SHARDA UNIVERSITY
Beyond Boundaries

NAAC
A+
ACCREDITED

SHARDA SCHOOL OF
COMPUTING SCIENCE
& ENGINEERING

COURSE

Flutter for Android & iOS Development
(NV61002)

VALUE ADDED
COURSE BROCHURE-30 HRS
2025-26

ABOUT THE UNIVERSITY

Sharda University envisions to serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship. It has 13,000+ students from 95+ countries, 29 states, and Union Territories, providing cultural diversity and global exposure to students. It has 26000+ alumni who are today leaders in their realms. Sharda University is **NAAC A+** University with Overall **NIRF Rank of 86**. Teaching Learning Center at Sharda University is to equip the faculty members with the expertise, skills and knowledge they need for capacity building of students. Teaching as a profession requires highly specialized skills and knowledge to impact significantly on student learning and therefore teachers must refine their conceptual and pedagogical skills.

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 and Applications strives to equip faculty and students with all the computing resources needed to address a wide range of scientific, technological, and socially complex problems. The department imparts technical education for designing quirky technological applications and innovations. The department grails to become a center of excellence and impart knowledge to intellectual professionals so as to equip them with the requisite skills as per Industry standards. The department aims to foster an innovative research environment by providing a supportive, amiable, and challenge-based learning culture. The department utilizes high-performance computing equipment and facilities to impart state-of-the-art technical knowledge to students and instill a desire to pursue lifelong learning. To emerge as a world-class department, we focus on innovative research and quality learning in computer science applications that prepares entrepreneurs and professionals to lead the social, economic, and technical development of society. The department enjoys the full patronage of the Chancellor, Vice-Chancellor, Pro-Vice-Chancellor, and the Dean of the School of Engineering (SSCSE) where it is housed presently. 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.

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.

RESOURCE PERSON

Mr. Vishvendra Pal Singh Nagar is an accomplished IT professional with extensive experience in software engineering, IT management, and automation across diverse industries. Over the years, he has contributed to organizations such as Extramarks.com, Havells India, Packet Shaper Technology, Vhigh Technologies, A2Z Message Solution, UIL Electronics India, and P.S. Electricals, where he has handled responsibilities ranging from server administration and web service deployment to automation of electrical panels and security program development. His expertise spans automation, microcontroller programming, firmware development, IoT and networking, web development, and robotics, making him adept at delivering innovative technological solutions and managing complex IT environments.

Ms. Raheel Hassan has pursued M. Tech from Sharda University, Greater Noida in CSE, Data Science and Analytics and B. Tech from BGSB University, Jammu and Kashmir in CSE. Ms. Raheel has published various papers in international conferences and Journals in the domain Deep learning, AI, and ML. She has filed her first design patent. Currently She is serving as Assistant Professor in the Department of Computer Science and Applications at Sharda University, Greater Noida, UP India.

COURSE SCHEDULE

Week	Topic	Duration Hrs.
1	Introduction to Mobile App Development & Platforms	2
2	Mobile App Architecture & Development Environments	2
3	Kotlin and Dart Basics for App Development	2
4	UI Design Principles in Android (Kotlin)	2
5	Event Handling, Intents & Activity Lifecycle in Android	2
6	Form Validation and Data Storage in Android	2
7	Flutter Framework and Widget Tree Basics	2
8	Flutter Navigation and UI Composition	2
9	State Management in Flutter (setState, Provider)	2
10	Local Databases: Room DB (Kotlin) and SQLite (Flutter)	2
11	REST APIs and JSON Parsing in Kotlin and Dart	2
12	Firebase Authentication and Firestore Integration	2
13	Firebase Storage and Cloud Features	2
14	App Planning, Testing & Deployment Strategies	2
15	Case Studies and Recent Trends in Mobile App Development	2
Total		**30 h**

1. Course Code	NV61002	
2. Course Title	**Data Visualization with Tableau and Power BI**	
3. Credits	0	
4. Contact Hours (L-T-P)	30 Hours	
Course Type	Value added course	
5. Course Objective	This course aims to provide conceptual understanding and design strategies for mobile application development across native (Android) and cross-platform (Flutter) environments. It focuses on architecture, UI design, application logic, state management, database interaction, and cloud integration.	
6. Course Outcomes	After the completion of this course, students will be able to: CO1: Demonstrate mobile platforms and configure development environments. CO2: Explain UI design principles and apply logic programming in Kotlin. CO3: Illustrate cross-platform development concepts using Flutter and Dart. CO4: Demonstrate understanding of database and API handling in mobile apps. CO5: Describe authentication mechanisms and cloud storage integration with Firebase. CO6: Analyze and plan the development life cycle of a full-fledged mobile application.	
7. Course Description	This course introduces students to the principles, tools, and technologies used in mobile application development, focusing on both native (Android) and cross-platform (Flutter) environments. It covers the complete app development lifecycle — from environment setup and UI design to logic implementation, database operations, and deployment. The course emphasizes hands-on understanding of Kotlin and Dart programming languages, real-time data handling, API integration, and cloud-based services like Firebase. Through theory sessions, students gain the foundational knowledge necessary to design scalable, secure, and user-friendly mobile applications for Android and iOS platforms.	

8. Outline syllabus		CO Mapping
Unit 1	**Mobile App Fundamentals and Environment Setup**	
A	Introduction to mobile platforms: Android, iOS, cross-platform tools	CO1
B	Mobile app architecture and life cycle	CO1
C	Setting up Android Studio and Flutter SDK	CO1, CO2
Unit 2	**User Interface Design and Logic in Android (Kotlin)**	
A	Introduction to Kotlin and Dart: syntax, variables, data types, control statements	CO2, CO3
B	UI Components: TextView, Button, EditText, ImageView, Layouts	CO2, CO3
C	Event handling and listeners, Form handling and validation	CO2, CO3
Unit 3	**Flutter UI and State Management**	
A	Dart programming essentials	CO3
B	Flutter widgets: stateless vs stateful, Layouts and UI composition	CO3
C	Navigation and routing, State management approaches	CO1, CO3
Unit 4	**Data Handling and API Integration**	
A	Local databases: SQLite (Flutter), Room DB (Android)	CO2, CO3, CO4
B	CRUD operations, REST API concepts: GET, POST, PUT, DELETE	CO4
C	JSON parsing in Kotlin and Dart, Error handling and asynchronous programming	CO4, CO5
Unit 5	**Firebase and Cloud Integration**	
A	Firebase and Cloud Integration	CO1, CO6
B	Firebase services overview, Firebase Authentication: email/password, Google sign-in	CO5, CO6
C	Cloud Firestore database: setup, CRUD, real-time sync	CO6
Mode of examination	Jury/Practical/Viva	

Text book/s*	1. **Android Programming with Kotlin for Beginners**
	     Author: John Horton
	     Publisher: Packt Publishing
	     ISBN: 9781789615401
	 2. **Flutter for Beginners: An Introductory Guide to Building Cross-Platform Mobile Applications with Flutter and Dart 2**
	     Author: Alessandro Biessek
	     Publisher: Packt Publishing
	     ISBN: 9781788996082	