Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Data Modelling

Unit ID: ITECH2004

Credit Points: 15.00

Prerequisite(s): (ITECH1103)

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 020303

Description of the Unit:

This unit introduces the capabilities and advantages of modern database systems. It covers the different types of systems designed for specific types of data, and uses them in practical applications.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory			✔			
Intermediate						

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Advanced						

Learning Outcomes:

Knowledge:

K1. Illustrate the components of a Relational Database Management System.

K2. Explain the motivation for emerging trends in database technology, and the impact of database technology on organizations.

K3. Discriminate between different types of database systems (e.g. relational, spatial, NoSQL, hierarchical, graph, object);

Skills:

S1. Interpret conceptual level diagrams (e.g. entity relationship) to implement a database.

S2. Use a database language for data definition, manipulation and control.

Application of knowledge and skills:

A1. Design and build a database application using database development tools to solve a realistic business problem.

A2. Utilise query language tools and techniques to retrieve data from a database.

Unit Content:

Topics may include:

- Introduction to database management systems, advantages of the database approach, data modelling, schemas, access and security provisions for multi-user databases.

- The relational model, primary and foreign keys, referential integrity, relational algebra, structured query language and normalisation.

- Entity relationship models.
- Different types of databases, including relational, spatial, NoSQL, graph etc.

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	Students will demonstrate the ability to effectively communicate, interact and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: • Using effective verbal and non-verbal communication • Listening for meaning and influencing via active listening • Showing empathy for others • Negotiating and demonstrating conflict resolution skills • Working respectfully in cross-cultural and diverse teams.	Not applicable	Not applicable
FEDTASK 2 Leadership	Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in: • Creating a collegial environment • Showing self-awareness and the ability to self-reflect • Inspiring and convincing others • Making informed decisions • Displaying initiative	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically • Evaluating ideas, concepts and information • Considering alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts • Forming creative solutions in problem solving	A1	AT1
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: • Finding, evaluating, managing, curating, organising and sharing digital information • Collating, managing, accessing and using digital data securely • Receiving and responding to messages in a range of digital media • Contributing actively to digital teams and working groups • Participating in and benefiting from digital learning opportunities	S2, A1, A2.	AT1
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in: • Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts • Committing to social responsibility as a professional and a citizen • Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Embracing lifelong, life-wide and life-deep learning to be open to diverse others • Implementing required actions to foster sustainability in their professional and personal life	Not applicable	Not applicable

Learning Task and Assessment:

Participation in lectures, and tutorials/ laboratory classes. Students are expected to spend time regularly out of scheduled classes, reading reference material as required, reviewing topics already covered in lectures and preparing for forthcoming topics and laboratory classes and completing assessment tasks. Assessment for this unit will be based on a number of tasks. These may include written assignments, programming tasks and laboratory exercises covering the systems development and programming design. An end of semester test/examination is based on all aspects of the unit.

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K3, S1, S2, S3, A1, A2.	Students will apply database tools and techniques to solve real-world problems.	Projects / assignments, laboratory exercises	70% - 80%
K1, K2, K3, S1.	Students will provide theoretical answers and work out solutions to a range of questions and problems designed to test their understanding on database concepts, principles and applications.	Tests and/or Exams	20% - 30%

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool