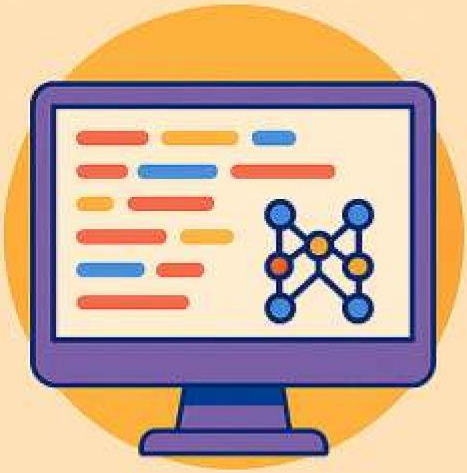
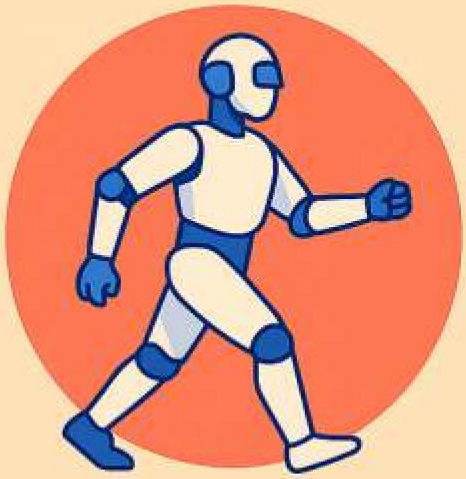
SHARDA UNIVERSITY
Beyond Boundaries

NAAC A+ ACCREDITED

SHARDA SCHOOL OF COMPUTING SCIENCE & ENGINEERING





COURSE

# Flutter for Android Application Development (NV62004)

VALUE ADDED
Course Brochure
2025-26

# ABOUT THE UNIVERSITY

Sharda University envisions serving 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 a NAAC A+ University with an Overall NIRF Rank of 86. The 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 have a significant impact on student learning; therefore, teachers must continually 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 from the professional grooming of renowned faculty and industry experts who have experience in 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 provide students with an inclination for complex problem-solving, design, innovation, and a passion for learning.

## ABOUT DEPARTMENT

The Department of Computer Science & Engineering 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 aims 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 prepare entrepreneurs and professionals to lead the social, economic, and technical development of society. The Value Added Education Courses aim to provide additional learner-centric centric graded skill skill-oriented training, with the primary objective of improving the employability skills of students.

## VALUE ADDED COURSE (VAC)

The Value Added Courses aim to provide additional learner-centric centric graded skill 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

**Dr. Sushant Jhingran**, Assistant Professor in the Sharda School of Computing Science & Engineering at Sharda University, has 12 years of teaching experience. He has done M. Tech and PhD in Computer Science. His area of interest is Java and cloud computing. He has also published 10+ research papers in national and international journals.

**Mr. Prem Prakash Agarwal**, Assistant Professor in the Sharda School of Computing Science & Engineering at Sharda University, has 16+ years of experience (Industry and Academia). He is pursuing a PhD from IP University and has done M.Tech. (CSE) from MNNIT, Allahabad, B.E.(CSE) from University of Rajasthan.

**Mr. Nishant Upadhyay**, is currently working as assistant Professor at Sharda School of Computer Science. Nishant Upadhyay is a dedicated academic and researcher in IT field. Nishant's expertise lies in the development and application of machine learning and signal processing techniques, particularly in the innovative area of human scream detection.

**Mr. Ashish Jain**, Assistant Professor in the Sharda School of Computing Science & Engineering at Sharda University, has 20 years of experience. Mr. Jain completed his M.Tech in CSE from Uttar Pradesh Technical University and his B.E. in CSE from Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal.

**Mr. Deepansh Raj,** Assistant Professor in the Sharda School of Computing Science & Engineering at Sharda University has expertise in teaching Data Structures, Algorithms, and Theory of Computation. Passionate about mentoring students to excel academically and professionally, while driving innovation and contributing to institutional growth.

**Ms Kalidindi Sowmya** is currently working as an Assistant Professor at Sharda School of Computer Science. She is a dedicated academic and researcher in the area of AIML.

# COURSE SCHEDULE

| Week | Topic | Duration Hrs. |
|---|---|---|
| 1 | Introduction to Flutter for Android Application Development | 2 |
| 2 | Dart environment setup | 2 |
| 3 | Basic syntax and control structures | 2 |
| 4 | OOP concepts in Dart (classes, inheritance) | 2 |
| 5 | Overview of Flutter framework | 2 |
| 6 | Process of UI building with Widgets | 2 |
| 7 | Stateless vs Stateful widgets utilization | 2 |
| 8 | State management in Flutter using VS code | 2 |
| 9 | Introduction to Provider and setState | 2 |
| 10 | Using third-party packages | 2 |
| 11 | SQLite database integration, | 2 |
| 12 | User input via TextFields | 2 |
| 13 | Passing data using Navigator, Overview on REST API integration and location services | 2 |
| 14 | Firebase setup with Flutter | 2 |
| 15 | Cloud Firestore for data storage | 2 |
| 16 | Firebase Authentication (email, Google sign-in) or Oauth authentication. | 2 |
| Total | | 32 h |

**School:** Sharda School of Computing Science & Engineering, (Department of Computer Science & Engineering)
**Program:** B. Tech CSE **Semester:** IV
**Batch:** 2024-28 **Current Academic Year:** 2025-26

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|---|---|---|
| **1.** Course Code | NV62004 | |
| **2.** Course Title | Flutter for Android Application Development | |
| **3.** Credits | 0 | |
| **4.** Contact Hours (L-T-P) | 30 Hours | |
| Course Type | Value added course | |
| **5.** Course Objective | 1. Understand the fundamentals of the Dart programming language and object-oriented concepts.<br>2. Learn the core architecture and design philosophy of Flutter.<br>3. Build interactive mobile applications using widgets and stateful logic.<br>4. Apply third-party packages and backend service integration in Flutter.<br>5. Work with local storage using SQLite and APIs for dynamic data handling.<br>6. Develop complete mobile applications integrated with Firebase for real-time data and authentication. | |
| **6.** Course Outcomes | After the completion of this course, students will be able to:<br>**CO1:** Apply Dart programming fundamentals and implement object-oriented concepts for app logic.<br>**CO2:** Develop mobile user interfaces using Flutter widgets and layout principles.<br>**CO3:** Manage application states effectively to create dynamic and responsive user experiences.<br>**CO4:** Integrate external packages and backend services to build feature-rich applications.<br>**CO5:** Use SQLite and web APIs for persistent storage and data exchange.<br>**CO6:** Build and deploy applications with Firebase Database and Authentication features. | |
| **7.** Course Description | This course aims to provide students with a comprehensive foundation in mobile application development using both Android and Flutter frameworks. By the end of the course, students will be equipped with the skills to design, develop, and deploy fully functional, data-driven mobile applications across platforms. | |
| **8.** Outline syllabus | | CO Mapping |
| **Unit 1** | **Introduction to Dart** | |
| A | Dart environment setup. | CO1 |
| B | Basic syntax and control structures. | CO1 |
| C | OOP concepts in Dart (classes, inheritance). | CO1 |
| **Unit 2** | **Basics of Flutter** | |
| A | Overview of Flutter Framework | CO2 |
| B | Process of UI Building with Widgets | CO2 |
| C | Stateless vs Stateful widgets utilization | CO2 |
| **Unit 3** | **Flutter App State & Packages** | |
| A | State management in Flutter using VS code | CO3, CO4 |
| B | Introduction to Provider and setState | CO3, CO4 |
| C | Using third-party packages | CO3, CO4 |
| **Unit 4** | **Local Database and APIs** | |
| A | SQLite database integration | CO5 |
| B | User input via TextFields, Passing data using Navigator | CO5 |
| C | Overview on REST API integration and location services | CO5 |
| **Unit 5** | **Firebase Integration** | |
| A | Firebase setup with Flutter | CO6 |
| B | Cloud Firestore for data storage | CO6 |
| C | Firebase Authentication (email, Google sign-in) or Oauth authentication | CO6 |
| **Mode of examination** | Jury/Practical/Viva | **Text Books**<br>1. Beginning Flutter: A Hands-On Guide to App Development – Marco L. Napoli, Wiley<br>2. Flutter for Beginners – Alessandro Biessek, Packt Publishing |
| **Reference e-Books** | | 1. Flutter Official Docs: https://flutter.dev/docs<br>2. Dart Programming Language: https://dart.dev<br>3. Firebase Integration: https://firebase.flutter.dev |