**ISS 4014 Database and Web Integration**

**Final Exam Study Guide**

Review Chapter Summaries from chapter 1-8, 10, 14 and 15.

Review HTML and PHP material.

Key Concepts and Terms:

1. Structured vs. unstructured data
2. Data warehouse vs operational databases
3. Data integrity
4. Meta data
5. Referential integrity
6. Business rules
7. Data modeling (entities and relationships)
8. Relationship cardinalities. (1:1, 1:M, M:M)
9. Detailed relational cardinalities notation. i.e. (0,1):(1:M)
10. Predicate operators: SELECT, PROJECT and JOIN
11. Joins and Union
12. Keys (Primary, Foreign, Super, Candidate, Composite…)
13. Strong and Weak relationships and entities
14. Associative or Composite entities
15. Functional, partial, and transitive dependencies.
16. Database normalization and de-normalization (1NF, 2NF, 3NF, BCNF)
17. Read an ERD
18. Read a dependency diagram
19. Join types and when to use them
20. Subqueries in WHERE clauses, FROM clauses and Attribute lists.
21. Union vs. Intersects
22. Views
23. Triggers and Stored Procedures.
24. Transactions and Transaction Properties (ACID – Serializability)
25. BEGIN, COMMIT and ROLLBACK
26. Different Locking granularities and when to use them.
27. Two-phase locking vs. standard locking
28. Deadlocks – Wait/Die vs. Wound/Wait
29. Big data and the 3V’s
30. Major components of the Hadoop Eco-Systems (Map-Reduce, HDFS, HBase, Impala, Pig, Hive, Flume, Squop).
31. Reading XML and JSON. What they are and how they are used.
32. NoSQL (Standard and MongoDB syntax)
33. HTML lists, tables and Forms
34. PHP Form action (Get and Post methods)
35. PHP Global Variables ($\_POST)
36. Accessing a database from PHP
37. Accessing PHP associative arrays

Types of Queries on the exam

1. Create a schema.
2. Create normalized (1NF, 2NF, 3NF) tables base on business requirements.
3. Set primary and foreign keys on a table.
4. Write information to database tables.
5. Select specific columns and rows from a table using a where clause.
6. Select specific columns and rows from two tables using a join.
7. Update statement to change the values of a specific field in a record.
8. Select statements using function, such as Average and Round and columns having alias names.
9. Select statements with a sub-select in the where clause.
10. Delete records from a table.
11. Delete tables.
12. Identify elements of an HTML page.
13. Debug a PHP page that accesses a database.