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INTRODUCING

SPECIALIZED SERIES - JOB ROLE MAPPED

B.Sc IT PROGRAMS

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B.Sc IT (DATA SCIENCE)

TECHNOLOGY OVERVIEW

Data Science is indisputably the most happening of all areas in computer science today. Exponential growth in generation and consumption of data has created an unprecedented need for people skilled in planning, collecting, storing, retrieving and analysing data, to extract useful insights from the data.

Data Science is quickly becoming an inevitable part of the tool kit you will need in the future. Knowing how to work with data - storing it, mining it, gaining insights from it, and being able to predict outcomes based on it will give you an edge over your compatriots - our program is designed to equip you with the pertinent skills and tools that will prepare you for the future.

MARKET GROWTH POTENTIAL AND OPPORTUNITIES

A study carried out by Analytics India Magazine and AnalytixLabs titled 'Analytics India Industry Study 2017', suggests that the Analytics/Data Science/Big Data industry in India is currently estimated to be $2.03 billion annually in revenues and that it is growing at a healthy rate of 23.8% (CAGR). A career in Data Science is said to be one of the hottest, and trending career options of this decade. Some even say, data is the new oil.

Data Science is projected to grow in demand by 28% by the year 2022. Reports estimate that by the year 2022, as much as 1.7 MB of digital data will be created each second for every single person on the planet.

A report by PricewaterhouseCoopers (PwC) has determined that over the next three years, there will be an additional 2.7m new jobs created in Data Science and analytics.

It is expected that revenue from Data Science and AI, from both IT and non-IT industries, would be around 16 billion U.S. dollars, providing jobs to nearly 150,000 professionals in the next seven to eight years.

The demand for Data Scientist jobs is projected to grow by 15% over the next five years, which translates to nearly

364,000 new job postings expected nationally by 2022. The fastest-growing roles are Data Scientists and Advanced Analysts, which are projected to see demand spike by 28% by 2022.

PROGRAM OVERVIEW

IT companies are looking for people who have good analytical, problem solving and hands-on exposure to Data Science processes, tools and techniques to take up various emerging roles in the area of Data Science.

Data Science provides all the tools and skills necessary to extract valuable insights from the data, by using Mathematical and Statistical techniques. This specialization also focuses on handling Big Data.

The B.Sc IT program with specialization in Data Science offered by the University is designed to provide exposure to students in the area of Computer Science and also specialize in Data Science. This program will enable students to take up various emerging roles in the area of Data Science.

PROGRAM OBJECTIVES

This innovative and engaging program is designed in collaboration with practitioners from industry and academia. The program provides students with exposure and experience to accelerate their career prospects in the evolving and emerging field of Data Science.

This undergraduate program is designed to develop student's expertise in the chosen area of Data Science, along with ample opportunities for students to explore 21st century skills.

The goal of this program is to enable students to be capable of providing meaningful solutions to real life problems. Throughout the program students will be exposed to tools of lifelong learning. This makes it possible for them to stay relevant in the fast paced world of technology.

SOME OF THE DATA SCIENCE TOPICS COVERED INCLUDE

» Data Analytics, Data Visualization, Data Mining, Data Science Process, Data Preprocessing, Data Cleaning, Machine Learning, Working with structured, unstructured and semistructured data

» Exposure and experience to industry specific tools such as R, Java, JEE, Python, Python libraries (Numpy, Pandas, scikit), Hadoop, Spark, Mapreduce, Relational Databases such as MySQL, NoSQL databases such as MongoDB, GraphDB, Redis
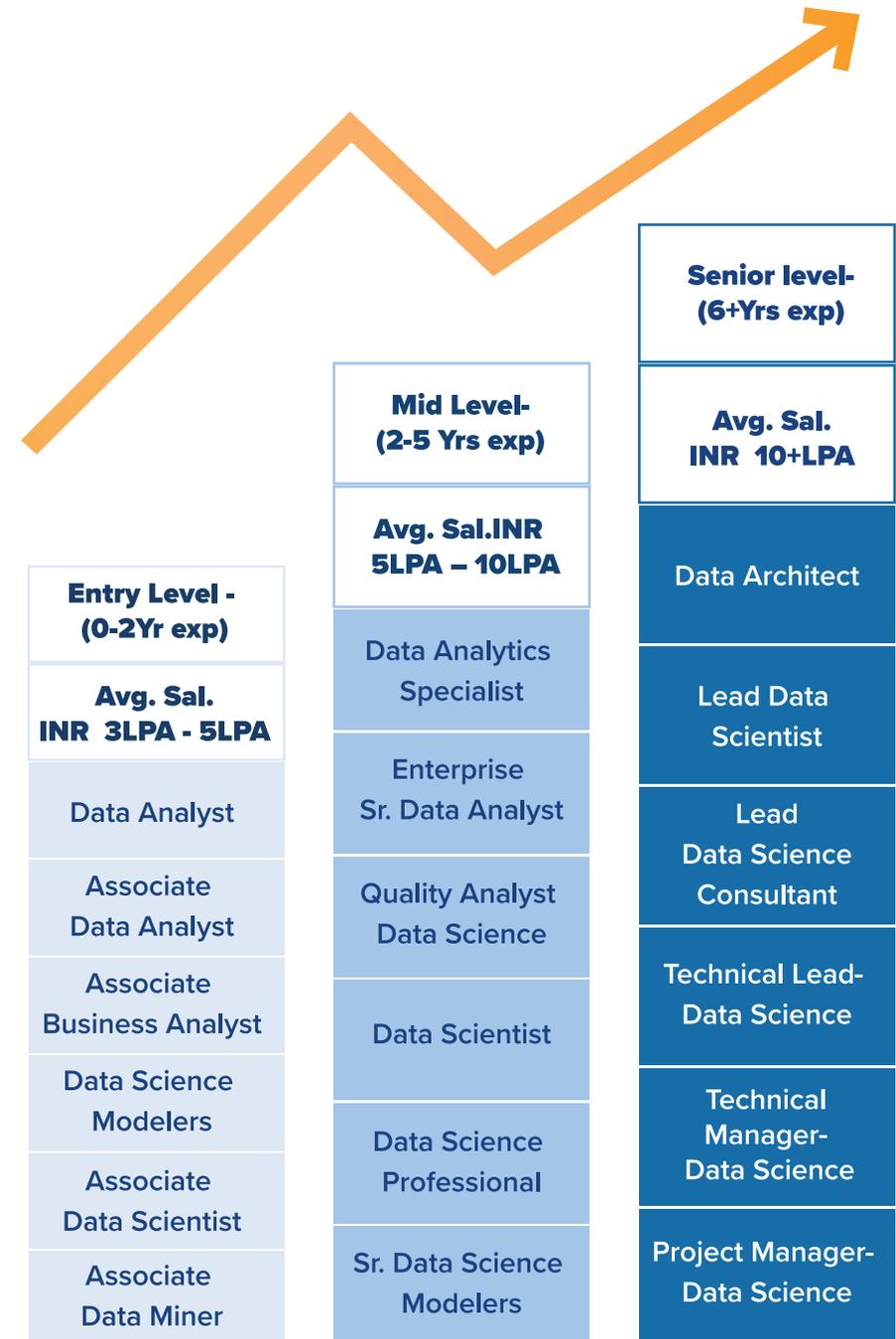
THE OBJECTIVES OF THIS INNOVATIVE UNDERGRADUATE PROGRAM ARE LISTED BELOW:

» Provide strong conceptual knowledge and experiential learning through activity-based learning in the area of Computer Science and Data Science

» Provide in-depth exposure and experience to Data Science processes, tools and techniques through project based learning

» Prepare students for evolving job roles in the area of Data Science by providing industry-endorsed content and industry relevant projects

» Develop 21st century skills such as Analytical skills, Critical Thinking, Problem Solving, Collaboration, Communication and Creativity

THE PROGRESSION ROUTES OF STUDENTS:

After successful completion of this program, the students have an option to choose an employment based on the job mapping or pursue higher studies

JOBS AND SALARY RANGES

Entry Level - (0-2Yr exp)	Mid Level- (2-5 Yrs exp)	Senior level- (6+Yrs exp)
Avg. Sal. INR 3LPA - 5LPA	Avg. Sal.INR 5LPA – 10LPA	Avg. Sal. INR 10+LPA
Data Analyst	Data Analytics Specialist	Data Architect
Associate Data Analyst	Enterprise Sr. Data Analyst	Lead Data Scientist
Associate Business Analyst	Quality Analyst Data Science	Lead Data Science Consultant
Data Science Modelers	Data Scientist	Technical Lead- Data Science
Associate Data Scientist	Data Science Professional	Technical Manager- Data Science
Associate Data Miner	Sr. Data Science Modelers	Project Manager- Data Science

SEMESTER WISE CURRICULUM

The students will spend a considerable amount of time throughout the course building a solid foundation in Computer Science and Data Science. The students get exposure to their specialization area from the 3rd semester. They can also choose electives in their specialization areas starting from the 4th semester where they can learn concepts, tools, techniques and apply them to solve industry relevant problems and projects in the area of Data Science.

SEMESTER 1

- Mathematics-I
- Computer Fundamentals and Problem Solving
- Computer Fundamentals and Problem Solving Lab
- Operating Systems
- Operating Systems Lab
- Life Skills-1
- Environmental Science

SEMESTER 2

- Mathematics-II
- Data Structures and Algorithms
- Data Structures and Algorithms Labs
- Data Modeling and Databases
- Data Modeling and Databases Lab
- Basic Electronics
- Financial Literacy
- Life Skills-2

SEMESTER 3

- Mathematics III
- Web Fundamentals
- Web Fundamentals Lab
- Computer Networks
- Object Oriented Programming using JAVA
- Object Oriented Programming using JAVA Lab
- Introduction to Data Science and Data Mining
- Life Skills-3

SEMESTER 4

- Python Programming
- Python Programming Lab
- Web Application Development
- Web Application Development Lab
- Data Analytics and Visualization
- Specialization Elective 1
- Life Skills-4

SEMESTER 5

- Advances in Databases (NoSQL databases)
- Advances in Databases (NoSQL databases) Lab
- Big Data Technologies
- Big Data Technologies Lab
- Specialization Elective 2
- Life Skills-5
- Internship

SEMESTER 6

- Design Patterns
- Design Patterns Lab
- Specialization Elective 3
- Life Skills-6
- Final Project

*Subject to changes

INDICATIVE LIST OF SPECIALIZATION ELECTIVES IN DATA SCIENCE

» **Machine Learning**
» **Text Mining and NLP**
» **Recommender Systems**
» **Deep Learning**

INTERNSHIP

Students should complete internship during the period specified in the Scheme of teaching and evaluation. The internship work must be in the chosen area of specialization and can be carried out in any Industry/R & D Organization/Research Institute /Educational Institute. The internship must be carried out under the guidance of academic and industry mentors.

PROJECT

Students should complete a industry relevant project during the period specified in the Scheme of teaching and evaluation. The project work must be in the chosen area of specialization carried out under the guidance of academic and industry mentors.

ELIGIBILITY

The Minimum qualification required to apply for this program is 10+2 examination from PUC/ ISC/ CBSE/ or equivalent board.

Program Duration - 3 years
(6 semesters) - Full-Time

DIRECT ADMISSION:

For Students securing 70%
and above in XII Std Board Exams.

B.SC IT (MACHINE LEARNING)

TECHNOLOGY OVERVIEW

The ever increasing amount of data being available provides us an opportunity to extract insights by applying techniques that have been developed for centuries. With greater computing capacity available and the development of sophisticated algorithms, smart data analysis has become pervasive and a critical catalyst in technological progress.

Machine learning is a sub-field of computer science evolved from attempts to extract insights from data, pattern recognition and computational learning theories in artificial intelligence. It is used in developing models that analyze large and complex data deriving faster and accurate insights that help in making the most appropriate decisions.

MARKET GROWTH POTENTIAL AND OPPORTUNITIES

Machine Learning scientists build methods for predicting product suggestions and product demand and explore Big Data to automatically extract patterns. Companies recruit for positions like Machine Learning Engineer, Machine Learning Analyst, NLP Data Scientist, Data Sciences Lead, and Machine Learning Scientist.

Machine learning patents grew at a 34% Compound Annual Growth Rate (CAGR) between 2013 and 2017, the third-fastest growing category of all patents granted.

Deloitte Global predicts the number of machine learning pilots and implementations will double in 2018 compared to 2017 and double again by 2022.

Gartner says that there will be 2.3 million Machine Learning jobs by 2022.

PROGRAM OVERVIEW

Machine Learning has applications in almost all walks of life. There is huge requirement of engineers who not only have strong theoretical knowledge in computer science, mathematics, statistics, and machine learning but also practical exposure and experience to quickly apply these techniques to solve new problems.

The B.Sc IT program with specialization in Machine Learning offered by partner University is designed to provide exposure to students in the area of Computer Science and also specialize in Machine Learning. This program will enable students to take up various emerging roles in the area of Machine Learning.

PROGRAM OBJECTIVES

This innovative and engaging program is designed in collaboration with practitioners from industry and academia. The program provide students with exposure and experience to accelerate their career prospects in the evolving and emerging field of Machine Learning. This undergraduate program is designed to develop student's expertise in the chosen area of **Machine Learning,** along with ample opportunities for students to explore 21st century skills.

The goal of this program is to enable students to be capable of providing meaningful solutions to real life problems. Throughout the program students will be exposed to tools of lifelong learning. This makes it possible for them to stay relevant in the fast paced world of technology.

SOME OF THE MACHINE LEARNING TOPICS COVERED INCLUDE

» Probability, Statistics, Linear Algebra, Machine Learning, Supervised and Unsupervised Learning, Deep Learning, Natural Language Processing, Machine learning models for Sentiment Analysis, Recommender Systems.

» Exposure and experience to industry specific tools and technologies such as Java, R, Python, Python libraries (Numpy, Pandas, scikit), Deep learning frameworks such as Tensorflow, NoSQL databases (MongoDB, GraphDB), Hadoop, Spark
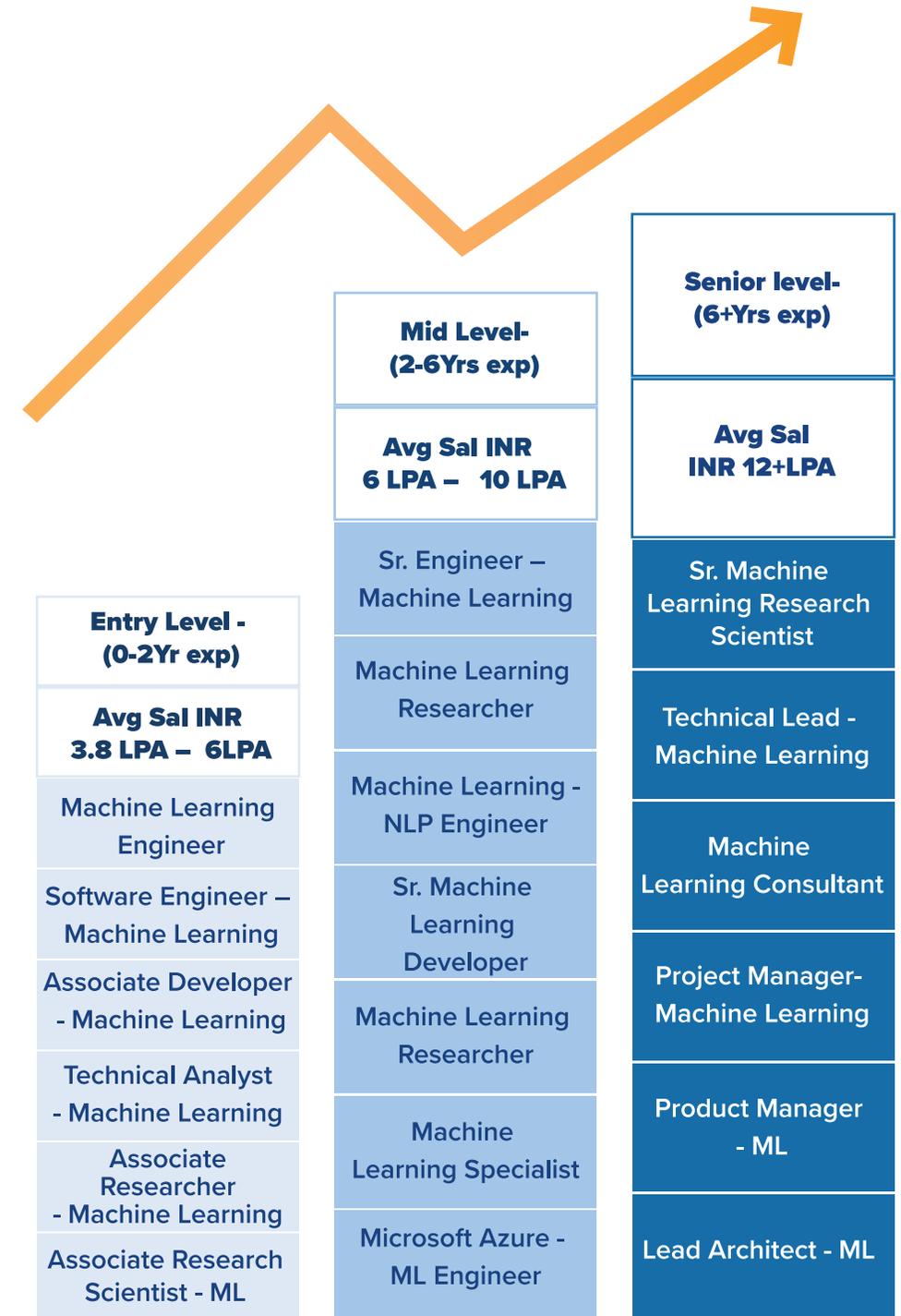
THE OBJECTIVES OF THIS INNOVATIVE UNDERGRADUATE PROGRAM ARE LISTED BELOW:

» Provide strong conceptual knowledge and experiential learning through activity-based learning in the areas of Computer Science, Mathematics, Statistics and Machine Learning

» Provide in-depth exposure and experience to processes, tools and techniques to build Machine Learning applications through project based learning.

» Prepare students for evolving job roles in the area of Machine Learning by providing industry-endorsed content and industry relevant projects

» Develop 21st century skills such as Analytical skills, Critical Thinking, Problem Solving, Collaboration, Communication and Creativity

THE PROGRESSION ROUTES OF STUDENTS:

After successful completion of this program, the students have an option to choose an employment based on the job mapping or pursue higher studies

JOBS AND SALARY RANGES

Entry Level - (0-2Yr exp)

Avg Sal INR 3.8 LPA – 6LPA

- Machine Learning Engineer
- Software Engineer – Machine Learning
- Associate Developer - Machine Learning
- Technical Analyst - Machine Learning
- Associate Researcher - Machine Learning
- Associate Research Scientist - ML

Mid Level- (2-6Yrs exp)

Avg Sal INR 6 LPA – 10 LPA

- Sr. Engineer – Machine Learning
- Machine Learning Researcher
- Machine Learning - NLP Engineer
- Sr. Machine Learning Developer
- Machine Learning Researcher
- Machine Learning Specialist
- Microsoft Azure - ML Engineer

Senior level- (6+Yrs exp)

Avg Sal INR 12+LPA

- Sr. Machine Learning Research Scientist
- Technical Lead - Machine Learning
- Machine Learning Consultant
- Project Manager- Machine Learning
- Product Manager - ML
- Lead Architect - ML

SEMESTER WISE CURRICULUM

The students will spend a considerable amount of time throughout the course building a solid foundation in Computer Science, Mathematics, Statistics and Machine Learning. The students will get exposure to their specialization area from 3rd semester. They can also choose electives in their specialization areas starting from 4th semester where they can learn concepts, tools, techniques and apply them to solve industry relevant problems and projects in the area of Machine Learning.

SEMESTER 1

- Mathematics-I
- Computer Fundamentals and Problem Solving
- Computer Fundamentals and Problem Solving Lab
- Operating System
- Operating System Lab
- Life Skills-1
- Environmental Science

SEMESTER 2

- Mathematics-II
- Data Structures and Algorithms
- Data Structures and Algorithms Lab
- Data Modeling and Databases
- Data Modeling and Databases Lab
- Basic Electronics
- Financial Literacy
- Life Skills-2

SEMESTER 3

- Mathematics III
- Web Fundamentals
- Web Fundamentals Lab
- Computer Networks
- Object Oriented Programming using JAVA
- Object Oriented Programming using JAVA Lab
- Introduction to Data Science and Data Mining
- Life Skills-3

SEMESTER 4

- Python Programming
- Python Programming Lab
- Web Application Development
- Web Application Development Lab
- Machine Learning
- Specialization Elective 1
- Life Skills-4

SEMESTER 5

- Advances in Databases (NoSQL databases)
- Advances in Databases (NoSQL databases) Lab
- Machine Learning and NLP
- Machine Learning and NLP Lab
- Specialization Elective 2
- Life Skills-5
- Internship

SEMESTER 6

- Design Patterns
- Design Patterns Lab
- Specialization Elective 3
- Life Skills-6
- Final Project

*Subject to changes

INDICATIVE LIST OF SPECIALIZATION ELECTIVES IN MACHINE LEARNING

» **Data Analytics and Visualization**
» **Machine Learning and Big Data Technologies**
» **Recommender Systems**
» **Deep Learning**

INTERNSHIP

Students should complete internship during the period specified in the Scheme of teaching and evaluation. The internship work must be in the chosen area of specialization and can be carried out in any Industry/R & D Organization/Research Institute /Educational Institute. The internship must be carried out under the guidance of academic and industry mentors.

PROJECT

Students should complete a industry relevant project during the period specified in the Scheme of teaching and evaluation. The project work must be in the chosen area of specialization carried out under the guidance of academic and industry mentors.

ELIGIBILITY

The Minimum qualification required to apply for this program is 10+2 examination from PUC/ ISC/ CBSE/ or equivalent board.

Program Duration - 3 years (6 semesters) - Full-Time

DIRECT ADMISSION:

For Students securing 70% and above in XII Std Board Exams.

B.SC IT (CLOUD COMPUTING AND DEVOPS)

TECHNOLOGY OVERVIEW

Cloud Computing continues to be one of the most hyped areas in the history of IT even though Cloud Computing technology has become part of the mainstream. Every IT vendor has a cloud strategy and variations, such as private cloud computing and hybrid approaches, deliver the benefits of agility, speed and innovation.

Cloud Computing is the delivery of computing services—servers, storage, databases, networking, software, analytics, intelligence and more—over the Internet ("the cloud") to offer faster innovation, flexible resources and economies of scale.

DevOps is a software development methodology that combines software development with information technology operations. The goal of DevOps is to shorten the systems development life cycle while also delivering features, fixes, and updates frequently in close alignment with business objectives.

MARKET GROWTH POTENTIAL AND OPPORTUNITIES

Gartner projected direct spending of over $40 billion on cloud computing last year and predicted that the spend will continue to grow over 30% in the coming years.

India is expected to see more than a million cloud computing job roles by 2022 as more organizations shift their operations to the cloud infrastructure.

The cloud storage market size is expected to grow to USD 88.91 billion by 2022, at a Compound Annual Growth Rate (CAGR) of 23.7% during the forecast period (2017–2022).

(Source:- wire19.com) India's public cloud market is estimated to be $2.6 billion in 2018 and would grow to over $4 billion by 2022.

(Source:- livemint.com) The cloud workflow market is expected to grow from USD 1.75 billion in 2018 to USD 3.85 billion by 2023, at a CAGR of 17.1% during the forecast period.

(Source:- marketsandmarkets.com) The DevOps market is expected to grow from USD 3.42 Billion in 2018 to USD 10.31 Billion by 2023, at a Compound Annual Growth Rate (CAGR) of 24.7% during the forecast period.

By using DevOps solutions, enterprises are developing newer and better ways of enhancing operational benefits, while reducing costs. Faster deployment, scalability, and agility; regulatory compliance requirements; and need for lower Capital Expenditure (CAPEX) and Operational Expenditure (OPEX) are expected to drive the demand for DevOps solutions and services.

PROGRAM OVERVIEW

Over the past few years there has been a shift in the way we do computing. With cheaper and ubiquitous internet availability, computing power is not necessarily limited any more to the devices with physical access. This has opened up many possibilities, not only are complex computations becoming cheaper, entire IT infrastructure can now be made available over the internet. Advances in Cloud Computing and DevOps has changed the way businesses think with respect to infrastructure management processes and software development processes. For example, setting up infrastructure for new organizations is no more a challenge and can be done in a few hours, there is a enhanced ability in the organizations to deliver software applications and services at a faster pace.

These advances has led to creation of new job roles with specialized skill set to take up the evolving jobs in the area of Cloud Computing and Devops. There is a demand for engineers with knowledge and skills to contribute in building cloud based systems and application/services – Plan for cloud based offerings; Design, develop and deploy applications and services on cloud and use DevOps tools and practices.

PROGRAM OBJECTIVES

This innovative and engaging program is designed in collaboration with practitioners from industry and academia. The program provide students with exposure and experience to accelerate their career prospects in the evolving and emerging field of Cloud Computing and DevOps. This undergraduate program is designed to develop student's expertise in the chosen area of **Cloud Computing and Devops**, along with ample opportunities for students to explore 21st century skills.

The goal of this program is to enable students to be capable of providing meaningful solutions to real life problems. Throughout the program students will be exposed to tools of lifelong learning. This makes it possible for them to stay relevant in the fast paced world of technology.

Some areas covered as part of specialization are Virtualization, Cloud Computing Models and Services, Cloud architecture, Cloud Storage, Cloud Networking and Security, DevOps tools (Jenkins, Salt Master, Dockers, Ansible, Puppet, Python, Java, building applications on cloud such as AWS.
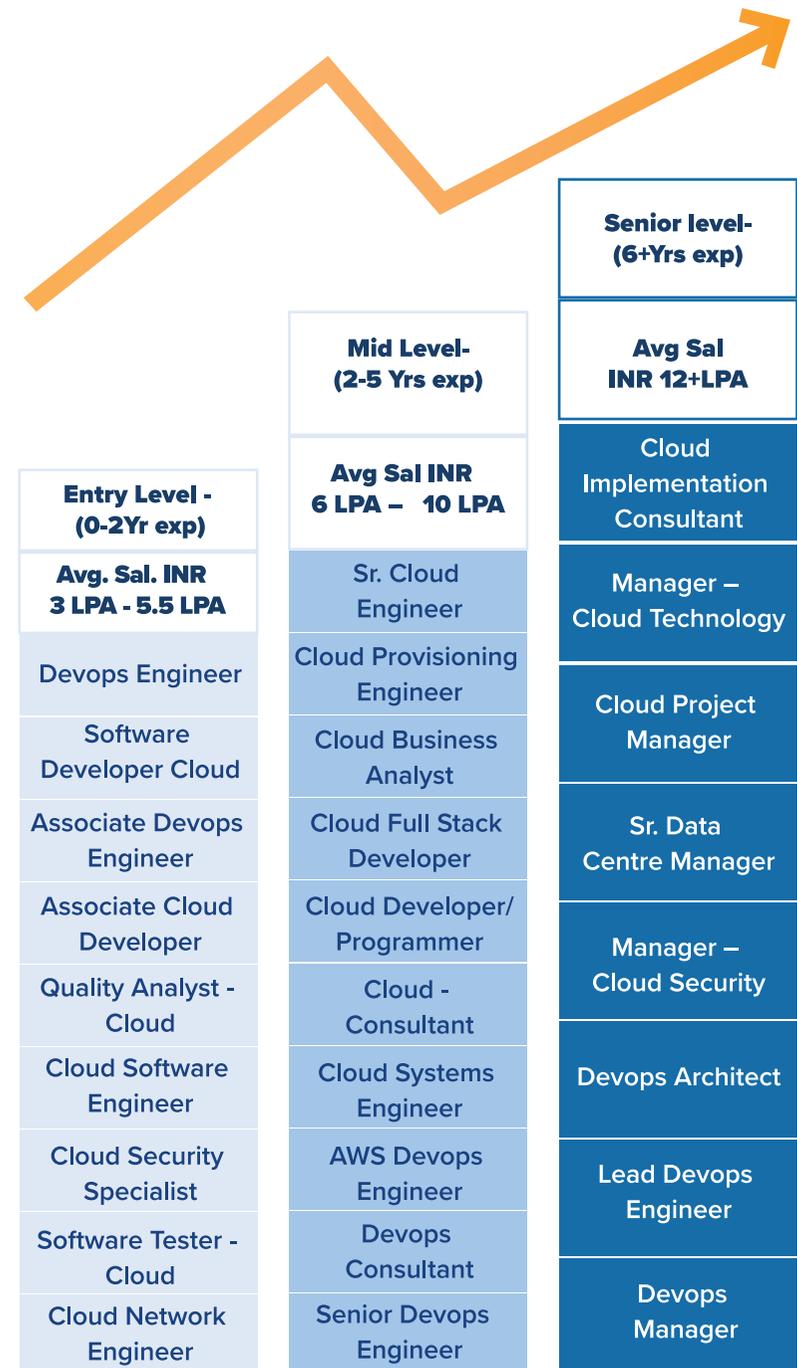
THE OBJECTIVES OF THIS INNOVATIVE UNDERGRADUATE PROGRAM ARE LISTED BELOW:

» Provide strong conceptual knowledge and experiential learning through activity-based learning in Computer Science, Cloud Computing and DevOps

» Provide in-depth exposure and experience to processes, tools and techniques to build Cloud applications and use DevOps processes, tools and practices through project based learning

» Prepare students for evolving job roles in the area of Cloud Computing and DevOps by providing industry-endorsed content and industry relevant projects

» Develop 21st century skills such as Analytical skills, Critical Thinking, Problem Solving, Collaboration, Communication and Creativity

THE PROGRESSION ROUTES OF STUDENTS:

After successful completion of this program, the students have an option to choose an employment based on the job mapping or pursue higher studies.

JOBS AND SALARY RANGES

Entry Level - (0-2Yr exp)	Mid Level- (2-5 Yrs exp)	Senior level- (6+Yrs exp)
Avg. Sal. INR 3 LPA - 5.5 LPA	Avg Sal INR 6 LPA – 10 LPA	Avg Sal INR 12+LPA
Devops Engineer	Sr. Cloud Engineer	Cloud Implementation Consultant
Software Developer Cloud	Cloud Provisioning Engineer	Manager – Cloud Technology
Associate Devops Engineer	Cloud Business Analyst	Cloud Project Manager
Associate Cloud Developer	Cloud Full Stack Developer	Sr. Data Centre Manager
Quality Analyst - Cloud	Cloud Developer/ Programmer	Manager – Cloud Security
Cloud Software Engineer	Cloud - Consultant	Devops Architect
Cloud Security Specialist	Cloud Systems Engineer	Lead Devops Engineer
Software Tester - Cloud	AWS Devops Engineer	Devops Manager
Cloud Network Engineer	Devops Consultant	
	Senior Devops Engineer	

SEMESTER WISE CURRICULUM

The students will spend a considerable amount of time throughout the course building a solid foundation in Computer Science. The students will get exposure to their specialization area from 3rd semester. They can also choose electives in their specialization areas starting from 4th semester where they can learn concepts, tools, techniques and apply them to solve industry relevant problems and projects in the area of Cloud Computing and DevOps.

SEMESTER 1

- Mathematics-I
- Computer Fundamentals and Problem Solving
- Computer Fundamentals and Problem Solving Lab
- Operating System
- Operating System Lab
- Life Skills-1
- Environmental Science

SEMESTER 2

- Mathematics-II
- Data Structures and Algorithms
- Data Structures and Algorithms Lab
- Data Modeling and Databases
- Data Modeling and Databases Lab
- Basic Electronics
- Financial Literacy
- Life Skills -2

SEMESTER 3

- Mathematics-III
- Web Fundamentals
- Web Fundamentals Lab
- Computer Networks
- Object Oriented Programming using JAVA
- Object Oriented Programming using JAVA Lab
- Introduction to Cloud Computing
- Life Skills-3

SEMESTER 4

- Python Programming
- Python Programming Lab
- Web Application Development
- Web Application Development Lab
- Cloud Architecture and Technology
- Specialization Elective 1
- Life Skills-4

SEMESTER 5

- Advances in Databases (NoSQL databases)
- Advances in Databases (NoSQL databases) Lab
- Building Applications on Cloud
- Building Applications on Cloud Lab
- Specialization Elective 2
- Life Skills-5
- Internship

SEMESTER 6

- Design Patterns
- Design Patterns Lab
- Specialization Elective 3
- Life Skills-6
- Final Project

*Subject to changes

INDICATIVE LIST OF SPECIALIZATION ELECTIVES IN CLOUD COMPUTING AND DEVOPS

» **Cloud Storage**
» **Cloud Network and Security**
» **DevOps Concepts, Tools and Practices**
» **Dockers and Devops**

INTERNSHIP

Students should complete internship during the period specified in the Scheme of teaching and evaluation. The internship work must be in the chosen area of specialization and can be carried out in any Industry/R & D Organization/Research Institute /Educational Institute. The internship must be carried out under the guidance of academic and industry mentors.

PROJECT

Students should complete a industry relevant project during the period specified in the Scheme of teaching and evaluation. The project work must be in the chosen area of specialization carried out under the guidance of academic and industry mentors.

ELIGIBILITY

The Minimum qualification required to apply for this program is 10+2 examination from PUC/ ISC/ CBSE/ or equivalent board.

Program Duration - 3 years (6 semesters) - Full-Time

DIRECT ADMISSION:

For Students securing 70% and above in XII Std Board Exams.

BE THE BEST FROM THE REST

SPECIALIZED PROGRAMS ADMISSION HELPLINE

+91 8209668322
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