Sant Gadge Baba Amravati University, Amravati

Part B

Syllabus Prescribed for 3 Year BCA UG Programme

Programme: Bachelor of Computer Application (BCA)

Semester V

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Hours)
5BCA3	**Fundamentals of Data Science**	**60**

Cos: After completion of the syllabus student will be able to:

1.Understand the Stages of data and its application in various field.
2. Clean the data for its processing.
3. Apply basics of statistics to the data.
4. Analyze the data
5. Develop data Model.

Unit	Content
Unit I	**Introduction to Data Science**: Evolution of Data Science – Data Science Roles – Stages in a Data Science Project – Applications of Data Science in various fields – Data Security Issues. **(12 Hours)**
Unit II	**Processing of Data Science:** Data collection & Data Preprocessing, Data Collection Strategies, Data Cleaning,Types of Data, Database table, Database Table Structure, Variables, Python Programming, Python Libraries: pandas , Matplotlib, Scipy, Numpy, Python Data Frame: Create Data Frame. **(11 Hours)**
Unit III	**Data Science Math**: Data Science Functions, Data Preparation: Extract & Read Data with Pandas, Data Catagories: Numerical, Catagorical, ordinal, Linear Function: plotting Linear Function, Slope & intercept. (**11 Hours)**
Unit IV	**Introduction to Statistics**: Descriptive Statastics,Statics Percentile,Statics Standard deviation, Statics Variance, Statics Corelation,Statistics correlation Matrix. **(11 Hours)**
Unit V	**Regression Coefficient:** Linear Regression: Least Square Method, Regression Table. Regression Coefficient, Regression table:P value, Regression Table R-squared. **(11 Hours)**
***SEM** Assignment, Class test, Attendance, Seminar, Study tour, Industrial visit, Field work, Group discussion or any other innovative practice/activity	
1. COs: To be able to draw upon foundational knowledge, learn, adapt and successfully bring to bear analytical and computational approaches on changing societal and technological challenges 2. Cos: To assess the curricular skills acquired by students at college level through Assignments, Unit test, Internal Test, Group Discussion/Seminar/Mini Project, Study Tour	
Activities	1. Seminar, 2. Design of Data Models. (4 Hours)

Course Material/Learning Resources

Text books:

1) Data Science using Python: A Step-by-Step Practical Approach for Beginners. By Dr. Vishal Goyal Dr.Monika Bansal, Dr.Munish Jindal , Dr.Harmandeep Kaur. DPS PUBLISHING HOUSE.
2) Data Analytics using Python by Bharti Motwani Publication: Wiley

Reference Books:

1. Data Science and Machine Learning using Python by By Reema Thareja Published: August 1, 2022

Weblink to Equivalent MOOC on SWAYAM if relevant:

https://medium.com/analytics-vidhya/top-10-moocs-for-learning-data-science-and-machine-learning-cc725ecfd551

https://www.my-mooc.com/en/categorie/data-analysis

https://www.my-mooc.com/en/categorie/data-visualization

Weblink to Equivalent Virtual Lab if relevant:

http://vlabs.iitb.ac.in/vlabs-dev/labs/machine_learning/labs/index.php
http://vlabs.iitb.ac.in/vlabs-dev/labs/python-basics/experiments/data-types-iitk/simulation.html
https://python-iitk.vlabs.ac.in/

Any pertinent media (recorded lectures, YouTube, etc.) if relevant:

https://www.youtube.com/watch?v=vPw734VvPqg

https://www.youtube.com/watch?v=MmfMncjyAkI

https://www.youtube.com/watch?v=11unm2hmvOQ