

Subject Description Form

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| Subject Code | COMP5151 | | | | |
| Subject Title | Advanced Database Systems | | | | |
| Credit Value | 3 | | | | |
| Level | 5 | | | | |
| Pre-requisite/ Exclusion | Prerequisite: COMP5111 Database Systems and Management [waived for Software Technology students] | | | | |
| Objectives | <p>The objectives of this subject are to:</p> <ol style="list-style-type: none"> 1. Equip students with principles of internal components in relational database systems; 2. Explore different types of database systems (e.g., distributed and parallel databases, spatial databases, multimedia databases). | | | | |
| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a) apply principles of internal components in relational database systems; b) apply techniques in distributed and parallel databases, spatial databases, multimedia databases | | | | |
| Subject Synopsis/ Indicative Syllabus | <ul style="list-style-type: none"> • Introduction and comparison of different types of databases • Internal components in relational database systems: Query processing, query optimization, concurrency control, recovery manager • Distributed and parallel database systems: Distributed database vs. parallel database, data fragmentation, query processing techniques, concurrency control and recovery techniques. • Spatial and multimedia database systems: Spatial relationship, filter-refinement framework, R-tree, space filling curve, range search, nearest neighbor search, spatial join. • Trendy topics: Examples may include in-memory databases | | | | |
| Teaching/Learning Methodology | Class activities including - lecture, tutorial, lab, workshop seminar where applicable | | | | |
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific Assessment Methods/Tasks | % weighting | Intended subject learning outcomes to be assessed | | |
| | | | a | b | c |
| | Assignments, Tests & Projects | 55 | ✓ | ✓ | ✓ |
| | Final Examination | 45 | ✓ | ✓ | ✓ |
| | Total | 100 | | | |

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| Student study effort expected | Class Contact: | |
| | Class activities (lecture, tutorial, lab) | 39 hours |
| | Other student study effort: | |
| | Assignments, Quizzes, Projects, Exams | 65 hours |
| | Total student study effort | 104 hours |
| Reading list and references | <p>(1) Hoffer, J.A., Venkataraman, R., Topi, H., 2012, Modern Database Management, 11th Ed, Pretice Hall.</p> <p>(2) Ozsu, M.T. and Valuriez, P., 2011, Principles of Distributed Database System, 3rd Ed, Springer.</p> <p>(3) Redmond, E., Wilson, J.R., 2012, Seven Databases in Seven Weeks: A Guide to Modern Databases and the NoSQL Movement, 1st Ed, Pragmatic Bookshelf.</p> <p>(4) Silberschatz, Korth, Sudarshan. 2010. Database System Concepts, 6th edition, McGraw-Hill.</p> | |