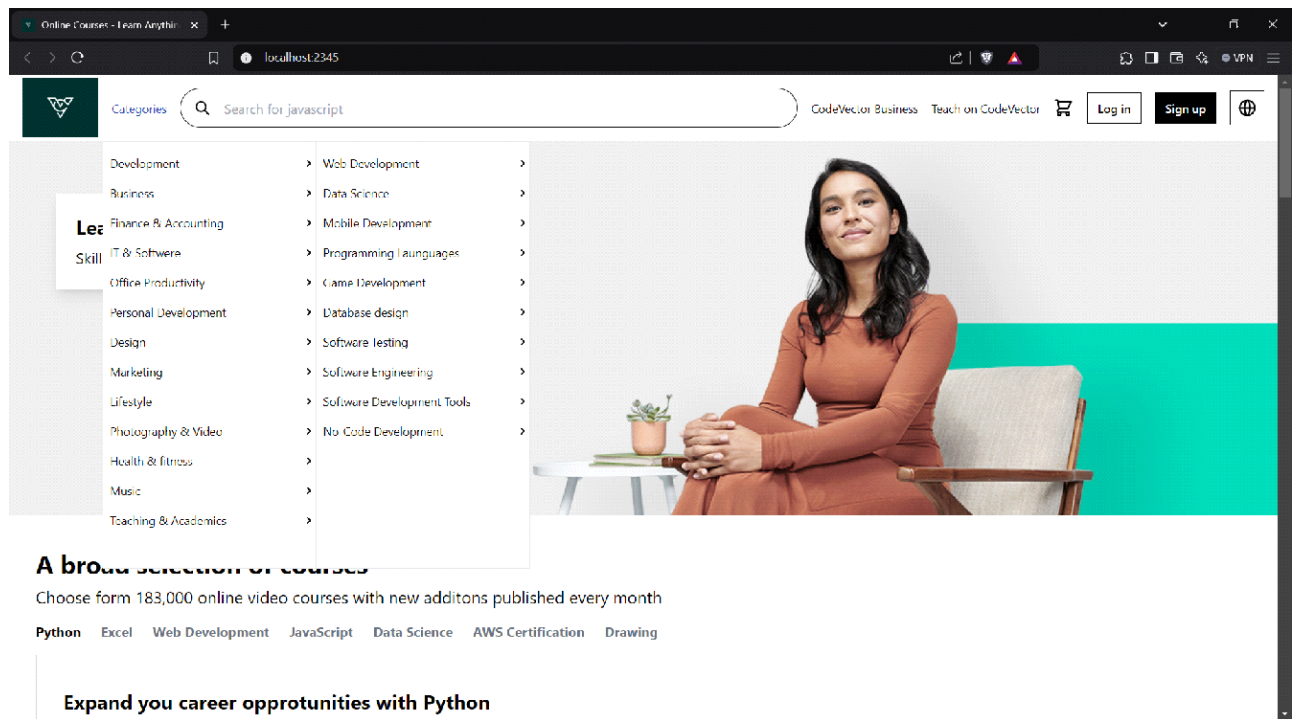
- **Database**

- **Database Choice:** MongoDB Atlas is chosen for scalable and efficient storage of user data, course content, and progress tracking.
    - **Data Structure:** Data models are designed for students, instructors, and admin roles to manage unique functionalities, along with a course schema to handle multiple sections, student enrollments, and progress.

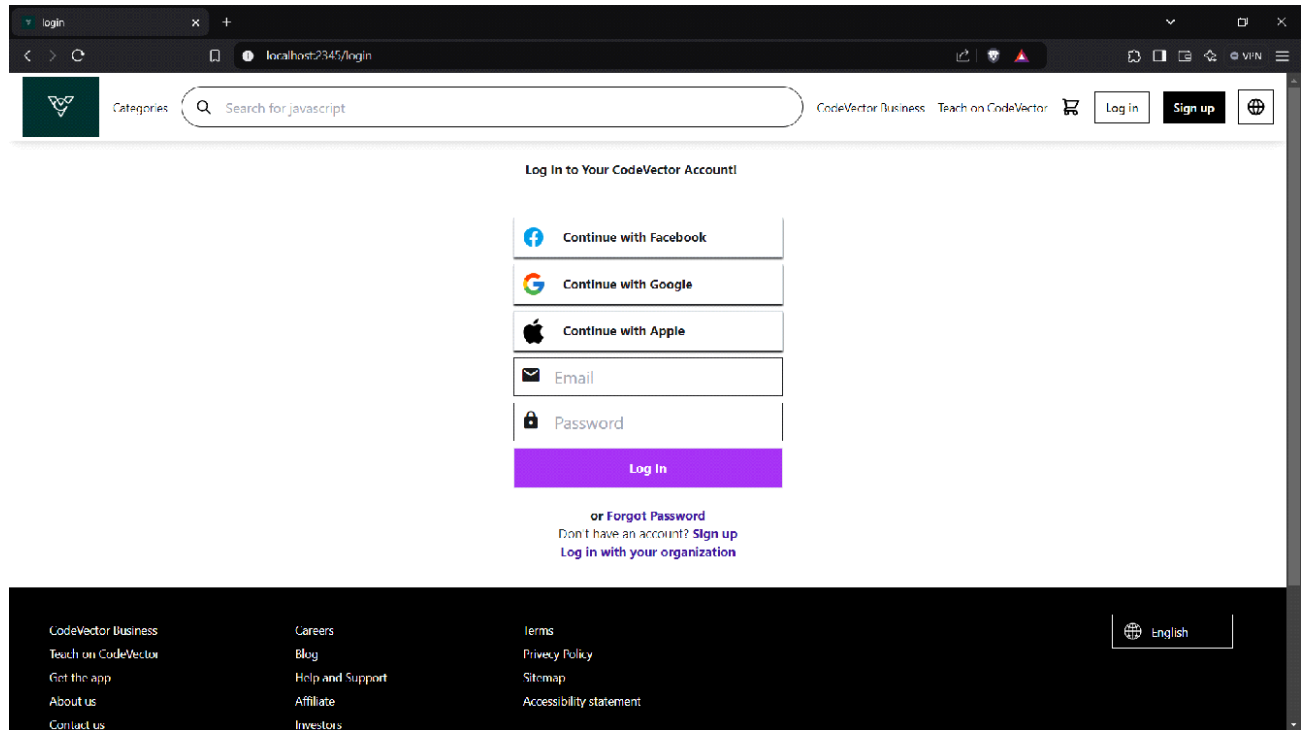
- **Workflow**
  - **Instructor Workflow**
    - Login -> Create/Edit/Delete Course -> Upload Videos via Cloudinary -> Manage Enrollments.
  - **Student Workflow**
    - Signup/Login -> Browse Courses -> Enroll -> Complete Course -> Obtain Certificate.
  - **Admin Workflow**
    - Login -> Monitor User and Course Activity -> Remove Content as Necessary.
- **Security Measures**
  - **JWT Tokens:** Used for secure session management and to protect sensitive routes.
  - **Password Hashing:** User passwords are securely hashed before storage to enhance account security.
- **Future Scope**
  - Potential integration of a payment gateway for premium courses.
  - Addition of live class features using WebRTC or similar streaming technologies.
  - Enhanced analytics for instructors and admins to track engagement metrics.

## Output Screenshots

- Landing Page



- **Instructor Login**



- **Instructor Dashboard**

[Find a course, webinar, conference...](#)

🔔
🗣️

Jack Douglas ▾

☰

## COURSES

	<h3>Health and safety</h3> <ul style="list-style-type: none"> <li>First aid</li> <li>Fire safety awareness</li> <li>Sexual harassment</li> </ul>	<ul style="list-style-type: none"> <li>Data security</li> </ul>
	<h3>Marketing</h3> <ul style="list-style-type: none"> <li>SEO</li> <li>SMM</li> <li>Google Analytics</li> </ul>	<ul style="list-style-type: none"> <li>Google Adwords</li> </ul>
	<h3>Job-specific courses</h3> <ul style="list-style-type: none"> <li>Logistics management</li> <li>Supply chain management</li> <li>Supply chain analytics</li> </ul>	<ul style="list-style-type: none"> <li>Supply chain principles</li> <li>Business operations management</li> </ul>
	<h3>On-boarding programme</h3> <ul style="list-style-type: none"> <li>Company history</li> <li>Values</li> <li>Team</li> </ul>	<ul style="list-style-type: none"> <li>Corporate Rules</li> </ul>

[Logout](#)

• Course Creation

Find a course, webinar, conference...

Sara Stewart

Courses

Groups

Discussions

Conferences

Assignments

Calendar

Logout

COURSES

ContentUsersFilesRulesReportsTimeline

Traversal rules

None

Completion rules

Certain units must be completed

All units must be completed

Units

Certain units must be completed

A percentage of units must be completed

Test passed

Availability rules

This course has as prerequisite the following courses...

Save



• Enrolled Students

Courses

Groups

Discussions

Conferences

Assignments

Calendar

Logout

Find a course, webinar, conference...

Sara Stewart

COURSES

Content

Users

Files























Rules

Reports

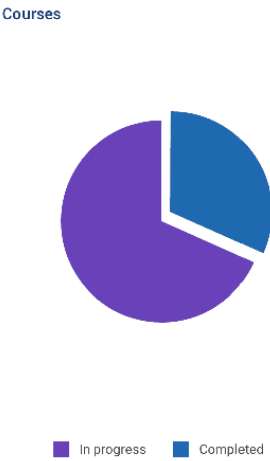
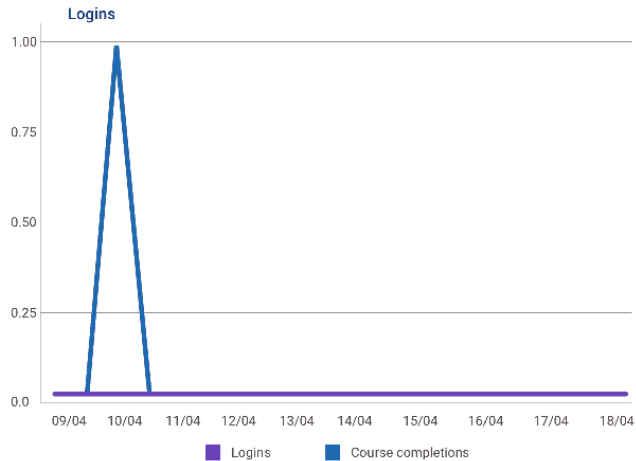
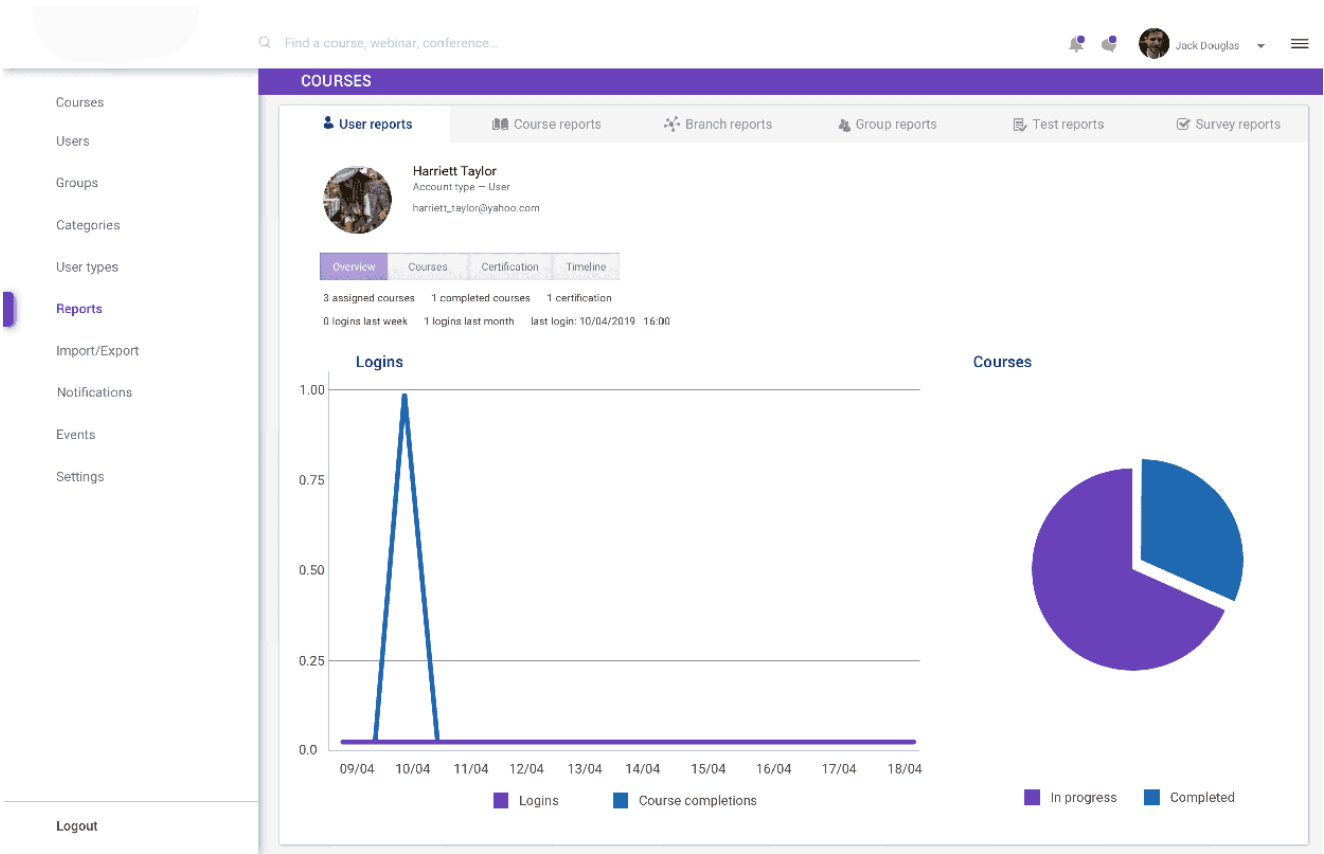
Timeline

Dashboard Users

Add User

Account Status	User Name	Email	Account type	Actions
Active	Sara Stewart	sarastewart@blanda.biz	Mentor	 
Inactive	Birdie Bates	queenie_om@yahoo.com	Mentor	 
Active	Violet Klein	ashton_ferry@gmail.com	User	 
Active	Violet Munoz	everardo.bogan@vince.tv	Semi Admin	 
Inactive	Lillian Berry	baumbach_maverick@yahoo.com	User	 
Inactive	Lewis Ruiz	veum_general@hotmail.com	Semi Admin	 
Active	Isaiah Underwood	moen_trudie@yahoo.com	User	 
Inactive	Alta Jennings	arlie_howell@hotmail.com	User	 
Inactive	Marie Tyler	jacobson_hilario@hotmail.com	User	 
Inactive	Nell Frazier	turcotte_samir@jayce.info	User	 
Inactive	Steve Silva	tamia_mueller@yahoo.com	User	 

• Profile Page



- Student Login

The screenshot shows a web browser window with the address bar displaying 'localhost:2345/signup'. The page features a dark header with the CodeVector logo, a search bar containing 'Search for javascript', and navigation links for 'CodeVector Business', 'Teach on CodeVector', 'Log in', and 'Sign up'. The main content area is titled 'Sign Up and Start Learning!' and contains a sign-up form with fields for 'Full Name', 'Email', and 'Password'. Below the form is a checkbox for email notifications and a purple 'Sign Up' button. A disclaimer states that signing up implies agreement to the terms of use and privacy policy. A link for existing users is provided at the bottom of the form. The footer contains a grid of links for various site sections and a language selector set to 'English'.

Sign up

localhost:2345/signup

Categories Search for javascript

CodeVector Business Teach on CodeVector Log in Sign up

Sign Up and Start Learning!

Full Name

Email

Password

☐ I'm in for emails with exciting discounts and personalized recommendations

Sign Up

By signing up, you agree to our [Terms of Use](#) and [Privacy Policy](#).

Already have an account? [Login](#)

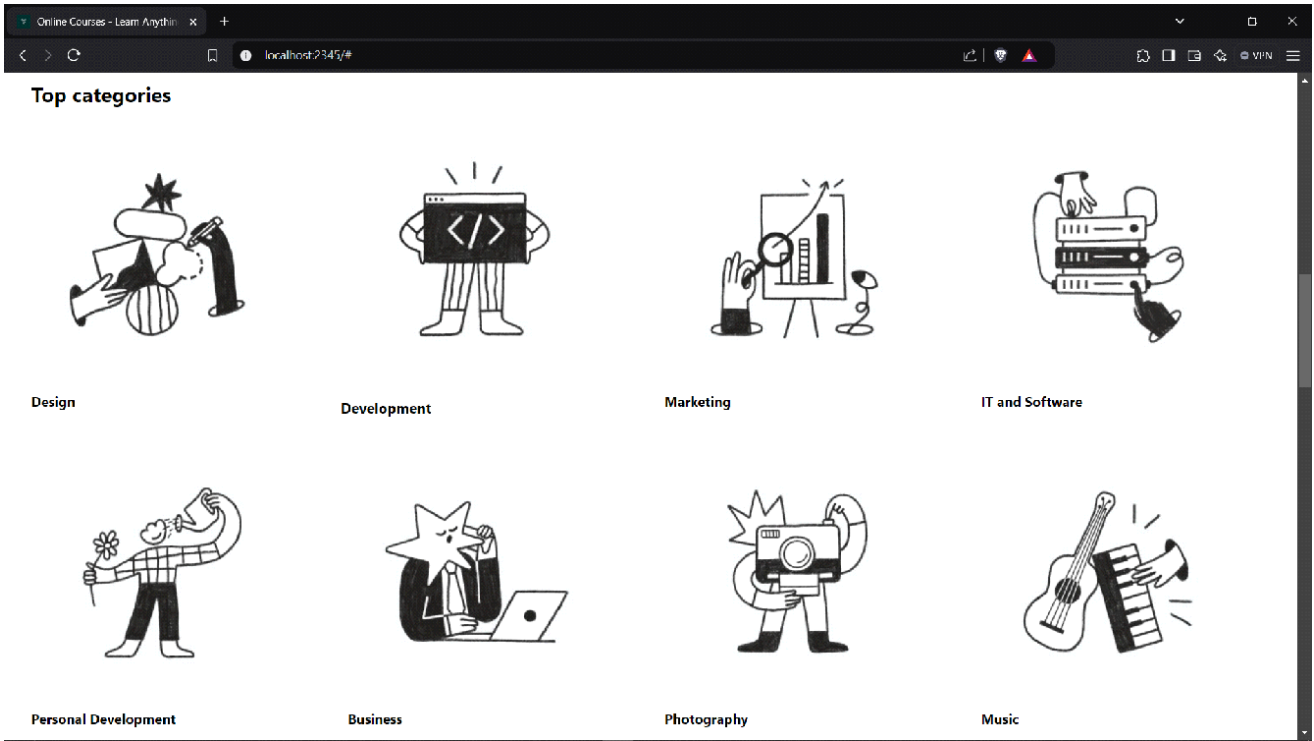
CodeVector Business  
Teach on CodeVector  
Get the app  
About us

Careers  
Blog  
Help and Support  
Affiliate

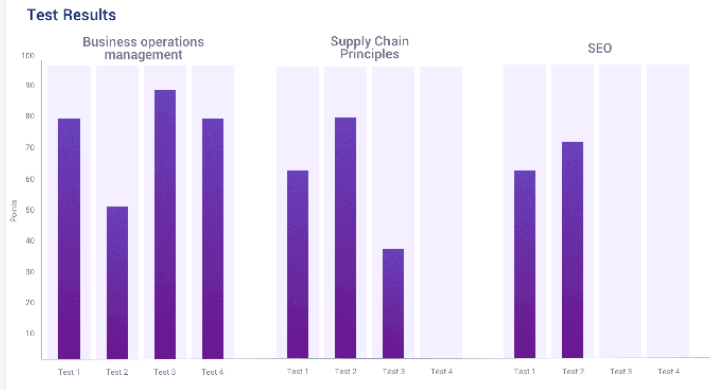
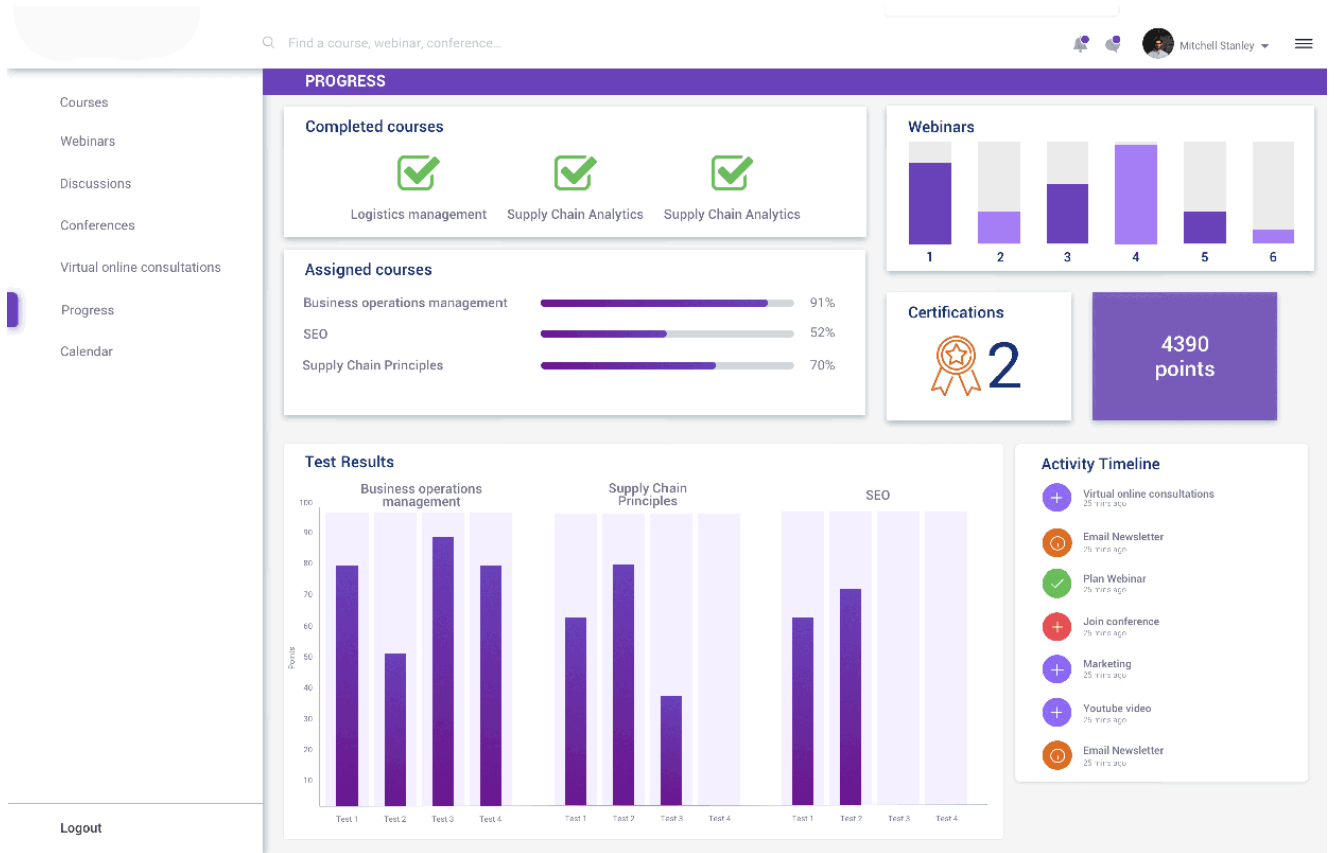
Terms  
Privacy Policy  
Sitemap  
Accessibility statement

English

• **Student Dashboard – All courses tab**



- My courses Tab



- **Course Details Page**

Find a course, webinar, conference...

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Courses

Groups

Discussions

Conferences

Assignments

Calendar

Logout

COURSES

Content

Users

Files

Rules

Reports

Timeline

Job-specific courses

SUPPLY CHAIN MANAGEMENT

+ Add

↕ Reorder

✎ Edit content info

👁 View as Mentee

⋮

Description:

- appreciate what a supply chain is and what it does;
- define the different organizations that participate in any supply chain;
- gain a conceptual appreciation of the business operations in any supply chain;
- assess supply operations in your company that may be candidates for outsourcing
- understand a common supply chain dynamic and appreciate the factors that contribute to this
- evaluate ways to combat this dynamic;
- define a concise set of metrics for measuring the performance of a company's supply chain operations;
- discuss ways to collect and display supply chain performance data.

Content:

- 8 units;
- 4 youtube video;
- 4 presentations;
- 3 webinars;
- 3 conferences;
- 4 tests;
- 1 certification.

✉ Message users

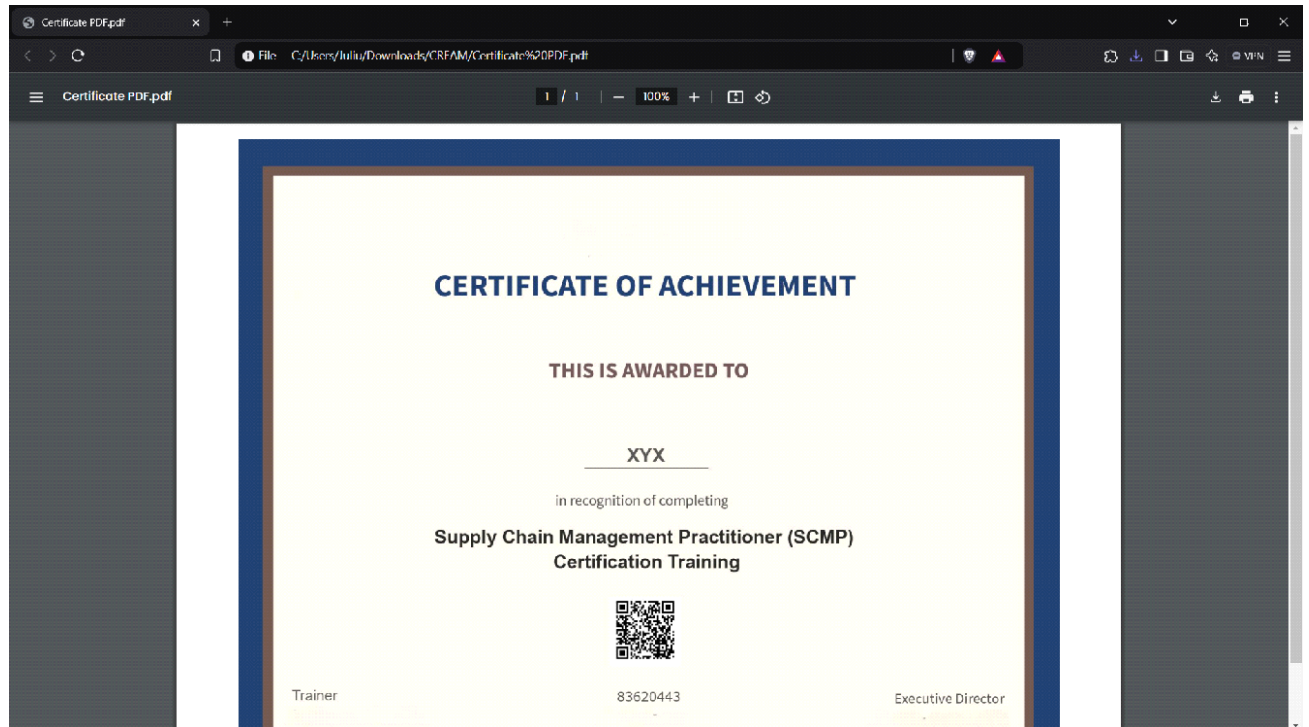
📅 Add event

🔗 Share

📱 Mobile app compatibility

- **Course Accessed Page**

- **Certificate Download**





Find a course, webinar, conference...

Mitchell Stanley

Courses

Webinars

**Discussions**

Conferences

Virtual online consultations

Progress

Calendar

Logout

DISCUSSIONS

Latest

	What are fundamental principles of logistics? Last reply 6 minutes ago by Toby	Logistics Principles	99
	All you need to know about Logistics Management Last reply 4 hours ago by Toby	Logistics management	13
	How to use data for Supply Chain optimization? Last reply 4 hours ago by Toby	Supply Chain Analytics	31
	What are the components of Supply Chain Management? Last reply 8 hours ago by Toby	Supply Chain Management Supply Chain Analytics	27
	What are the key processes in warehousing? Last reply 6 minutes ago by Toby	Warehousing	36
	How to customize the logistics network? Last reply 4 hours ago by Toby	Logistics Principles Logistics management	13
	How to improve supply chain forecasting and efficiency? Last reply 4 hours ago by Toby	Supply Chain Analytics	4
	How to organize the storage of inventory in a warehouse? Last reply 8 hours ago by Toby	Warehousing Logistics management	82
	Do you apply all logistics principles? Last reply 9 hours ago by Toby	Logistics Principles	31
	How do supply chains use Big Data? Last reply 11 hours ago by Toby	Supply Chain Management	27
	How to measure Supply Chain performance? Last reply 11 hours ago by Toby	Supply Chain Analytics Supply Chain Management	99
	What Supply Chain metrics should you track? Last reply 12 hours ago by Toby	Supply Chain Analytics	31
	Do you need robots in warehousing? Last reply 12 hours ago by Toby	Logistics management Logistics Principles Warehousing	13
	Do you have a way to handle expedited shipping? Last reply 12 hours ago by Toby	Logistics management	13
	Are you using current best practices for warehousing? Last reply 24 hours ago by Toby	Supply Chain Management Warehousing	13
	How to manage supply chain metrics? Last reply 24 hours ago by Toby	Supply Chain Analytics Logistics Principles	82

All Discussions110

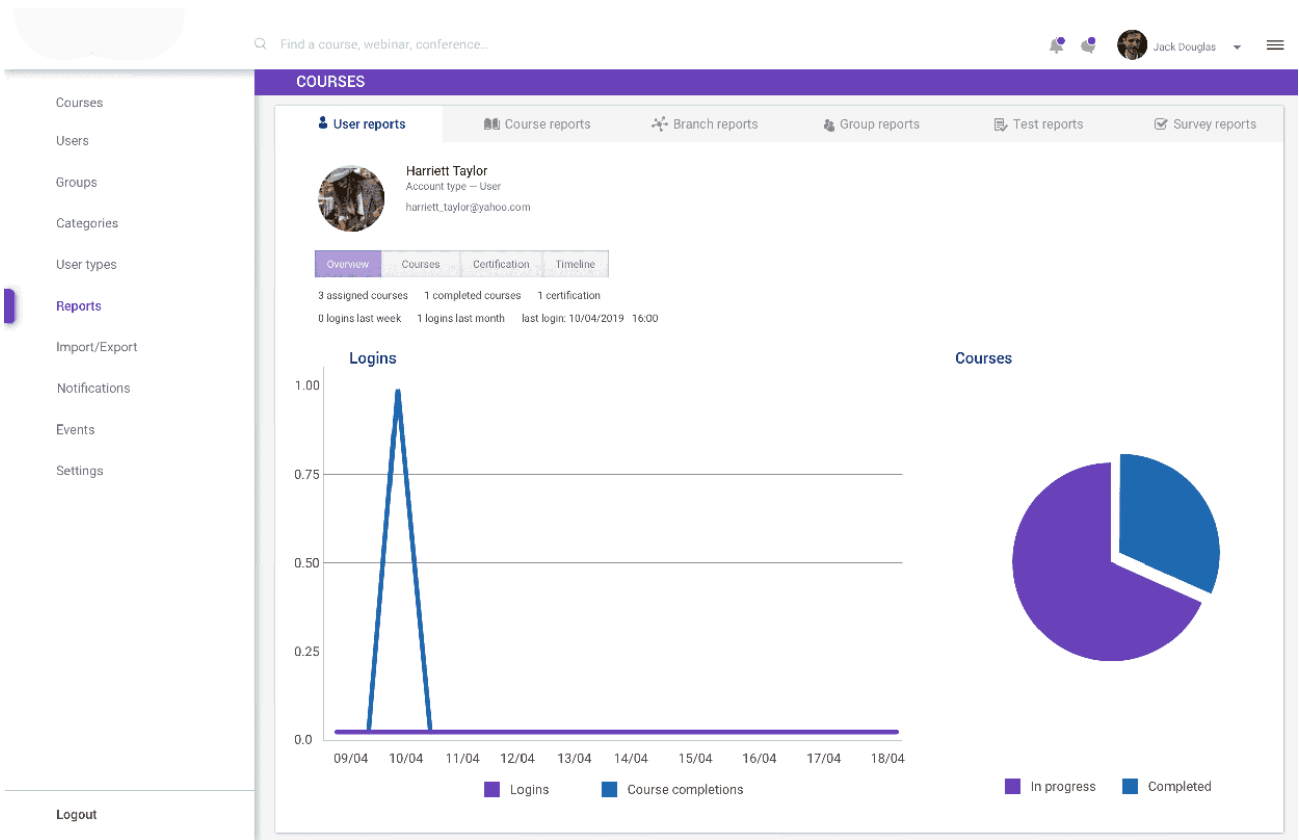
Following23

Tags100

Supply Chain Management
   
Logistics management
   
Supply Chain Analytics
   
Logistics Principles
   
Warehousing
   
[More Tags](#)

Start a Discussion

- **Student Profile Page**



- Admin Dashboard

Courses

Users

Groups

Categories

User types

Reports

Import/Export

Notifications

Events

Settings

Logout

Find a course, webinar, conference...

Jack Douglas

COURSES

User reports

Course reports

Branch reports

Group reports

Test reports

Survey reports

User Name	Account type	Last login	Assigned Courses	Completed courses	Actions
Jack Douglas	Semi Admin	10/04/2019 16:00	1	1	
Emma Haynes	Mentor	12/04/2019 15:25	2	1	
Sophie Kelley	Mentor	03/03/2019 12:50	2	1	
Vera Schmidt	User	09/04/2019 14:20	3	1	
Harriett Taylor	User	10/04/2019 16:00	—	—	
Cody Kelly	User	11/04/2019 09:00	2	1	
Jessie Banks	User	03/04/2019 10:06	3	1	
Luis Rice	User	13/04/2019 17:45	1	1	
Eugenia Rogers	User	10/04/2019 16:00	3	1	
Lida Bowman	User	20/04/2019 11:00	2	1	
Jimmy Knight	User	10/04/2019 16:00	2	1	
Bessie Manning	User	23/04/2019 15:45	2	1	