24SJMCA271	BUSSINESS INTELLIGENCE AND ITS APPLICATIONS	CATEGORY	L	T	P	CREDIT
		ELECTIVE	3	1	0	4

Preamble:	This course introduces the fundamentals of Business Intelligence (BI), focusing on data-driven decision-making, BI system design, data warehousing, and data mining. It emphasizes practical applications and case studies to develop skills in analyzing and implementing BI solutions.
Prerequisite:	Basic knowledge of databases, programming, and statistics.

Course Outcomes: After the completion of the course the student will be able to:		K Level
CO1	Differentiate between Transaction Processing and Analytical applications and describe the need for Business Intelligence.	K2
CO2	Demonstrate understanding of technology and processes associated with Business Intelligence Framework.	K3
CO3	Select appropriate DM tools and methods to manipulate and achieve data.	K3
CO4	Demonstrate understanding of Data Warehouse implementation methodology and project life cycle.	K3
CO5	Identify the metrics, indicators and make recommendations to achieve the business goal for given business scenario.	K3

Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2		2				2
CO2	3	2	3	3				2
CO3	3	3	3	3				2
CO4	3	3	3	3				2
CO5	3	2	3	2				2

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	40	60	3 hours

Continuous Internal Evaluation Pattern:

Attendance   : 8 marks
Continuous Assessment Test (2 numbers)   : 20 marks
Assignment/Quiz/Course project   : 12 marks

End Semester Examination Pattern: There will be two parts; Part A and Part B. Part A contains 10 compulsory short answer questions, 2 from each module. Each question carries 3 marks. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 6 marks

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Explain the need for Business Intelligence in modern organizations.
2. Describe the role of computerized decision support in management decision-making.
3. Summarize the phases of the decision-making process with suitable examples.
4. Discuss how changing business environments influence decision-making.
5. Illustrate the early framework of Decision Support Systems (DSS).

Course Outcome 2 (CO2)

1. Define Decision Support Systems (DSS) and explain their key characteristics.
2. Discuss the various configurations and classifications of DSS.
3. Explain the major components of DSS with neat diagrams.
4. Describe the role of data management, model management, and user interface subsystems in DSS.
5. What is a knowledge-based management subsystem? Explain with an example.

Course Outcome 3(CO3):

1. Differentiate between decision-making under certainty, uncertainty, and risk.
2. Explain the use of decision tables and decision trees in decision analysis.
3. What are the key steps involved in the data mining process?
4. Compare different data mining methods and their applications in business.
5. Identify popular data mining tools and explain their business use cases.

Course Outcome 4 (CO4):

1. Describe the basic structure and learning process of an Artificial Neural Network.
2. Explain how neural networks are used for data mining and prediction.
3. What is text mining? Discuss its process, tools, and applications in business analytics.
4. Define web mining and differentiate between web content mining and web structure mining.
5. Describe the role of Natural Language Processing (NLP) in text mining.

Course Outcome 5 (CO5):

1. Explain the architecture and components of a data warehouse.
2. Differentiate between OLTP and OLAP systems with examples.
3. Outline the process of data warehouse development.
4. Discuss the importance of data warehouse administration and security.
5. Explain the concept and advantages of real-time data warehousing in decision support systems.

Syllabus

Module I (8 Hours)
Decision support and business intelligence introduction, changing business environments, managing decision making, computerized support for decision making, an early framework, work system view, major tools and techniques, plan.   Computerized decision support introduction and definitions, models, phases of decision making processes, intelligence phase, design phase, choice phase, implementation phase.

Module II (10 Hours)
Decision support systems concepts, methodologies and technologies decision support system configurations, description, characteristics and capabilities, classifications, components of decision support systems, data management subsystem, model management subsystem, user interface subsystem, knowledge based management subsystem.

Module III (10 Hours)
Modelling and analysis- management support systems modelling, certainty, uncertainty, risk, decision analysis with decision tables and decision. Data mining for business intelligence- data mining concepts and applications, data mining applications, data mining process, data mining methods, data mining software tools.

Module IV (8 Hours)
Artificial neural networks for data mining- basic concepts of neural networks, learning in artificial neural networks. Text and web mining text mining concepts and definitions, natural language processing, text mining applications, text mining process, text mining tools, web mining overview, web content mining and web structure mining.

Module V (9 Hours)
Data warehousing data warehousing concepts and definitions, data warehousing process overview, data warehousing architecture, data warehouse development, real-time data warehousing, data warehouse administration and security issues, OLTP Vs OLAP .

Textbooks

1. Here are **recommended textbooks and references** that align closely with your **Business Intelligence (BI) syllabus** — covering Decision Support Systems (DSS), Data Mining, Neural Networks, Text/Web Mining, and Data Warehousing:

2. **Turban, Efraim, Sharda, Ramesh, Delen, Dursun, and King, David.**
   Decision Support and Business Intelligence Systems, 10th Edition, Pearson Education, 2014 → *Covers DSS fundamentals, BI concepts, modelling, data mining, and case studies.*

3. **Han, Jiawei, Kamber, Micheline, and Pei, Jian.**
   Data Mining: Concepts and Techniques, 3rd Edition, Morgan Kaufmann, 2012.

→ Excellent for Modules III & IV – data mining methods, processes, and tools.

4. **Inmon, W. H.**
Building the Data Warehouse, 4th Edition, Wiley India, 2005.
→ Core reference for Module V – data warehousing architecture and development.

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1. **Ponniah, Paulraj.**
Data Warehousing Fundamentals for IT Professionals, Wiley India, 2010. *→ Focuses on data warehouse design, implementation, and administration.*

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Course Contents and Lecture Schedule

No		Topic	No. of Lectures
1	**Module 1**		**8 Hours**
1.1	Decision support and business intelligence introduction		1
1.2	changing business environments, managing decision making, computerized support for decision making		1
1.3	an early framework, work system view, major tools and techniques, plan.		1
1.4	Computerized decision support introduction and definitions,		1
1.5	models, phases of decision making processes,		1
1.6	intelligence phase, design phase,		1
1.7	choice phase, implementation phase.		2
2	**Module 2**		**10 Hours**
2.1	Decision support systems concepts, description,.		1
2.2	, methodologies and technologies decision support system configurations		1

2.3		1
2.4	characteristics and capabilities, classifications,	2
2.5	components of decision support systems, data management subsystem	2
2.6	model management subsystem, , user interface subsystem,	2
2.7	knowledge based management subsystem	1
3	**Module 3**	**10 Hours**
3.1	Modelling and analysis- management support systems modelling,	1
3.2	certainty, uncertainty, risk, decision analysis with decision tables and decision.	2
3.3	Data mining for business intelligence- data mining concepts and applications,	1
3.4	data mining applications, data mining process,	2
3.5	data mining methods	2
3.6	data mining software tools	2
4	**Module 4**	**8 Hours**
4.1	Artificial neural networks for data mining- basic concepts of neural networks,	1
4.2	, learning in artificial neural networks.	1
4.3	Text and web mining text mining concepts and definitions	1
4.4	natural language processing,	1
4.5	text mining applications, text mining process, text mining tools,	1
4.6	web mining overview, web content mining	1
4.7	web structure mining.	2
5	Module 5	9 Hours
5.1	Data warehousing data warehousing concepts and definitions, , , , ,	2
5.2	data warehousing process overview	1
5.3	data warehousing architecture	2
5.4	data warehouse development	1
5.5	real-time data warehousing	1
5.6	data warehouse administration and security issues, OLTP Vs OLAP .	2

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4.2	, learning in artificial neural networks.	1
4.3	Text and web mining text mining concepts and definitions	1
4.4	natural language processing,	1
4.5	text mining applications, text mining process, text mining tools,	1
4.6	web mining overview, web content mining	1
4.7	web structure mining.	2
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5.1	Data warehousing data warehousing concepts and definitions, , , , ,	2
5.2	data warehousing process overview	1
5.3	data warehousing architecture	2
5.4	data warehouse development	1
5.5	real-time data warehousing	1
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