SHARDA UNIVERSITY
Beyond Boundaries

NAAC A+ ACCREDITED

SHARDA SCHOOL OF COMPUTING SCIENCE & ENGINEERING

COURSE

Full Stack Development with Cloud Integration

(Nv61010)

VALUE ADDED

COURSE BROCHURE-30 HRS

2026-27

ABOUT SCHOOL

Sharda School of Computing Science & Engineering is an open platform for diverse voices where teaching runs parallel to the real world, and students are groomed to join the global workforce. SSCSE is distinguished as one of the top-ranked engineering schools in India. The students at SSCSE benefit through the professional grooming of renowned faculty and industry experts having experience of tackling pressing engineering problems. Students discover their passion in one of the various offered Engineering majors at the Sharda School of Computing Science & Engineering. A student-centric pedagogy, project-based approach and design-driven curriculum provides students with an inclination for complex problem solving, design, innovation, and a passion for learning.

ABOUT DEPARTMENT

The Department of Computer Science & Application stands as a pioneer in higher education, research, and innovation within key realms of computer science and application. The mission of the department is to foster excellence in the realm of computer science and application through the impartation of higher education and cutting-edge research. The department boasts an accomplished faculty with a stellar academic track record and proficiency in cutting-edge technologies. The faculty members bring diverse specializations to the fore, ensuring the fulfilment of teaching and research needs. The entire faculty of the department is associated with esteemed universities, institutions, and government departments.

The commitment is to install a spirit of ingenuity, innovativeness, and technical competence in our students through rigorous competition and consistent guidance. Additionally, the department caters to regional needs by organizing programs for teaching and research communities. The curriculum is designed to provide a robust theoretical foundation complemented by high-quality teaching and extensive practical training. Beyond the regular curriculum, the department hosts workshops, technical seminars, faculty development programs (FDP), short-term training programs (STTP), and conferences, exposing students to real-world problems aligning with industrial and societal needs.

A testament to the success of the department is the fact that many of the alumni are now thriving in esteemed companies such as IBM, American Express Bank, Wipro, Infosys, Samsung, Microsoft, GlobalLogic, CISCO, and HCL, both in India and abroad. Prominent alumni also consist of entrepreneurs and scholars who have made significant contributions to prestigious academic institutions.

VALUE ADDED COURSE (VAC)

The Value added Education Courses aim to provide additional learner centric graded skill oriented training, with the primary objective of improving the employability skills of students.

PURPOSE OF VALUE ADDED COURSE

VACs are pertinent instructional strategies designed to close knowledge gaps in students and provide them a competitive edge in the job market. The courses' well-defined structure makes these VACs highly effective in enhancing students' employability quotient by developing diverse competencies. They help students lay the creative groundwork for passion projects (such as interactive dashboards, business analytics, or sector-specific visual reports) beyond their core academic curriculum, offering skills that can transform their enthusiasm into career opportunities.

Course Schedule

Week	Topic	Duration Hrs.
1	HTML and Web Standards	2
2	Accessibility and Usability	2
3	CSS Fundamentals	2
4	Responsive Web Design	2
5	UI Engineering and Version Control	2
6	JavaScript Fundamentals	2
7	Modern JavaScript and Browser Behaviour	2
8	Asynchronous Programming and APIs	2
9	Component-Based Frontend Development	2
10	Frontend Performance and Testing	2
11	Backend Development and REST APIs	2
12	Relational and Non-Relational Databases	2
13	Authentication and Web Security	2
14	Cloud Computing and Infrastructure	2
15	Cloud Deployment, Integration and Capstone Project	2
Total		30hrs

RESOURCE PERSON

Dr. S. Mahalakshmi

Dr. S. Mahalakshmi is an accomplished academician and researcher in Computer Science with over 17 years of experience in higher education, teaching, and research innovation. She earned her Ph.D. in Computer Science from Madhav University in 2025, an MCA from Periyar University and BCA from Bharathiar University. She has integrated industry trends into undergraduate syllabi, designed unit structures, and supervised research scholars in AI and ML. Her research expertise includes Artificial Intelligence, Deep Learning, and Medical Image Processing, with contributions to Scopus indexed publications, patents, books, and chapters. She is a member of IEEE, ACM, and CSI, reflecting her commitment to academic excellence and innovation.

Ms. Vandana

Ms. Vandana is an Assistant Professor in the Department of Computer Science and Applications at Sharda University, Greater Noida, with over eight years of teaching and research experience. She holds a Ph.D. in Computer Science from Chitkara University, Punjab, with research focused on deep learning-based medical image analysis for monkeypox detection. Her research interests include Artificial Intelligence, Deep Learning, Computer Vision, Medical Image Processing, Healthcare Informatics, and Explainable AI. She has published numerous research papers in SCI/Scopus-indexed journals, IEEE conferences, and book chapters with leading international publishers. She is actively involved in research, academic mentoring, curriculum development, and interdisciplinary projects aimed at advancing intelligent healthcare technologies.

School : SSCSE	Current Academic Year: 2026-27
Programme: B.Tech.	Semester: V/VII

1. Course Code	NV61010
2. Course Title	Full Stack Development with cloud Integration
3. Credits	Non-Credit
4. Contact Hours (L-T-P)	30 Hours
Course Type	Value added course
5. Course Objective	To develop the ability to design, implement, and deploy scalable full stack applications integrated with cloud platforms. The course emphasizes frontend and backend engineering, cloud-native architecture, deployment, security, and intelligent system integration for real-world applications.
6. Course Outcomes	Upon successful completion of this course, the student will be able to: CO1: Design and develop responsive, accessible, and user-centric web interfaces using modern frontend technologies. CO2: Implement dynamic client-side applications using structured programming and component-based architecture. CO3: Develop secure, scalable backend systems and RESTful APIs following industry best practices. CO4: Design, implement, and optimize relational and non-relational databases for real-world applications. CO5: Apply cloud computing principles to deploy, manage, and scale full stack applications using cloud infrastructure. CO6: Integrate full stack applications with cloud-native and intelligent features to build production-ready systems with performance, security, and reliability considerations.
7. Course Description	This course provides a comprehensive understanding of full stack web development combined with cloud integration. It covers frontend and backend development, database management, and cloud computing concepts such as deployment, scalability, and service integration. Students will learn to build and deploy production-grade applications using modern software engineering practices and cloud-native architectures.

8. Outline syllabus		**Duration Hours**
Unit 1	**Web Foundations and Interface Design**	
A	**HTML and Web Standards:** Structure of web pages, semantic elements, Forms and input handling, Accessibility and usability principles	CO1
B	**CSS and Responsive Design:** Selectors, box model, layout techniques, Flexbox and Grid systems, Responsive design using media queries	CO1
C	**UI Engineering Principles:** Design systems and reusable components, Cross-browser compatibility, Version control fundamentals and collaboration workflows	CO1
Unit 2	**Client-Side Programming and Frontend Architecture**	
A	**JavaScript Fundamentals:** Data types, control structures, functions, scope, Arrays, objects, modern language features	CO2,CO3
B	**Asynchronous Programming and Browser Behavior:** Event loop and execution model, Promises and asynchronous handling, API interaction and data handling	CO2,CO3
C	**Component-Based Development:** Modular UI design and state management, Routing and navigation, Performance optimization and testing fundamentals	CO2,CO3
Unit 3	**Backend Systems, Databases and Security**	
A	**Backend Development Fundamentals:** Server-side architecture and request-response lifecycle, API design principles and middleware	CO3, CO4
B	**Database Systems:** Relational databases and schema design, Non-relational databases and document models, CRUD operations and query optimization	CO3, CO4
C	**Security and Authentication:** Authentication and authorization, Input validation and secure coding practices, Common vulnerabilities and mitigation strategies	CO3, CO4
Unit 4	**Cloud Computing and Infrastructure Fundamentals**	
A	**Cloud Computing Concepts:** Service models (IaaS, PaaS, SaaS), Deployment models (public, private, hybrid), Virtualization and containerization basics	CO4, CO5
B	**Cloud Infrastructure Components:** Compute services and storage systems, Networking fundamentals (VPC, subnets, routing), Identity and access management concepts	CO4, CO5
C	**Scalability and Reliability:** Load balancing and auto-scaling, Fault tolerance and high availability, Monitoring and logging fundamentals	CO4, CO5
Unit 5	**Cloud Integration, Deployment and Intelligent Applications**	
A	**Application Deployment and Integration:** Deploying frontend and backend applications to cloud, Environment configuration and secrets management, Continuous integration and continuous deployment basics	CO5, CO6
B	**Cloud-Native Application Design:** Microservices architecture fundamentals, API gateways and service communication, Serverless computing concepts	CO5, CO6
C	**Intelligent Features and Capstone Project:** Integration of intelligent features in applications, Data-driven automation and processing, Design and development of a full stack cloud-based application (including scalability, security, and performance considerations)	CO5, CO6
Mode of Examination	Assignments/Quizzes/Presentation/Group discussion	
Text book/s*	**1.** Full-Stack Web Development with TypeScript 5, Hassan Djirdeh, Packt Publishing **2.** Designing Data-Intensive Applications: The Big Ideas Behind Reliable, Scalable, and Maintainable Systems, Martin Kleppmann, O'Reilly	
Other References	**1.** Eloquent JavaScript, Marijn Haverbeke, No Starch Press **2.** You Don't Know JS (Book Series), Kyle Simpson, O'Reilly **3.** Learning Web Design, Jennifer Niederst Robbins, O'Reilly **4.** Cloud Computing: Concepts, Technology & Architecture, Thomas Erl, Prentice Hall	