**Week 1: SQL-Advanced SQL**

* Database Fundamentals: Database, DBMS, schema, Instance, Data models (Hierarchical Model, Network model, Relational model), Normalization
* ER Model: Entity (weak, strong), Attributes (simple, composite, derived, multivalued), Relationships
* Relational Model: Tuple/Record/Row, Attribute/Column/Field
* Keys: Primary Key, Foreign Key, Super Key, Candidate Key, Alternate key
* DDL Statements: Create, Alter, Drop, Truncate
* DML: Insert, Update, Delete
* DRL/DQL: Select
* DCL: Grant, Revoke
* TCL: Commit, Rollback, Savepoint
* Null: special consideration (not a zero, not a space): Is null and Is not null for comparison
* Constraints: Not null, Unique, Default, Check, primary Key, Foreign Key (on delete cascade, on delete set null)
* SQL Clauses: Where (condition checking with rational operators / logical operators, between, in), Group by, Having, Order by, Like (for pattern matching)
* Joins: Cross join/ cartesian product, Natural Join, Inner join, Outer join (left, right, full), self-join
* Subqueries: Single Row subquery (comparison with relational operators) and Multiple row subquery (IN, ANY, ALL), correlated subqueries, inline subquery
* Exists/ Not exists
* Sequence
* Index (for improving read performance), Clusters and non-clustered
* Synonyms: just another name for database objects
* Views: virtual table
* Functions:
  + **String functions:** lower, upper, initcap, length, concat, substr, lpad, rpad, trim, ltrim, rtrim, replace
  + **Number functions:** abs(), round(), mod(), trunc()
  + **General Purpose functions:** NVL(takes 2 args, if first is null then returns second, else returns first), NVL2 (takes 3 args, 1: value for checking if null or not, 2: returns this if not null, 3: returns this if null), coalesce(n number of args of same datatype, returns first non-null value), nullif(takes two args, if equal then returns null otherwise returns first args) decode (if-else), case (multiple conditions in a series), Regexp\_like (pattern matching), regexp\_replace(find and replace a pattern)
  + **Conversion functions:** to\_char, to\_number, to\_date
  + **Date functions:** add\_months, months\_between, last\_day, next\_dat, current\_date, trunc, sysdate, round
  + **Analytical functions:** row\_number, rank, dense\_rank, first\_value, last\_value, lag, lead, listagg
* Aggregate functions: count, sum, min, max, avg, variance, stddev
* Hierarchical queries
* Temporary tables
* Query optimizations: tips and guidelines, explain plan
* Set operations: union, intersect, minus,
* Data Dictionary
* PL-SQL:
  + Cursor:
  + trigger
  + unnamed pl-sql block: declare, begin, exception, table%rowtype, tbl.column%type
  + stored function,
  + stored procedure,
  + conditional statements: if, if else, if-elsif…….-else
  + loop statements: basic loop, while, for, nested loops
  + exception handling :

**Week 2: DWH, ETL, PM, SDLC, Agile, Scrum, Testing, ETL Testing**

* Data warehouse:
  + Def: subject oriented, non-volatile, time variant, integrated
  + architecture, data models, dimensional modeling
  + Schema: star, snowflake, fact constellation
  + Fact Table: Additive semi-additive, non-additive facts, cumulative fact tables and snapshot fact table
  + Dimension table: junk, conformed, degenerated, SCD(1,2,3)
* ETL:
  + Staging Area,
  + Extraction
  + Transformation
  + Loading: full and incremental
  + ETL vs. ELT
  + ETL Tools

Project Management: Risks, triple constraints

SDLC: models, phases, methodologies (waterfall, agile, lean)

Agile: stages of Agile (discovery, sprint cycles, release),

Scrum: scrum artifacts, scrum roles(product owner, scrum master, agile team), user story, epic, theme, scrum documents (product backlog, scrum backlog, burndown chart, DoR, DoD, impediment lists), scrum events (daily stand up call, sprint planning, sprint review, retrospective calls)

Testing: STLC phases and deliverables, importance, types of testing, bugs, Manual Vs, Automation, testing principles, TDM, test.