KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY
Deemed to be University U/S 3 of the UGC Act, 1956
SCHOOL OF MANAGEMENT

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For more details visit: **www.ksom.ac.in/business-analytics**

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# KSOM INTRODUCES SPECIALIZATION IN BUSINESS ANALYTICS

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## ABOUT THE SPECIALIZATION / PROGRAM


## WHY BUSINESS ANALYTICS?

As the computing power of electronics significantly increasing year on year, present day businesses are gearing up to access its benefit. Customer engagement with businesses are tracked at every step and every minute details about them are stored in machines for future predictions. Companies are able to generate and store huge volume of data through implementation of ERP and other technologies. Analytics use the power of advanced statistical concepts to analyse data more intelligently. This includes descriptive statistics, data visualization and predictive modelling for generating/ finding data-driven insights.

The results from the analytics may be used for developing competitive strategies for a business scenario. This can be used in the field of finance, marketing, operations, and HR for identifying ROI drivers, developing target market for a product, fine-tuning the supply chain, deciding on retention of performers etc.

## A RIGHT OPPORTUNITY

The scope of analytics and hence the talent requirement increasing significantly worldwide. The skills gained through the learnings in the area provides a strong leverage to get employment in various analytics role in industries. At present there are not enough talent supply for the existing demand in the analytics field. IBM predicts demand for data scientist will soar 28% by 2020. Follow the link here. Hence the specialization in analytics can definitely be an added advantage for the need of the hour.

## OBJECTIVE OF THIS SPECIALIZATION

The **specialization** shall help in exploring and strengthening the analytical mind

Adequately efficient in applying the **software knowledge** and **tools** using R, Python, Tableau, and Excel Analytics

Helps in applying **data visualization** technique for exploratory analysis

**Learn to apply** and **evaluate** different models for a business scenario

This will help to **add skillset** in the decision-making process through data

## COURSES OFFERED AS CORE AND ELECTIVE PAPERS


**Core papers:**

### Advanced statistics for data science

**Course Contents:**

- Basic Probability Theory (Probability spaces, Conditional probability, Independence)
- Random Variables (Definition, Discrete random variables, Continuous random variables, Conditioning on an event, Functions of random variables, Generating random variables)
- Multivariate Random Variables (Discrete random variables, Continuous random variables, Joint distributions of discrete and continuous variables, Independence, Functions of several random variables, Generating multivariate random variables, Rejection sampling,
- Expectation (Expectation operator, Mean and variance, Covariance, Conditional expectation,
- Random Processes (Definition, Mean and autocovariance functions, Independent identically-distributed sequences, Gaussian process, Poisson process, Random walk
- Convergence of Random Processes (Types of convergence, Law of large numbers, Central limit theorem, Monte Carlo simulation)
- Markov Chains (Time-homogeneous discrete-time Markov chains, Recurrence, Periodicity, Convergence, Markov-chain Monte Carlo)
- Frequentist Statistics (Independent identically-distributed sampling, Mean square error, Consistency, Confidence intervals, Nonparametric model estimation, Parametric model estimation)
- Bayesian Statistics (Bayesian parametric models, Conjugate prior, Bayesian estimators, )
- Hypothesis testing (Parametric testing, Nonparametric testing)
- Linear Algebra (Vector spaces, Inner product and norm, Orthogonality, Projections, Matrices, Eigen decomposition, Eigen decomposition of symmetric matrices)

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## Analytics Toolbox

**Course Contents:**

- Excel fundamentals
- Advanced excel methods for simulations and analytics
- What-if analysis, regression analysis, hypothesis tests.
- Working with Data – Introduction to R
- R-data types, working with lists and data-frame in R
- Data Visualization – Using R
- Programming in Python
- Introduction to functions in Python and R
- SQL and NoSQL labs
- Tableau operations
- Plots and reporting using Tableau

## Business Analytics

**Course Contents:**

- Introduction, Role of Business analytics in Organization
- Business Statistics (Descriptive and Inferential)
- Introduction to predictive analytics
- Working with Data – Introduction to R
- Data Visualization – Using R
- Linear Regression & Prediction modelling– (Theory and modelling using R)
- Logistic Regression & Prediction modelling – (experience with using R)
- Supervised vs. unsupervised learning
- Data segmentation and classification technique- Decision science – Trees & clustering
- Text analytics (Introductory)
- Business Analytics – Case studies using Excel modelling

## Elective papers:

**Course Contents:**

- Business Analytics Fundamentals
- Business Data Mining
- Machine learning and AI
- Introduction to R programming for analytics
- Financial Risk Management and Analytics
- Supply Chain Analytics
- Basics of Marketing and social media Analytics
- Categorical Data Analytics
- Text mining and Analytics
- Human Resource Analytics
- Advanced Business Analytics

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