Course code: Course Title	Course Structure			Pre-Requisite
SE427: Data Management and Ethics	L	T	P	NIL
	3	1	0	

Course Objective: To make one understand the data management basics and publication ethics in academia.

S. NO	Course Outcomes (CO)
CO1	Understand database system concepts, architectures, and data modelling techniques.
CO2	Apply relational data modelling concepts and normalization techniques.
CO3	Analyze transaction processing concepts and concurrency control techniques to ensure database consistency, recoverability, and security.
CO4	Evaluate ethical principles and responsibilities in data management.
CO5	Analyze and remember ethical challenges in data usage, privacy, and algorithmic decision-making through real-world case studies.

S.No.	Contents	Contact Hours
UNIT 1	**Introduction:** Database system concepts and its architecture, Data models schema and instances, Data independence and database language and interface, Data definition languages, DML. **Data modeling using Entity Relationship Model:** E.R. model concept, notation for ER diagrams mapping constraints, Keys, Concept of super key, candidate key, primary key generalizations, Aggregation	8
UNIT 2	**Relational Data Model and Language:** Relational data model concepts, integrity constraints, Keys domain constraints, referential integrity, assertions, triggers, foreign key relational algebra, SQL data definition queries and updates in SQL. **Data Base Design:** Functional dependencies, normal forms, 1NF, 2NF, 3NF and BCNF, multi-valued dependencies fourth normal form, join dependencies and fifth normal form. Inclusion dependencies, lossless join decompositions, normalization using FD	8
UNIT 3	**Transaction processing concepts:** Transaction processing system, schedule and recoverability, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recovery from transaction failures, deadlock handling. **Concurrency Control Techniques:** Locking Techniques for concurrency control, time stamping protocols for concurrency control, Database Security Issues.	8
UNIT 4	**Ethics and Data Management:** Data ethics, Need for Data ethics, Data ownership, The Five Cs(Consent, Clarity Consistency and Trust, Control and Transparency, Consequences), Implementing 5Cs, Ethics and Security Training, Developing Guiding Principles, Building Ethics into a Data-Driven Culture.	8
UNIT 5	**Ethical issues related to data collection and storage:** ethical responsibilities of a company to its customers. Ethical responsibilities of employees to the company and its customers, Ethical responsibilities of customers to the	3

	company. **Database Administrator's Code of Ethics:** Database Administrator, Need of Database Administrator, Existing DBA Code of Ethics, Areas of improvistion in existing code of ethics.	
UNIT 6	**Data Ethics Case studies:** The Ethics of Using Hacked Data: Patreon's Data Hack and Academic Data Standards, "It Was A Matter of Life and Death": A YouTube Engineer's Decision to Alter Data in the 'It Gets Better Project', No Encore for Encore? Ethical questions for web-based censorship measurement Dynamic Sound Identification, Optimizing Schools Law Enforcement Chatbots	**7**
	TOTAL	**42**

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1.	Elmasri Ramez, Navathe Shamkant, "Fundamentals of Database systems", Pearson, 7th Edition.	**2017**
2.	Abraham Silberschatz, Henry F. Korth, S. Sudarshan, "Data Base System Concepts", McGraw-Hill, 7th Edition.	**2021**
3.	Mike Loukides, Hilary Mason, DJ Patil, "Ethics and Data Science", O'Reilly Media, Inc.	**2018**
4.	Leslie Turner and Andrea Weickgenannt, "Accounting Information Systems: The Processes and Controls", Wiley, 2nd Edition.	**2013**