Oracle Database Design & SQL Fundamental	Counting	ICT (Core)	Database	Core + Database
Introduction				
• Data vs. information	1	1		1
• History of the database	1	1		1
• Major transformations in computing	1	1		1
What is Data Modeling?				
• Conceptual & physical models	1	1		1
• Entities, instances, attributes and identifiers	1	1		1
• Entity relationship modeling and ERDs	1		1	1
Entity Relationship Diagramming				
• Identifying relationships	1		1	1
• ER diagramming conventions	1		1	1
• Speaking ERD and drawing relationships	1		1	1
• Matrix diagrams	1			
Supertypes, Subtypes, and Business Rules				
• Supertypes and subtypes	1			
• Documenting business rules	1			
Working with Entity Relationships				
• Relationship transferability	1		1	1
• Relationship types	1		1	1
• Resolving many-to-many relationships	1		1	1
• Understanding CRUD requirements	1			
Unique Identifiers and Normalization				
• Artificial, composite and secondary UID	1			
• Normalization and first normal form	1		1	1
• Second normal form	1		1	1
• Third normal form	1		1	1
Arcs, Hierarchies, and Historical Data				
• Arcs	1			
• Hierarchies and recursive relationships	1		1	1
• Modeling historical data	1			
ERD Project Presentation				
• Presentation of the ERD to the client	1		1	1
• Modeling change	1			

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• Modeling change time	1			
• Modeling change price	1			
• Adding the time element to an ERD	1			
Drawing Conventions and Generic Modeling				
• Drawing conventions for readability	1		1	1
• Generic modeling	1			
Transforming From Conceptual Model to Physical Model				
• Introduction to relational database concepts	1		1	1
• Basic mapping	1		1	1
• Relationship mapping	1		1	1
• Subtype mapping	1			
Introduction to SQL				
• Introduction to Oracle Application Express	1			
• SQL introduction: querying the database	1	1		1
• Basic modifications	1			
• System development life cycle	1		1	1
Project				
• Project overview and getting started	1			
• Presentation project management	1			
• Final presentation components	1			
Presentation				
• Creating tables for the final presentation	1	1		1
• Preparing written documentation	1			
• Preparing visual materials	1			
• Final presentations	1			
SELECT Statements and Relational Database Technology				
• Anatomy of a SQL statement	1	1		1
• Oracle database environment	1			
• Using applications	1			
• Relational database technology	1		1	1
Using the WHERE Clause				
• Working with columns, characters, and rows	1	1		1
• Limit rows selected	1	1		1

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• Comparison operators	1	1		1
Restricting Rows and Introduction to Functions				
• Logical comparisons and precedence rules	1	1		1
• Sorting rows	1	1		1
• Introduction to functions – single row functions	1	1		1
Using Character, Number, and Date Functions				
• Case and character manipulation	1	1		1
• Number functions	1	1		1
• Date functions	1	1		1
Using Single Row Functions				
• Conversion functions	1			
• NULL functions	1	1		1
• Conditional expressions	1	1		1
Executing Database Joins				
• Cross joins and natural joins	1		1	1
• Join clauses	1		1	1
• Inner versus outer joins	1		1	1
• Self joins and hierarchical queries	1		1	1
Working with Group Functions				
• Review of joins	1		1	1
• GROUP functions	1	1		1
• COUNT, DISTINCT, NVL	1	1		1
Using Complex SQL with Aggregated Data				
• Using GROUP BY and HAVING clauses	1	1		1
• Using ROLLUP and CUBE operations, and GROUPING SETS	1			
• Using SET operators	1		1	1
Creating Subqueries				
• Fundamentals of subqueries	1		1	1
• Single row subqueries	1		1	1
• Multiple-row subqueries	1		1	1
• Correlated subqueries	1		1	1
Constructing DML Statements				
• INSERT statements	1		1	1

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• Updating column values and deleting rows	1		1	1
• DEFAULT values, MERGE, and multi-table inserts	1		1	1
Working with DDL Statements				
• Creating tables	1		1	1
• Using data types	1		1	1
• Modifying a table	1		1	1
Ensuring Quality Query Results				
• Ensuring quality query results	1			
Creating and Managing Constraints				
• Defining NOT NULL and UNIQUE constraints	1		1	1
• PRIMARY KEY, FOREIGN KEY, and CHECK constraints	1		1	1
• Managing constraints	1		1	1
Creating and Managing Views				
• Creating views	1	1		1
• DML operations and views	1			
• Managing views	1	1		1
Working with Sequences				
• Working with sequences	1			
• Indexes and synonyms	1		1	1
Fundamentals of Database Security				
• Controlling user access	1		1	1
• Creating and revoking object privileges	1		1	1
• Regular expressions	1			
Understanding Database Transactions				
• Database transactions	1			
Oracle Proprietary Join Syntax				
• Cartesian product and the JOIN operations	1		1	1
• NONEQUIJOINS	1			
• OUTER joins	1		1	1
Project				
• Testing	1	1		1
• Final project: database creation	1			
• Final exam review	1			

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Ensuring Quality Query Results – Advanced Techniques				
• Ensuring quality query results – advanced techniques	1			
Total	101	25	42	67
		25%	42%	66%