

**FACULTY OF COMPUTER APPLICATIONS**  
**B.Sc. (Data Science)**

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- **Sem.** : 6
- **Subject Code** : 05DS0604
- **Subject** : Major Project
- **Course Objectives:**
  1. To develop a comprehensive understanding of the data science lifecycle, including data collection, cleaning, analysis, and interpretation.
  2. To apply various data science techniques and algorithms to solve real-world problems in diverse domains.
  3. To Gain hands-on experience with popular data science tools and programming languages such as Python, R, AI-ML and Power BI.
  4. To Work collaboratively in a team environment to tackle complex data science projects from inception to completion.
  5. Demonstrate effective communication skills through the presentation and documentation of the project findings and insights.
- **Prerequisites** : Knowledge of data science concepts and tools.

**Guidelines**

- Clearly define the project's objectives, scope, and deliverables. Ensure alignment with program goals and feasibility within given resources.
- It is recommended that the team should be of 1-3 students.
- Acquire, clean, and preprocess data meticulously. Document data sources, cleaning procedures, and transformations undertaken.
- Choose appropriate data analysis techniques and methodologies. Justify selections based on project requirements and data characteristics.
- Project plan along with the division of work amongst team mates would have been prepared and got approved within a week of the starting of semester for

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- Maintain comprehensive documentation throughout the project. Document code, analyses, decisions, and outcomes effectively for transparency and reproducibility.
- Conduct the project with integrity and adhere to ethical principles. Ensure privacy, confidentiality, and fairness in data handling and analysis.

**Accomplishments of the student after completing the course:**

- Doing the project will enable the student to go through rich experience in developing projects & application of programming knowledge. Such an experience will include encountering various technical issues, finding sources to resolve the issues and finally finding the solution of all these issues satisfactorily.
- Students develop advanced analytical skills through hands-on experience in data collection, preprocessing, analysis, and interpretation. They gain proficiency in applying various data science techniques and algorithms to solve real-world problems across diverse domains.
- Thinking analytically, analyzing and synthesizing requirements and complicated information for getting a good comprehension of the solution methodology to be adopted.
- Students enhance their communication skills by presenting project findings and insights to both technical and non-technical audiences. They learn to communicate complex analytical concepts and results clearly and convincingly through presentations, reports, and visualizations.
- Students gains the proficiency in technical documentation and writing, coupled with adept time management skills, enables effective

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organization of project tasks and deadlines. This facilitates collaborative efforts within a team setting, enhancing productivity and fostering the generation of substantial outputs.

**Course Outcomes:**

1. Student able to successfully identify and define a relevant and feasible data science project topic, including defining clear objectives and scope.
2. Student able to collect, preprocess, and analyze relevant datasets using appropriate data science methods and techniques.
3. Student able to implement and evaluate machine learning models or other analytical approaches to address the project's objectives.
4. Student able to generate meaningful insights and conclusions from the analysis, effectively communicating the findings through visualizations, reports, and presentations.
5. Student able to receive recognition for the quality of the project work through evaluations by peers and instructors demonstrating proficiency in data science concepts and methodologies.

**Course Outcomes – Program Outcomes Mapping Table:**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO
CO1	H	L	L		L			L	L	H	H
CO2			L		L	M		M		M	L
CO3		M	L	L	M				H	L	
CO4		H	H	M	H	L	H		M		H
CO5	H		M	M	H	L	M	H		M	

**Text Book:**

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1. "Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani. Publisher: Springer. Publication Year: 2013.
2. "Python for Data Analysis" by Wes McKinney. Publisher: O'Reilly Media. Publication Year: 2017.
3. "Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking" by Foster Provost and Tom Fawcett. Publisher: O'Reilly Media. Publication Year: 2013.

**Reference Books:**

1. "The Elements of Statistical Learning: Data Mining, Inference, and Prediction" by Trevor Hastie, Robert Tibshirani, and Jerome Friedman. Publisher: Springer. Publication Year: 2009.
2. "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems" by Aurélien Géron. Publisher: O'Reilly Media. Publication Year: 2019.
3. "Deep Learning" by Ian Goodfellow, Yoshua Bengio, and Aaron Courville. Publisher: MIT Press. Publication Year: 2016.

**Web References:**

1. <https://www.kaggle.com>
2. <https://towardsdatascience.com>
3. <https://www.datacamp.com>

**App References:**

1. PyDroid 3 on Google Play
2. Jupyter Notebook on Google Play
3. DataCamp on Google Play