ಮಂಗಳೂರು **MANGALORE** ವಿಶ್ವವಿದ್ಯಾನಿಲಯ **UNIVERSITY**

(Accredited by NAAC with 'A' Grade)

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR.01/2022-23/A2

ಕುಲಸಚಿವರ ಕಛೇರಿ
ಮಂಗಳಗಂಗೋತ್ರಿ – 574 199
Office of the Registrar
Mangalagangothri – 574 199
ದಿನಾಂಕ/Date:02.07.2022

NOTIFICATION

Sub: Implementation of New Soft Core course in M.Sc. Statistics programme.

Ref: Academic Council approval vide agenda No.: ಎಸಿಸಿ:ಶೈ.ಸಾ.ಸ.1:6(2022–23) dtd 16.06.2022

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Implementation of New Soft Core course STS 565:Data Science in M.Sc. Statistics programme which has been approved by the Academic Council at its meeting held on 16.06.2022 is hereby notified for implementation with effect from the academic year 2022-23.

Copy of the Syllabus shall be downloaded from the University Website (www.mangaloreuniversity.ac.in)

REGISTRAR

To,
1. The Chairman, Dept. of Post Graduate Studies and Research in Statistics, Mangalore University, Mangalagangothri.
2. The Chairman, P.G. BOS in Statistics, Mangalore University, Mangalagangothri.
3. The Registrar (Evaluation), Mangalore University, Mangalagangothri.
4. The Superintendent (ACC), O/o the Registrar, Mangalore University.
5. The Asst. Registrar (ACC), O/o the Registrar, Mangalore University.
6. Guard File.

STS 565: Data Science   3 Credits

Course objectives :

- Develop in depth understanding of the key technologies in data science.
- Understand the theory of certain Statistical method of data Science.
- Gain practical, hands-on experience with statistics programming languages and big data tools through coursework.
- Demonstrate knowledge of statistical data analysis techniques utilized in company decision making.
- Apply principles of Data Science to the analysis of real-life data.
- Employ cutting edge tools and technologies to analyze data of Data Science.
- Apply algorithms to build machine intelligence.

Course outcomes :

At the end of the course, students will be able to

- Outline the importance of handling, analysing data in making appropriate decisions.
- Students will develop the ability to build and assess data-based models and describe the processes involved in the data analysis.
- Get guided, hands-on experience with R or/and Python to analyse data.
- Learn how to use different data science methods of analytics and execute them.
- Describe the spectrum of data analytics in company decisions.
- Use analytics to extract insights out of datasets and draw conclusions.

Unit I: Introduction to data science, and its product, data science environment/ecosystem.
Data visualization - data graphics, elements of visual perception, data manipulation - SQL, merging, aggregating and iterating.   (12 hrs)

Unit II: Data preparation - data cleaning, methodologies and its validation.
Python/R Data preparation and applications   (8hrs)

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Unit III: Machine learning Methods: Bayes model and residual error, linear methods, nearest neighbourhood methods and support vector machines. Neutral network, artificial intelligence.Model selection and Evaluation.   (12 hrs)

Unit IV: Random Forests – Bias variance decomposition, regression, classification, randomised models
Multi-model data processing- components and applications.   (8 hrs)
A mini project on data science by self study (for internal evaluation only).

Reference :

1. Richard O Duda, Peter E Hart, and David D Stork (2012):Pattern Classification, John Wiely and Sons
2. Oswald Campesato (2020) : Artificial Intelligence Machine Learning and Deep Learning, Mercury Learning And Information, New Delhi
3. Charles Elkan (2013) Predictive analytics and data mining –e-book
4. Trevor Hastie, Robert Tibshirani& Jerome Friedman (2001):The Elements of Statistical Learning: Data Mining, Inference and Prediction, Springer, New York.
5. James D. Miller (2017): Statistics for Data Science, Packt Publishing Ltd.
6. Wes McKinney(2018): Python for Data Analysis, O'Reilly Media, Inc.

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