BACHELOR OF COMPUTER SCIENCE (DATABASE MANAGEMENT)
COURSE LEARNING OUTCOMES

The learning objectives of this course is to produce knowledge and highly skilled graduates in the field of information and communication technology. Graduates pursuing the program are equipped with the in-depth knowledge and specialized skills in database management area. This includes the ability to analyze, design, develop program using structured programming method, manage and maintain database system which could meet the industrial needs in the field. Students should be able to develop data mining application with required security standard to protect the system database.

LEARNING OUTCOMES

Bachelor of Computer Science (Database Management) programme at FTMK intended to produce graduates with the following characteristics:

1. Able to apply knowledge of Computer Science and Information Technology.
2. Able to analyze, design and develop ICT applications.
3. Able to develop database by applying database concept using latest
4. Able to develop database application with standard security measures.
5. Able to administer and maintain database according to the standard procedure and policy.
6. Able to solve problems in creative way and able to communicate effectively.
7. Able to contribute individually or in a team in various discipline and domain
8. Able to lead with ethics and have entrepreneurship skills
9. Able to continue learning independently in the acquisition of new knowledge and skill.
CAREER PROSPECTS

Graduates specialized in Database Management have the opportunity to work as Database System Administrator, Database Designer. They also could work as System Programmer, Information System Officer and System Analyst. The graduates also have the opportunity to further up their studies in Master and Doctorate level.

CURRICULUM STRUCTURE

Student must complete a minimum of 120 credit (additional 2 credits if student register for subject BLHW 1012 English Foundation) to graduate with a Bachelor of Computer Science (Database Management) degree. The programme consists of the components as follows:

<table>
<thead>
<tr>
<th>Components</th>
<th>Credit Hours</th>
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<tr>
<td>University Compulsory Subjects</td>
<td>18</td>
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<tr>
<td>Program Core Subjects</td>
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## UNIVERSITY COMPULSORY SUBJECTS  (18 credits)

<table>
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<th>Code</th>
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| BLHC 4042 | Entrepreneur Skills and New Business  
(Kemahiran Keusahawanan dan Perniagaan Baru) |
| BLHW 1702 | Islamic and Asian Civilizations  
(Tamadun Islam dan Tamadun Asia –TITAS) |
| BLHW 2712 | Etnique Relation  
(Hubungan Etnik) |
| BLHW 2402 | Technical Communication I  
(Komunikasi Teknikal I) |
| BLHW 3402 | Technical Communication II  
(Komunikasi Teknikal II) |
| BLHW 1722 | Philosophy of Science and Technology  
(Falsafah Sains dan Teknologi) |
| BLHL 4032 | Critical and Creative Thinking  
(Pemikiran Kritis dan Kreatif) |
| BLHW 1012 | Foundation English  
(Asas Bahasa Inggeris)* |
| BLHL 1 - - 2 | Third Language  
(Bahasa Ketiga) |
| BKK* - - - 1 | Co-Curriculum I  
(Kokurikulum I) |
| BKK* - - - 1 | Co-Curriculum II  
(Kokurikulum II) |

## PROGRAMME CORE SUBJECTS  (72 credits)

<table>
<thead>
<tr>
<th>Code</th>
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</table>
| BACS 1253 | Mathematics for Computer Science I  
(Matematik Sains Komputer I) |
| BACS 1263 | Mathematics for Computer Science II  
(Matematik Sains Komputer II) |
| BACS 2213 | Statistic and Probability  
(Statistik dan Kebarangkalian) |
| BITP 1113 | Programming Technique  
(Teknik Pengaturcaraan) |
| BITP 1123 | Data Structure and Algorithm  
(Struktur Data dan Algoritma) |
| BITP 1213 | System Development  
(Pembangunan Sistem) |
| BITP 1323 | Database  
(Pangkalan Data) |
| BITP 3113 | Object Oriented Programming  
(Pengaturcaraan Berorientasikan Objek) |
| BITP 2213 | Software Engineering |
BITS 1123 Computer Organization and Architecture
(Kejuruteraan Perisian
Organisasi dan Senibina Komputer)
BITS 1213 Operating System
(Sistem Pengoperasian)
BITS 1313 Data Communication and Networking
(Komunikasi Data dan Rangkaian)
BITS 2513 Internet Technology
(Teknologi Internet)
BITM 1113 Multimedia System
(Sistem Multimedia)
BITM 2113 Web Application Development
(Pembangunan Aplikasi Web)
BITI 1113 Artificial Intelligence
(Kepintaran Buatan)
BITU 2913 Workshop I
(Bengkel I)
BITU 3923 Workshop II
(Bengkel II)
BITU 3926 Industrial Training
(Latihan Industri)
BITU 3946 Industrial Training Report
(Laporan Latihan Industri)
BITU 3973 Project I
(Projek Sarjana Muda I)
BITU 3983 Project II
(Projek Sarjana Muda II)

**COURSE CORE SUBJECTS (24 credits)**

BITP 2313 Database Design
(Rekabentuk Pangkalan Data)
BITP 2323 Database Administration
(Pentadbiran Pangkalan Data)
BITP 3343 Data Mining and Warehousing
(Penggudangan dan Perlombongan Data)
BITP 3353 Multimedia Database
(Pangkalan Data Multimedia)
BITS 3433 Information Technology and Database Security
(Keselamatan Teknologi Maklumat dan Pangkalan Data)
BITP 2223 Software Requirement and Design
(Keperluan dan Rekabentuk Perisian)
BITP 3223 Software Project Management
(Pengurusan Proyek Perisian)
BITP 2303 Database Programming
## ELECTIVE SUBJECTS (6 credits)

Choose any two from the following.

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<tr>
<th>Code</th>
<th>Subject</th>
<th>Code</th>
<th>Subject</th>
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</table>
| BITP 3233 | Strategic Information System Planning  
*Perancangan Strategik Sistem Maklumat* | BITS 2313 | Local Area Network  
*Rangkaian Komputer Setempat* |
| BITM 3413 | Geographical Information System  
*Sistem Maklumat Geografik* | BITP 3523 | Advanced Database Administration  
*Pentadbiran Pangkalan Data Lanjutan* |
| BITP 3513 | Advance Database Programming  
*Pengaturcaraan Pangkalan Data Lanjutan* | BITI 2223 | Machine Learning  
*Pembelajaran Mesin* |
## CURRICULUM STRUCTURE PER SEMESTER

### Year One (Semester I)

<table>
<thead>
<tr>
<th>Code</th>
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### Year Two (Semester I)

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**This subject can be taken in any semester.**
### Year Two (Semester II)

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### Year Three (Semester I)

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### Year Three (Special Semester)

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* Equivalent to 9 hours of contact if carried out in normal semester.
### Year Four (Semester I)

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### Elective Subjects

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<td>BITP 3533</td>
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<td>3 BITP 2323</td>
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<td>BITP 3513</td>
<td>Advance Database Programming</td>
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<td>3 BITP 2303</td>
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<td>Strategic Information System Planning</td>
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<td>Local Area Network</td>
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<td>BITM 3413</td>
<td>Geographical Information System</td>
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### Third Language

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BACS 1253  Mathematics for Computer Science I (3,3,2)

Learning Outcomes
Upon completing this course, students should be able to:

1. Explain the concepts of fundamental Linear Algebra and Discrete Mathematic.
2. Solve problems in Computer Science related to Linear Algebra and Discrete Mathematic theory using software.
3. Solve application problems using appropriate techniques.

Synopsis
This course covers two disciplines of mathematics namely Linear Algebra and Discrete Mathematics. The topics for Linear Algebra are linear equations, matrices, determinants, vectors in $\mathbb{R}^n$, real vector spaces, eigenvalues, eigenvectors, diagonalization and linear transformation. The topics for discrete mathematics include logic, sets, function, algorithms, integers, mathematical reasoning, counting, relations, graphs, trees and Boolean algebra.

References

BACS 1263 Mathematics for Computer Science II (3,3,2)

Learning Outcomes
Upon completing this course, students should be able to:

1. Apply the knowledge and basic concepts of calculus and numerical analysis.
2. Solve problems in Computer Science related to calculus and numerical analysis theory using software.
3. Solve application problems using appropriate techniques.

Synopsis
This course covers two disciplines of mathematics namely calculus and numerical analysis. The topics for calculus are derivatives, function, differentiation techniques, logarithmic function and exponents as well as its application, integration techniques, and multivariable functions. The topics for numerical analysis include Taylor polynomial, numbers, error, interpolation, numerical differentiation and integration as well as numerical solution for differential equation.

References

BACS 2213  Statistic and Probability (3,2,2)

Learning Outcomes
Upon completing this subject, students should be able to:
1. Explain the concepts of fundamental statistics and probability.
2. Solve problems in statistic inference related to hypothesis test using software.
3. Solve application problems using appropriate statistic techniques.

Synopsis

Students will be introduced to the concept of probability and inferential statistics. The course starts with Probability followed by Discrete Random Variables, Continuous Random Variables and Sampling Distribution. The main topics for Inferential statistics are Estimation, Hypothesis Testing, Estimation and Hypothesis Testing: Two Populations, Anova, Simple Linear Regression and Correlation. This course will also provide the students with some exposure to statistical software.

References


BITP 1113  Programming Technique (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:
1. Explain basic principles of problem solving in Software Engineering.
2. Demonstrate basic principles of programming.
3. Develop basic construction of C++ language in building program.

Synopsis

This course introduces the students to the basic concepts of computer and programming techniques that includes program lifecycle variable, identifier, data type, operator, selection, repetition, function, array, string, file and pointer.

References


BITP 1123  Data Structure and Algorithm (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:
1. Identify suitable data structure for certain application.
2. Solve problems by applying knowledge in data structure and algorithm.
3. Analyze the memory and run time efficiency of an algorithm design.
4. Use and develop data structure based on the current problem requirement.
Synopsis

This course introduces the students to data structures and algorithms. The basic concepts in structure, class, array and pointer are discussed in order to understand the fundamental of data structures and algorithms. The course focuses on data structures such as list, stack, queue, tree, searching and hash while sorting, graph and heaps topics cover the algorithms. This also includes the algorithm efficiency for run time. Pseudo code and C++ programming language will be used in algorithm implementation. Apart from the theory, the students must apply the data structures and algorithms in the development of small scale application as a group work.

References


BITP 1213 System Development (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:
1. Identify and explain all the phases in system development.
2. Follow suitable methodology used in system or application development.
3. Apply system development life cycle based on the current problems.

Synopsis

This course introduces the students to the basic system development concept, analysis, design, modeling, methodology, technique, tool and other perspectives that are important to be considered in the development of information system.

References


BITP 1323 Database (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:
1. Identify and explain the concept of database, data modeling (relationship) and SQL statements.
2. Produce data conceptual representation using Entity Relationship Model.
3. Develop database application based on the current problem requirement.

Synopsis

This course is an introduction to database and file management system. It assists the students to form an understanding of data modeling, file management and database system functionality in information system. The students will be introduced to the process of designing, developing and executing database applications. This course
focuses on practical skills to create, control and execute statement for database relationship. Exercises based on various resources will be given in all lab sessions. The students will submit their exercises at the end of the lab session. The students must present their database application project to demonstrate their understanding of the course. This allows the students to apply their knowledge and the techniques that they have learnt into the real world database applications.

References


BITP 2213  Software Engineering (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:

1. Explain the concept and importance of requirement engineering in software development process.
2. Implement software requirement phase and analyze the requirement engineering specification.
3. Create official documents for software requirement specification based on the current problems by following the software requirement engineering process.
4. Choose a suitable tool to design a case study.

Synopsis

This course introduces the students to system development and software engineering. The topics includes the software lifecycle, requirement analysis, software design, processes in software design, design quality, strategy in design and metric in software testing. This course also covers software project management including the budgeting and quality management.

References


BITS 1123  Computer Organization and Architecture (3,2,1)

Learning Outcomes

At the end of the lesson, students should be able to:

1. Define and explain computer architecture and organization concept including functional components and their characteristics, performance and the detailed interactions in computer system including system bus, different types of memory and input/output as well as CPU.
2. Apply computer architecture theory to solve the basic functional computer problem.
3. Show and assemble basic computer components.

Synopsis

This course provides detail of computer system’s functional components, their characteristics, performance and
interactions including system bus, different types of memory and input/output and CPU, as well as practical implementations of the components. This curse also covers the architectural issues such as instruction set program and data types. On top that, the students are also introduced to the increasingly important area of parallel organization.

References


BIT 1213 Operating System (3,2,2)

Learning Outcomes

At the end of the course, students should be able to:

1. Explain the major components of an operating system.
2. Elaborate the major operating system responsibilities or aspects.
3. Explain the differences of the functionality among various kinds of operating system.

Synopsis

This course gives exposure to the students about the basic of operating system which comprises process, memory management, file and I/O and also CPU scheduling. The introduction part covers the evolution of operating system followed by the basic concepts, technology and theories used in operating system such as concurrency, kernel, deadlock and multithreading.

References


BIT 1313 Data Communication & Networking [3, 2, 2]

Learning Outcomes

At the end of the course, students should be able to:

1. Explain and apply the fundamental concept of data communication and networking.
2. Differentiate types of media, network topologies and network technologies.
3. Practice the best technique in developing network.
4. Configure and troubleshoot a basic network.

Synopsis

This course introduces the fundamental concepts and terminology of data communication and networking, encompassing both technical and managerial aspects. It also provides an understanding about the challenges and opportunities faced by the modern businesses. The topics include: fundamentals of telecommunications, data transmission mechanisms, telecommunication media and technologies, considerations for LAN and WAN implementations, the Internet and intranet applications, emerging telecommunications technologies, and trends in the telecommunications industry. Students will also be able to understand, explain and apply the fundamentals of data communication and networking as well as skills in network
applications to troubleshoot and configure a basic computer networks using guided or unguided media.

References


BITS 2513  Internet Technology (3,2,2)

Learning Outcomes

Upon completing this subject, students should be able to:

1. Apply the concepts of computer networks, core components of the Internet infrastructure, protocol and services.
2. Show the implementation of client and server application
3. Select the best Internet application according to the current situation.

Synopsis

Internet has become a major tool in doing business today. The evolutions of web based knowledge also contribute to this phenomenon. Hence, this course is purposely designed to provide an introduction to Internet technologies. This course covers a wide range of material about the Internet and the major areas of study including basic concepts of client and server, networking, Internet Security and its application.

References


BITM 1113  Multimedia System (3,2,2)

Learning Outcomes

Upon completing this course, students should be able to:

1. Use several media editing software to create original multimedia content.
2. List down and discuss the software and hardware components used in multimedia system.
3. Demonstrate life long learning by relating and describing the fundamental concept of multimedia systems into other subjects (e.g. Software Engineering, Internet Technology, PSM etc).
4. Apply problem solving skills by identifying several different environments in which multimedia might be used and several different aspects of multimedia that benefit other forms of information presentation.

Synopsis

This subject prepares the students with the basic concept of multimedia, technology and the importance of multimedia application. It covers the introduction to media, multimedia graphic implementation, 2D/3D graphics and animation, video, audio, authoring, multimedia integration and application development. In lab sessions, the students will be introduced to tools for selected media elements and authoring software for media integration. Students will be trained for practical preparation of still image, simple animation, sound and effectively apply it in a multimedia project. Students will be exposed to teamwork, leadership, problem solving and communication skills while performing their various tasks and project.
References


BITM 2113 Web Application Development (3,2,2)

Learning Outcomes

Upon completing this course, students should be able to:
1. Explain the concept and the principle of Internet and WWW based on the latest technologies.
2. Identify and develop important components in Web applications which comprises client site technology, server site technology, database server and Web server.
3. Relate relevant key components in developing Web applications.

Synopsis

The purpose of this course is to provide the students with a comprehensive understanding of the tools and problem-solving techniques related to the development of effective World Wide Web. It emphasizes on four (4) components of Web application development which are:
- Client Site Technologies: HTML, XHTML, CSS, XML, and JavaScript
- Server Site Technologies: PHP
- Database Server: MySQL
- Web Servers: Apache

BITP 3113 Object Oriented Programming (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:
1. Apply object oriented programming concept and methods.
2. Build program that implement programming language syntax and semantic in Java application.
3. Develop object oriented application based on the current case study.

Synopsis

This course introduces the students to the object oriented programming methods by using Java programming language. Student will apply and design the basic object oriented structure, swing, event handling, interface components, exception handling, database, multimedia, networking and threads. Student will also develop a complete Java programs and applications.
References


BITU 2913 Workshop I (3,0,9)

Learning Outcomes

Upon completing this course, students should be able to:

1. Use the knowledge learnt specifically the programming techniques to develop a project.
2. Identify and solve problems systematically based on the information from various resources.
3. Run and produce a project individually.
4. Present and defend the project output.

Synopsis

The aim of Workshop 1 is to provide the students with experience and skills to develop and present an individual project. Students must use the knowledge learnt to solve the problems and think creatively to achieve their projects’ objectives and scopes. Students should be able to apply programming technique in their projects. The systems/applications developed must have logic process flow, robust, consistent, have attractive user interface and are able to detect errors in input/output data. At the final stage of this workshop, the students must present and defend their project. A supervisor will supervise the students for the whole 12 weeks and will evaluate the progress during the implementation and final presentation. This course is also a fundamental course to prepare the students for industrial training.

References

BITU 3923 Workshop II (3,0,9)

Learning Outcomes

Upon completing this course, students should be able to:

1. Analyze and develop a group project.
2. Apply the concept of system design and development in their projects.
3. Identify, analyze and organize the changes made to project scope during the project life cycle.
4. Organize a group project with good manner.
5. Present and defend the project output.

Synopsis

This course allows the students to practice their knowledge and experience gained from the courses taken earlier. This course builds the students understanding about problem solving techniques based on their project scopes. The scope of their projects is based on their programme specializations. This course requires the project to be developed in a team of three to five students.

References


BITU 3926 Industrial Training (6,0,6)

Learning Outcomes

Upon completing this course, students should be able to:

1. Be responsible in performing tasks as an ICT worker.
2. Apply skills and knowledge learnt in classes.
3. Practice discipline and ethic in performing daily tasks.
4. Use the latest technology in the ICT domains.
5. Interact and communicate with colleagues in a good manner.

Synopsis

During this course, students will be able to practice the knowledge that they have learnt in UTeM such as analyzing and designing, database programming, data structure and algorithm, operating system, web programming, network and data communication etc. It is an opportunity for the students to gain ICT knowledge as in the industry. The students can develop soft skills and professionalism through interaction and communication with colleagues.

References

Industrial Training Committee "Industrial Training Guidelines", UNIC, Universiti Teknikal Malaysia Melaka.

BITU 3946 Industrial Training Report (6,0,6)

Learning Outcomes
Upon completing this course, students should be able to:
1. Apply the skills and knowledge learnt
2. Use the latest technology in the ICT domain.
3. Organize information to produce a formal report.

Synopsis
This course requires the students to produce a report while undergoing the industrial training. The students should be able to apply the courses that they have learnt at UTeM such as to analyze and design, database programming, data structure and algorithm, operating system, web programming, network and data communication etc. It is an opportunity for them to gain industrial ICT knowledge.

References
Industrial Training Committee “Industrial Training Guidelines”, UNIC, Universiti Teknikal Malaysia Melaka.

BITU 3973 Project I [3,0,9]
Learning Outcomes
Upon completing this course, students should be able to:

1. Run testing and validate their systems based on the projects' timeline.
2. Solve problems related to the industrial need in the ICT domain.
3. Complete the project output that has the commercial value.
4. Present and defend the output.
5. Organize information to produce a formal report.

Synopsis
This course joins together all the subjects learnt from year one of the studies including to analyze and to design a specific system, the application of database, algorithm and data structure, web programming, data communication etc. It is compulsory to the final year students to develop a Final Project and to attend the offered courses.

References
1. Bachelor Degree Project and Diploma Project Committee, PSM Report Guideline, FTMK, Universiti Teknikal Malaysia Melaka.
2. Bachelor Degree Project and Diploma Project Committee, PSM Report Guideline Book, FTMK, Universiti Teknikal Malaysia Melaka.

BITU 3983 Project II [3,0,9]
Learning Outcomes
Upon completing this subject, students should be able to:

1. Run testing and validate their system based on the project timeline.
2. Solve problems related to the industrial need in the ICT domain.
3. Complete the project output that has the commercial value.
4. Present and defend the output.
5. Organize information to produce a formal report.

Synopsis
This course joins together all the subjects learnt from year one of the studies including to analyze and to design a specific system, the application of database, algorithm and data structure, web programming, data communication etc. It is compulsory to the final year students to develop a Final Project and to attend the offered courses.

References
1. Bachelor Degree Project and Diploma Project Committee, PSM Report Guideline, FTMK, Universiti Teknikal Malaysia Melaka.
2. Bachelor Degree Project and Diploma Project Committee, PSM Report Guideline Book, FTMK, Universiti Teknikal Malaysia Melaka.
BITP 2313  Database Design  (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:
1. Understand the concept of database design and its usage in different applications.
2. Develop the object relational data model using database programming language syntax.
3. Construct database design based on the current problem requirement.

Synopsis

This subject provides exposure to the students about the fundamental principle and designing issues in non-relational data model such as object oriented data and object relational model with additional ERD characteristic. It includes advanced concept of database and application such as data warehousing, OLAP, data mining, database in electronic commerce and distributed database system.

References


BITP 2323  Database Administration (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:
1. Explain the concept of database management system.
2. Implement the roles and responsibilities of a database administrator.
3. Explore the function and the architecture of a database management system.
4. Analyze the performance of database.

Synopsis

This course discusses roles, issues and responsibilities of database administrator; functions and architecture of database management system and its relationship with the environment where it is implemented. Discussions also cover DBMS functions such as storage, access and updates of data; database object such as table space, indexes and user objects as well as data integrity, planning and implementation of activities for performance upgrading and user management.

References

BITP 2303  Database Programming (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:

1. Explain features, syntax, purpose and benefits of SQL and PL/SQL to developer and database administrator.
2. Organize procedures, functions, packages and database triggers and manipulate large object size.
3. Apply and use Oracle supplied packages.

Synopsis

The contents of this course are based on the syllabus of two modules in Oracle certification (Oracle Certified Associate). The first part of the lesson introduces the concepts of relational database and SQL syntax. This includes topics related to Oracle database architecture, its ability, constraints in data integrity, and other database objects such as views, index, sequence and synonyms. The second part of the lesson explains the objectives, functions and benefits of PL/SQL in developing database application. This includes the development, implementation and maintenance of procedures, functions, packages and database triggers. The lesson also explains the use of stored procedures and triggers in retrieving data and executing complex business rules to enhance data integrity. Students will be introduced to Oracle packages, subprograms and PL/SQL triggers. They will also be exposed on how to use and manipulate large object size (LOBs).

References


BITP 3353  Multimedia Database (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:

1. Identify the importance of multimedia database and related concepts.
2. Design multimedia database based on the current environment and requirement.
3. Develop application which incorporate multimedia database as a group work.

Synopsis

Multimedia Database Management System (MDBMS) is a DBMS that supports traditional and multimedia data types. The DBMS is able to handle large cluster of multimedia entities. This subject covers main components that need to be integrated into conventional DBMS for practical usage in multimedia application development. This includes an overview of multiple features and approaches in handling large cluster of multimedia entities by the current DBMS. Consequently, a set of features and functionalities needed by a MDBMS to support various multimedia data types effectively and efficiently is being developed.

References

BITP 2223  Software Requirement and Design (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:

1. Understand and explain about the concept of requirement analysis and software design.
2. Analyze software requirements and design the software using object oriented concept and Unified Modeling Language (UML) notations.
3. Build analysis software requirement models and software design model by using UML notation.
4. Identify and solve problems on software design by using pattern design concept.

Synopsis

This course introduces the students to the concept application software development cycle especially requirement analysis and software design which based on objects, UML notations difference between OOAD and SDM. It covers requirement analysis modeling besides activity diagram, sequence diagram and class diagram. Design phase will be introduced to the students including on how to develop relations between classes, operations, attributes, decomposition, frameworks, layers and tiers.

References

3. Cay Horstman, Object Oriented Design and Patterns, John Wiley and Sons 2006
4. Alan Shalloway, James Trott Design Patterns Explained: A New Perspective on Object-Oriented Design, 2/E, Addison-Wesley Professional, 2005

BIT 3433 Information Technology and Database Security (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:

1. Interpret and explain the concepts of information technology security with regards to database.
2. Analyze risk, threat and devise security implementation plan for database, in line with current standards and requirements.
3. Develop database system that incorporates features of data security, data integrity and data access control (group work).

Synopsis

This course introduces basic concepts of data security in database environment, computer network and internet. The topic includes basic requirement of data security control, explain the risk and threats towards integrity, availability and data confidentiality in the organization. Among other issues discussed are technologies on application and data security such as data access control, data confidentiality, user management, virtual stand alone database and database auditing. Students will be exposed to techniques of data security implementation in Oracle9i environment.

References

BITP 3223  Software Project Management (3,2,2)

At the end of the lesson, students should be able to:

1. Explain the related activity and identify the scope in software project management.
2. Analyze the project requirement and choose the appropriate approach to be used in software project management.
3. Organize a software project management based on current problem of project requirement.

Synopsis

This course gives initial exposure related to project management discipline in a software project. This course aims to expose the students on how to choose the appropriate approach and style in project management to be used in managing a software project. Besides the theory of project management, it will also focus on fundamental understanding in analysing techniques.

References


BITP 3343  Data Mining and Warehousing (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:

1. Explain the concept, component and purpose of data warehousing and data mining.
2. Design data warehouse based on certain model and data warehouse life cycle.
3. Apply data mining techniques.
4. Identify selected database for system application.

Synopsis

The subject focuses on two areas, which are data warehousing and data mining. Data warehousing topic includes the basic of warehousing, multi dimensional data analysis and factors in planning design, maintenance and successful exploitation of data mining. Data mining topic includes the origin of data mining, algorithm technique, tools and knowledge discovery in database.

References

ELECTIVE SUBJECTS

BITP 3523 Advanced Database Administration (3,2,2)

Learning Outcomes

At the end of the lesson, students should be able to:

1. List the introductory concept and compare the database optimization.
2. Identify, troubleshoot and solve problems related to database performance.
3. Explain the strategies and techniques to configure Oracle 9i server and the importance of database earlier design.

Synopsis

This course is the advanced course for database administration. It helps the students to understand on how to optimize the performance of database. This course covers on how to use the Oracle tools to identify, troubleshoot and solve problems related Oracle database administration. This course is based on Oracle certification which is also requirement to obtain OCP (Oracle Certified Professional). Furthermore, this course is based on practical application or hands on. It is also a fundamental skills to those who want to become a database developer or administrator. With the skills, students can maximize the performance of components to access the database system.

References


BITP 3513 Advance Database Programming (3,0,6)

Learning Outcomes

At the end of the lesson, students should be able to:

1. Produce form module consists of various components to interact with the database including the controlling graphical user interface (GUI).
2. To measure/test developed form module using web server and three level environment.
3. Practice the concept of object reusable and programming.

Synopsis

This course gives the exposure to the students to develop, test and use the interactive internet application by using Oracle Forms Developer software. With the use of graphical user interface (GUI) environment, students learn on how to develop and edit forms using check boxes, list items and radio groups. Students also learns to enhance data access by inventing event-related triggers. In addition, students will be taught to expose form elements and data using more than one windows and canvas. This course is designed as preparation for the students to obtain Oracle Certified Professional (OCP) certification.

References

4. Sunderraman, Rajshekhar; Riccardi, Greg (2004), Database Management: With Website Development
BITP 3233  Strategic Information System Planning (3,2,2)

Learning Outcomes
At the end of the lesson, students should be able to:

1. Explain the value, functions of information system to the organization and how the information system can be used for the organizations to compete.
2. Use the technique tools and management strategies tools to develop information system strategies.
3. Analyze organization business scenario and propose information system plan.
4. Work in group to complete the group project.

Synopsis
This subject introduces the importance of information technology in order to develop a competitive organization. Students will be able to understand the concept and gain the skills needed to develop suitable organization information system that can support the strategies of business organization. Strategic planning techniques and suitable tools will be discussed to develop required information systems. A few identified information systems which can be applied will be introduced as an organization selection. The elements of information system, resources and leadership are important to ensure the development of information system is efficient.

References

Biti 2223 - Machine Learning (3, 2, 2)

Learning Outcomes
Upon completing this subject, students should be able to:

1. Explain by relating the fundamental concept of machine learning theory.
2. Assess and identify the appropriate techniques in machine learning problem solving.
3. Demonstrate machine learning algorithm based on machine learning concepts.

Synopsis
The course aims to provide exposure on the foundation of machine learning, which is the study on how to build a computer system that learns from experience. The course starts with an overview of Data Mining for a background study. Main topics that will be covered are such as concept learning, decision tree learning, Bayesian learning, instance-based learning, learning sets of rules, and reinforcement learning. Besides, some applications of machine learning including robotic control, autonomous navigation, bioinformatics, speech recognition, and web data processing will also be introduced.

References
3. E.N Richard (2003), Learning Bayesian Networks (Hardcover), Prentice Hall.
BITS 2313 Local Area Network (3,2,2)

Learning Outcomes

At the end of the course, students should be able to:

1. Explain and elaborate the concepts of local Area Network and its usage.
2. Study and identify suitable method in selecting hardware, topology and protocol in Local Area Network.
3. Demonstrate and configure the software and hardware required in Local Area Network communication.

Synopsis

This course is an introduction to the current methods and practices in the use of Local Area Networks (LANs). The emphasis will be placed on LAN hardware and software, installation management and connection to other networks. Topics covered include network architecture, network communication protocol, end-to-end protocol stacks, network components, network management and the (OSI) reference model.

References


BITM 3413 Geographical Information System (GIS) (3,2,2)

Learning Outcomes

At the end of the course, students should be able to:

1. Show and explain the concepts, issues, techniques and various GIS applications.
2. Solve information system problems based on the GIS language technique.
3. Justify the issues in GIS management based on the information from various resources.

Synopsis

This course introduces the students to Geographic Information Systems (GIS). GIS is a computer based data processing tool that is used to manage, analyze and visualise spatial data. It can be considered as advanced database. Students will explore some of the GIS applications in the area of electronic government, resources management, disaster management, businesses, banking and insurance industries. Students must be familiar with traditional methods of identifying and describing locations using paper maps. The students will begin by examining the geographic basics of mapping and examine the processes in which spatial data can be recorded, captured, stored, processed using computers. Next, the students will introduce the methods used in spatial analysis. The final portion of the course will focus on spatial cartographic presentation of data.

References