



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
DEPARTMENT OF COMPUTER APPLICATIONS

COURSE PLAN – PART I			
Name of the programme and specialization	MSc , Computer Science		
Course Title	DATA MINING AND ANALYTICS		
Course Code	CAS764	No. of Credits	3
Course Code of Pre-requisite subject(s)	-		
Session	January , 2019	Section (if, applicable)	-
Name of Faculty	Dr. C. SIVARAJ	Department	Computer Applications
Official Email	sivaraj@nitt.edu	Telephone No.	7339431431
Name of Course Coordinator(s) (if, applicable)	Dr. MICHAEL AROCK		
Official E-mail	michael@nitt.edu	Telephone No.	
Course Type (please tick appropriately)	<input checked="" type="checkbox"/> Core course <input type="checkbox"/> Elective course		
Syllabus (approved in BoS)			
<p>Data Mining Techniques-Data Mining Process-Process with a typical set of data- Data Analytic Techniques-Big Data-Visualization of data through data mining and analytical software. Data Mining Methods as Tools - Memory-Based reasoning methods of Data Mining - Algorithms with prototypical data based on real applications using data analytical methods. Data Stream Mining, Mining Time Series, Text Mining, Data Stream Clustering, mining Big Data through data mining and analytical tools. Market Basket Analysis - Fuzzy Data Mining approaches - Fuzzy Decision Tree approaches Fuzzy Association Rule applications. Rough Sets - Support Vector Machines - Genetic algorithms. Case studies. Social Computing - Analysis -Graph Mining – Social Network Mining-Web Mining – Web Usage Mining-Privacy Preserving Data Mining-Recommender Systems. Case studies.</p> <p>References:</p> <ol style="list-style-type: none"> 1. David L. Olson and Dursun Delen, —Advanced Data Mining Techniques , Springer, 2008. 2. Charu C. Aggarwal and Haixun Wang, —Managing and Mining Graph Data , Springer, 2010. 3. Ian H. Witten, Eibe Frank and Mark A. Hall, —Data Mining: Practical Machine Learning Tools and Techniques , Morgan Kaufmann Publishers, 2011. 4. Jiawei Han and Micheline Kamber, —Data Mining: Concepts and Techniques , Morgan Kaufmann Publishers, 2006. 5. Margaret H. Dunham, —Data Mining Introductory and Advanced Topics , Prentice Hall, 2003. 6. Anand Rajaraman and Jeff Ullman, —Mining of Massive Datasets , Cambridge University Press, 2011. 7. Wolfganag, J., Business Analytics for managers, Spinger, 2011. 			



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COURSE OBJECTIVES			
<ul style="list-style-type: none"> • To introduce the basic concepts and techniques of data mining and analytics. • To develop skills of using recent data mining and analytics software for solving problems. • To be aware of advanced concepts of data mining and analytics techniques and its applications in the knowledge discovery process. 			
MAPPING OF COs with POs			
Course Outcomes			Programme Outcomes (PO)
1. Understand the concepts and algorithms of data mining and analytics.			1,3,4,8
2. Apply data mining and analytic techniques for business intelligence			1, 2,3
3. Be aware of the privacy and security issues in data mining and analytics			1,2,4,5
COURSE PLAN – PART II			
COURSE OVERVIEW			
<p>Data Mining is a dynamic and fast growing field at the interface of Statistics and Computer Science. The emergence of massive datasets containing millions or even billions of observations provides the primary impetus for the field. Such datasets arise, for instance, in large-scale retailing, telecommunications, astronomy, computational biology, and internet commerce. The analysis of data on this scale presents exciting new computational and statistical challenges. This course will provide an overview of current research in data mining and will be suitable for post graduate students.</p>			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.N o.	Week/Contact Hours	Topic	Mode of Delivery
1. 1	Week 1/ 3hrs	Data Mining Techniques	Power Point Presentation
2.		Data Mining Techniques continue..	Power Point Presentation
3.		Data Mining Process	Power Point Presentation
4.	Week 2/ 3hrs	Process with a typical set of data	Power Point Presentation
5.		Data Analytic Techniques	Power Point Presentation
6.		Data Analytic Techniques	Power Point Presentation
7.	Week 3/ 3hrs	Visualization of data through data mining and analytical software.	Tutorial
8.		Visualization of data through data mining and analytical software.	Tutorial
9.		Data Mining Methods as Tools	Tutorial & chalk and talk
10.	Week 4/ 4hrs	Memory-Based reasoning methods of Data Mining	Power Point Presentation



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11.		Algorithms with prototypical data based on real applications using data analytical methods	Power Point Presentation
12.		Algorithms with prototypical data based on real applications using data analytical methods	Power Point Presentation
13.		Algorithms with prototypical data based on real applications using data analytical methods	Power Point Presentation
14.	Week 5/ 3hrs	Data Stream Mining	Power Point Presentation
15.		Mining Time Series	Chalk and Talk, tutorial
16.		Text Mining	Power Point Presentation
17.	Week 6/ 3hrs	Data Stream Clustering	Power Point Presentation
18.		mining Big Data through data mining and analytical tools	Power Point Presentation
19.		mining Big Data through data mining and analytical tools	Power Point Presentation
20.	Week 7/ 3hrs	Market Basket Analysis	Power Point Presentation
21.		Fuzzy Data Mining approaches	Power Point Presentation
22.		Fuzzy Decision Tree approaches	Power Point Presentation
23.	Week 8/ 3hrs	Fuzzy Association Rule applications	Power Point Presentation
24.		Rough Sets	Power Point Presentation
25.		Support Vector Machines	Power Point Presentation
26.	Week 9/ 4hrs	Genetic algorithms: case studies	Power Point Presentation
27.		Social Computing	Power Point Presentation
28.		Analysis -Graph Mining	Power Point Presentation
29.		Social Network Mining	Power Point Presentation
30.	Week 10/ 3hrs	Web Mining	Chalk and Talk, tutorial
31.		Web Usage Mining	Power Point Presentation
32.		Privacy Preserving Data Mining	Power Point Presentation
33.	Week 11/ 2hrs	Recommender Systems,	Power Point Presentation
34.		Recommender Systems. Case studies.	Power Point Presentation



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COURSE ASSESSMENT METHODS (shall range from 4 to 6)				
S.N o.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cyscle Test 1	As per schedule	60 mins	20
2	Cyscle Test 2	As per schedule	60 mins	20
3	Assignment and Case study	3 rd , 5 th , 7 th , 9 th and 10 th week	-	30
4				
CPA	Compensation Assessment*	12 th week		40
5				
6	Final Assessment *	As per schedule	180	30
<p>COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)</p> <ul style="list-style-type: none"> ➤ The students through the class representative may give their feedback at any time to the course chairman which will be duly addressed. ➤ The students may also give their feedback during class committee meeting. ➤ Course Outcome Survey' form will be distributed on the last working day to all the students and the feedback on various rubrics will be analyzed. ➤ The COs will be computed after arriving at the final marks. 				
<p>COURSE POLICY (including compensation assessment to be specified)</p> <p>Students who are all absent for both the cycle test for a genuine reason may be given CPA and it will cover the portion of cycle test 1 and 2.</p>				
<p>ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)</p> <ul style="list-style-type: none"> ➤ At least 75% attendance in each course is mandatory. ➤ A maximum of 10% shall be allowed under On Duty (OD) category. ➤ Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade. 				



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ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION, IF ANY

The students can get their doubts clarified at any time with their faculty member with prior appointment

FOR APPROVAL


Dr. C. Sivaraj
Course Faculty


Dr. U. Srinivasulu Reddy
PAC-Chairperson


Dr. S.R. Balasundaram
HOD