**Bachelor of Computer Applications [Specialization in Mobile Applications and Cloud Technology]**

**Course Objective**

This unique course provides dual career options for the students in the fast growing technology sectors of Mobile Applications and Cloud Technology. In addition to all the mandatory subjects of a traditional BCA, this specialized course offers in-depth practical know-how of the latest technology trends – Mobile Applications and Cloud Technology. These sectors have the potential to grow exponentially and will provide challenging job opportunities for young professionals with the right skill sets.

On the Mobile Applications front, the course provides the students the fundamental knowledge of all aspects of mobile Technology with emphasis on application development for Android, with industry requirements in mind.

On the Cloud Technology front, the course provides the students the fundamental knowledge of all aspects of Cloud Technology. The course focuses on Virtualization Technology, Cloud Technology, Datacenters, Networking and Operating Systems.

**Career Opportunities for Mobile App Developers**

Global Scenario

Mobile Applications have spawned a new industry aptly called the “Mobile Apps Economy’ which continues to grow at a rapid pace.

* Number of Apps in Android market - Google Play: 7,00,000 \*
* Number of Apps in Apple App Store: 6,50,000 \*\*
* Estimated size of the current Mobile App Industry: $ 25 billion\*\*\*
* Revenue growth of Mobile Apps Industry 2011 & 2012: 197 %\*\*\*\*

The boom is set to create about 3 million Mobile Application Development related jobs worldwide.

*\*(Source: Bloomberg Business week) \*\* (Source: Distimo) \*\*\* (Source: Gartner Inc) \*\*\*\* (Source: ScanLife Trend Report 2012)*

Indian Scenario

Advantage India

The sector’s exponential growth bodes well for India. With huge investments provided for developing both consumer and enterprise apps, the sector in India will open up challenging opportunities – for both outsourced and indigenous app development.

Indian App market estimated to be around Rs 150-200Cr; could grow up to Rs 2,000Cr by 2016: Avendus Report

The Indian app market was estimated to be Rs 150-200 crore during 2012, as per a study released by Avendus Partners. The total monthly revenues earned by Google Play and Apple app store from Indian customers was Rs 27.5 crore in October 2012 or an annualized run-rate of Rs 330 crore. Based on these estimates, the market size for 2012 has been pegged to be somewhere Rs 150-200 crore.

* As per the study, the Indian app market could reach Rs 2,000 crore by 2016.
* As per the estimates, Google Play and Apple App store are expected to cross Rs 800 crore each by 2016.

**Employment Opportunities**

* Small, Medium and Large Professional Services IT Companies
* Enterprise Application Product and Service Companies
* Mobile Application Product and Service Companies
* VAS providers
* e-Commerce, m-Commerce companies
* Internet companies

**Career Progression Path - Mobile Applications**

|  |  |  |  |
| --- | --- | --- | --- |
| **Industry** | **Entry level (0-1 yrs exp.)** | **Mid Level (3-5 yrs exp.)** | **Advanced level (5 yrs plus exp.)** |
| **Average Salary** | **Rs.2,00,000 – 4,00,000** | **Rs.4,00,000 – 8,00,000** | **Rs. 8,00,000 +** |
| **Job Role** | UI Engineer | UI Designer | UI Development Lead |
| Software Engineer / Developer | Sr. Software Engineer / Developer | Technical Lead / Technical  Manager / Project Manager |
| Test Engineer | Sr. Test Engineer | Test Manager |
| Mobile Application Developer | Mobile Application Entrepreneur | CEO |

**Career Opportunities for Cloud Technology Professionals**

Global Scenario

* Combined Market of Private and Public Cloud Services - $11 Billion in 2012
* Poised to grow to $ 65 to 85$ Billion in 2015

- McKinsey Analysis: Winning in the SMB Cloud: Charting a Path to Success

Growth and Forecast

* There are currently about 50 million enterprise users of Cloud Office Systems which represent only 8 percent of overall office system users, excluding China and India.
* Predicts that a major shift toward cloud office systems will begin by the first half of 2015 and reach 33 % penetration by 2017.

- Gartner Report

* Worldwide spending on public IT cloud services will be more than $40 billion in 2014
* Expected to approach $100 billion in 2016.
* Over the 2012–2016 forecast period, public IT cloud services will enjoy a compound annual growth rate (CAGR) of 26.4%, five times that of the IT industry overall

- IDC research

Jobs and Opportunities - Global

* Cloud Computing to Create 14 Million New Jobs by 2015.
* By 2015, business revenues from IT innovation enabled by the cloud could reach US$1.1 trillion a year.

Indian Scenario

Market Size - India

The public cloud services market in India is forecast to grow 36 percent in 2014 to total $443 million, up from $326 million in 2013, according to Gartner, Inc. Infrastructure as a service (IaaS), including cloud computing, storage and print services, continues as the fastest-growing segment of the market in India, growing 22.7 percent in 2013 to $43.1 million, and it is expected

to grow 39.6 percent in 2014 to $60.2 million. Infrastructure as a service (IaaS), including cloud compute, storage and print services continued as the fastest-growing segment of the market, growing 42.4 percent in 2012 to $6.1 billion and expected to grow 47.3 percent in 2013 to $9 billion.

**Jobs and Opportunities - India**

India will create over 2 million jobs in Cloud sector, predicts a study commissioned by Microsoft and conducted by International Data Corporation (IDC).

**Career Progression Path - Cloud Technology**

|  |  |  |  |
| --- | --- | --- | --- |
| **Industry** | **Entry level (0-1 yrs exp.)** | **Mid Level (3-5 yrs exp.)** | **Advanced level (5 yrs plus exp.)** |
| **Average Salary** | **Rs.4,00,000 – 5,00,000** | **Rs.4,00,000 – 8,00,000** | **Rs. 8,00,000 +** |
| **Job Role** | Cloud Architect |  | Cloud Consultant |
| Cloud Engineer | Sr. Cloud Engineer  Manager Cloud Technology | Manager Cloud Technology |
| Datacenter Technician | Datacenter Engineer | Datacenter Manager |
| Remote Desktop Engineer | Cloud Provisioning Engineer | Datacenter Manager |
| Cloud Security Specialist | Security Engineer | Manager Cloud Security |

**Bachelors Engineering Courses - Suggested distribution: (BCA)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **General education** | **Core Course (Maths + Science)** | **Engineering Fundamentals** | **Specialization sequence with directed electives** | **Free Electives** |
| Percentage | 15% | 25% | 25% | 30% | 5% |
| Credits | 16-20 | 30-32 | 30-32 | 38-40 | 6-7 |
| **Actual Percentage** | **14%** | **20%** | **21%** | **37%** | **8%** |
| **Actual Credits** | **13** | **20** | **20** | **36** | **8** |

**Bachelor’s of Computer Applications with specialization in Mobile Applications and Cloud Technology: Semester wise Course Structure:**

|  |  |  |
| --- | --- | --- |
| **Sr. No** | **Semester** | **Marks Distribution** |
| 1. | I | 650 |
| 2. | II | 700 |
| 3. | III | 700 |
| 4. | IV | 500 |
| 5. | V | 550 |
| 6. | VI | 400 |
| **Total** |  | **3500** |

Details of Subjects distributed in all 6 Semester of BCA Programme with Specialization in Mobile Applications and Cloud Technology

**Sem I: Total Credits: 16, Total Marks: 650**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Credits**  **Subjects** | **General Education** | **Core Course (Maths + Science)** | **Engineering Fundamentals** | **Specialization sequence with directed electives** | **Free Electives** |
| 1. English I | 2 |  |  |  |  |
| 1. Fundamentals of Mathematics |  | 3 |  |  |  |
| 1. Computer fundamentals & organizations |  |  | **3** |  |  |
| 1. Programming in C |  |  | **2** |  |  |
| 1. Introduction to LINUX |  |  |  | **2** |  |
| 1. Effective Speaking and Analytical Skills - I |  |  |  |  | **2** |
| 1. C Programming Lab |  |  | **1** |  |  |
| 1. LINUX Lab |  |  |  | **1** |  |
| **TOTAL** | **2** | **3** | **6** | **3** | **2** |

\*\*\* Note: Lab carries 50 Marks

**Sem II: Total Credits: 18, Total Marks: 700**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Credits**  **Subjects** | **General Education** | **Core Course (Maths + Science)** | **Engineering Fundamentals** | **Specialization sequence with directed electives** | **Free Electives** |
| 1. English II | 2 |  |  |  |  |
| 1. System Configuration and Maintenance |  | 3 |  |  |  |
| 1. Data structures using C |  |  | 3 |  |  |
| 1. Operating system |  |  |  | 3 |  |
| 1. OOPs with C++ |  |  |  | 3 |  |
| 1. Effective Talking and Analytical Skills - II |  |  |  |  | 2 |
| 1. Data structure Lab |  |  | 1 |  |  |
| 1. C++ Lab |  |  |  | 1 |  |
| **TOTAL** | **2** | **3** | **4** | **7** | **2** |

\*\*\* Note: Lab carries 50 Marks

**Sem III: Total Credits: 17, Total Marks: 700**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Credits**  **Subjects** | **General Education** | **Core Course (Maths + Science)** | **Engineering Fundamentals** | **Specialization sequence with directed electives** | **Free Electives** |
| 1. Information Security Fundamentals |  | 3 |  |  |  |
| 1. Software Engineering | 3 |  |  |  |  |
| 1. Computer networks |  |  | 3 |  |  |
| 1. Programming in Java |  |  |  | 2 |  |
| 1. Introduction to DBMS |  |  |  | 2 |  |
| 1. Business Communication |  |  |  |  | 2 |
| 1. Lab JAVA |  |  |  | 1 |  |
| 1. Lab DBMS |  |  |  | 1 |  |
| **TOTAL** | **3** | **3** | **3** | **6** | **2** |

\*\*\* Note: Lab carries 50 Marks

**Sem IV: Total Credits: 17, Total Marks: 500**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Credits**  **Subjects** | **General Education** | **Core Course (Maths + Science)** | **Engineering Fundamentals** | **Specialization sequence with directed electives** | **Free Electives** |
| 1. Mobile Device and Network Architecture | 3 |  |  |  |  |
| 1. Introduction to Cloud Technology |  | 4 |  |  |  |
| 1. Mobile Web and Application Development |  |  | 3 |  |  |
| 1. Basic Android Programming |  |  |  | 3 |  |
| 1. Fundamentals of Datacenter |  |  |  |  | 2 |
| 1. Introduction to Cloud Technology - Lab |  |  |  | 1 |  |
| 1. Basic Android Programming - Lab |  |  |  | 1 |  |
| **TOTAL** | **3** | **4** | **3** | **5** | **2** |

\*\*\* Note: Lab carries 50 Marks

**Sem V: Total Credits: 16, Total Marks: 550**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Credits**  **Subjects** | **General Education** | **Core Course (Maths + Science)** | **Engineering Fundamentals** | **Specialization sequence with directed electives** | **Free Electives** |
| 1. Fundamentals of Storage | 3 |  |  |  |  |
| 1. Mobile Ecosystem and Business Models |  | 3 |  |  |  |
| 1. Server Operating System - II |  | 3 |  |  |  |
| 1. Advanced Android Programming |  |  | 3 |  |  |
| 1. Server Operating System - II Lab |  |  | 1 |  |  |
| 1. Advanced Android Programming - Lab |  | 1 |  |  |  |
| 1. Specialization 1.1 /2.1 |  |  |  | 3 |  |
| **TOTAL** | **3** | **7** | **4** | **3** |  |

\*\*\* Note: Lab carries 50 Marks

Specialization

|  |  |  |  |
| --- | --- | --- | --- |
| Specialization 1 – Mobile Applications | | Specialization 2 – Cloud Technology | |
| Specialization 1.1 | Web Technology and Value Added Services in Mobile | Specialisation2.1 | Principles of Virtualization |

**Sem VI: Total Credits: 12, Total Marks: 400**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Credits**  **Subjects** | **General Education** | **Core Course (Maths + Science)** | **Engineering Fundamentals** | **Specialization sequence with directed electives** | **Free Electives** |
| 1. Specialization 1.2 /2.2 |  |  |  | 3 |  |
| 1. Final Project + Viva |  |  |  | 9 |  |
| **TOTAL** |  |  |  | **12** |  |

Specialization

|  |  |  |  |
| --- | --- | --- | --- |
| Specialization 1 – Mobile Applications | | Specialization 2 – Cloud Technology | |
| Specialization 1.2 | Mobile Testing | Specialisation2.2 | Introduction to Windows Azure |

\*\*\* Note: Final Project + Viva carries 300 Marks