**PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE**
***Autonomous***
**Siddhartha Nagar, Vijayawada-520010**
***Re-accredited at 'A+'by the NAAC***

**Offered to: M.Sc. (Computational Data Science)**

| **CourseName** | Social Media Analytics | | **L** | **T** | **P** | **C** | **CIA** | **SEE** | **TM** |
|---|---|---|---|---|---|---|---|---|---|
| **CourseCode** | 22DS4E7 | | 4 | 0 | 0 | 4 | 30 | 70 | 100 |
| **Year of Introduction:** 2021 | **Year of Offering:** 2023 | **Year of Revision**: 2023 | | | **Percentage of Revision:** NA | | | | |
| **L**-Lecture, T-Tutorial, **P**-Practical, **C**-Credits, **CIA**-InternalMarks, **SEE**-ExternalMarks, **TM**-TotalMarks | | | | | | | | | |

**Course Descriptive and Purpose:** This course provides students with the skills and knowledge necessary to understand basic concepts of Social Media Mining & New Challenges for Mining.The curriculum covers a range of topics, Graph Essentials, Network Measures and Network Models, Data Mining Essentials and Information Diffusion in Social Mediadomains.

**Course Objectives:** This course is designed to Learn Graph Essentials, Recommendation Social Media and Behaviorand get to make Analysis of Collective Behavior and Events Analytics in Social Media

**Course Outcomes:**
Upon successful completion of the course, the student will be able to:
**CO1**: Understand basic concepts of Social Media Mining & New Challenges for Mining.
**CO2:** Recall Graph Essentials.
**CO3:** Recognize with Network Measures and Network Models.
**CO4:** Analyze Data Mining Essentials and Information Diffusion in Social Media.
**CO5:** Create recommendations for Social Media and Behavior Analysis.

| **CO-PO MATRIX** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **COURSE CODE** | **CO-PO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** |
| 22DS4E7 | **CO1** | M | | | | | | M |
| | **CO2** | | M | | | | | |
| | **CO3** | | | | | | | **M** |
| | **CO4** | | | | | | **M** | |
| | **CO5** | | | M | | | **M** | |

**UNIT-I (12 Hours)**

**Introduction:** What is Social Media Mining - New Challenges for Mining.
**Graph Essentials:** Graph Basics - Graph Representation - Types of Graphs - Connectivity in Graphs - Special graphs - Graph Algorithms.
**Web Scraping:** What Is Web Scraping? - Why Web Scraping for Data Science - Web Scraping Uses - Getting Ready - Setting Up A Quick Python Primer.

**UNIT-II (12-Hours)**

**Network Measures:** Centrality - Transitivity, Reciprocity - Balance and Status - Similarity.
**Network Models:** Properties of Real World Networks - Random Graphs - Small World Models - Preferential Attachment Model.

**UNIT-III (12-Hours)**

**Data Mining Essentials:** Data -Data Preprocessing - Supervised Learning Algorithms - Unsupervised Learning Algorithms.

**Communities and Interactions:** Community Analysis - Community Detection - Community Evolution - Community Evaluation.

**UNIT-IV (12-Hours)**

**Information Diffusion in Social Media:** Herd Behaviour - Information Cascades - Diffusion of Innovations - Epidemics.

**Influence and Homophily:** Measuring Assortativity - Infiuence - Homophily - Distinguishing Influence and *Homophily.*

**UNIT-V (12-Hours)**

**Recommendation Social Media:** Challenges - Classical Recommendation Algorithms - Recommendation Using Social Context - Evaluating Recommendations.

**Behaviour Analysis:** Individual Behavior - Collective Behavior - Events Analytics in Social Media.

| Prescribed Text Book | | | |
|---|---|---|---|
| | Author | Title | Publisher |
| 1 | Reza Zafarani, Mohammad Ali Abbasi, and Huan Liu. | Social Media Mining : An Introduction | Cambridge University Press, 2014 |
| 2 | SeppeVandenBroucke, Bart Baesens | Practical Web Scraping for Data Science | Apress, 2018 |

| Reference Text Books | | | |
|---|---|---|---|
| | Author | Title | Publisher |
| 1 | Matthew A. Russell | Mining the Social Web | 2nd Edition. O'Reilly Media. 2013 |
| 2 | Jennifer Golbeck | Analyzing the Social Web | Morgn Kaufmann 2013, ISBN 978-0124055315 |
| 3 | Ricardo Baeza Yates and BerthierRibeirNeto. | Modern Information Retrieval: The Concepts and Technology behind Search | Second Edition, ACM Press Books, 2011, ISBN 978-0321416919 |
| 4 | Charu C Aggarwal | Social Network Data Analytics | Springer, 2011 |

**PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE**
***Autonomous***
**Siddhartha Nagar, Vijayawada-520010**
***Re-accredited at 'A+'by the NAAC***

**M.Sc.(Computational Data Science)** **Semester :IV**

**Course Code: 22DS4E7Course Name: Social Media Analytics**

**Time: 3 Hours** **Max Marks: 70**

**SECTION-A**

**Answer the following questions. (5×4=20Marks)**

1. (a) Explain Web Scraping.(CO1,L2)

(or)

(b) Explain Graph Representation. (CO1,L2)

2. (a) What is Reciprocity? Explain. (CO2,L1)

(or)

(b) Explain Random Graphs. (CO2,L1)

3. (a) What is Data Preprocessing? (CO3,L1)

(or)

(b) List the Supervised Learning Algorithms. (CO3,L1)

4. (a) Explain Information Cascades. (CO4,L2)

(or)

(b) Explain Homophily. (CO4,L2)

5. (a) Explain Challenges of Social Media. (CO5,L2)

(or)

(b) Explain Events Analytics in Social Media. (CO5,L2)

**SECTION-B**

**Answer Five Questions Choosing One Question from each unit.**

**All Questions Carry Equal Marks. (5×10=50Marks)**

6. (a) Explain various types of Graphs in Graph Mining.(CO1,L2)

(or)

(b) Explain the different Challenges of Social Media Mining. (CO1,L2f)

7. (a) Explain Network Measures Transitivity & Reciprocity. (CO2,L2)

(or)

(b) State and explain Small World Models and its Properties. (CO2,L2)

8. (a) Make use of Naive Bayes Classification and Nearest Neighbor Classifier. (CO2,L3)

(or)

(b) Experiment with Community Detection in Evolving Networks. (CO2,L3)

9. (a) Examine Information Diffusion and Herd Behavior with Diners Example .(CO4,L4)

(or)

(b) Analyze Measure and Model Homophily? (CO4,L4)

10. (a) Discuss various recommendation of Social Media Context? (CO5,L6)

(or)

(b) Discuss Collective Behavior Analysis, Features and Prediction? (CO5,L6)