# COURSE OUTLINE

| | | | |
|---|---|---|---|
| **School/ Faculty:** | Computing/Engineering | **Page:** | 1 of 4 |
| **Course code:** | SCSP 3843 | **Academic Session/Semester:** | 20222023/2 |
| **Course name:** | Special Topic Data Engineering | **Pre/co requisite (course name and code, if applicable):** | - |
| **Credit hours:** | 3 | | |

| | | | | |
|---|---|---|---|---|
| **Course synopsis** | This course presents to the students recent research and industrial issues pertaining to data engineering, database systems and technologies. Various topics of interests that are directly or indirectly affecting or are being influenced by data engineering, database systems and technologies are explored and discussed. Participation in forums as well as face to face interaction, with researchers and practitioners on these topics are encouraged. Students should then be able to conduct their own investigation and deductions. This course will also expose students to industry's experiences in managing database systems and technologies through sharing knowledge sessions and work-based learning activities with selected organization. | | | |
| **Course coordinator (if applicable)** | Nor Hawaniah Zakaria | | | |
| **Course lecturer(s)** | **Name** | **Office** | **Tel** | **E-mail (@utm.my)** |
| | Nor Hawaniah binti Zakaria | N28-402-10 | 0137416098 | hawaniah@utm.my |
| | Mohd Shahizan Othman | N28A | 0127363269 | shahizan |
| | | | | |

**Mapping of the Course Learning Outcomes (CLO) to the Programme Learning Outcomes (PLO), Teaching & Learning (T&L) methods and Assessment methods:**

| No. | CLO | PLO | *Taxonomies & **generic skills | T&L methods | ***Assessment methods |
|---|---|---|---|---|---|
| CLO1 | **Identify** issues related to database/ data engineering systems and technologies by using appropriate resources and search techniques. | PLO4 (CS) | CS3 | Lecture, active learning, work-based learning | A1 (10%)<br>A2 (10%)<br>PR (15%) |
| CLO2 | **Discuss on current** database/data engineering technologies related matters with researchers and/or practitioners | PLO7 (TW) | TW3 | Active learning, work-based learning | (10%)<br>PR (15%) |
| CLO3 | **Analyse** issues regarding emerging information retrieval approaches, related technologies and its potential. | PLO4 (CS) | CS7 | Active earning, work-based learning | A3 (10%)PR |
| Refer *Taxonomies of Learningand **UTM's Graduate Attributes, where applicable for measurement of outcomes achievement | | | | | |

| | |
|---|---|
| Prepared by:<br>Name: Dr Haslina binti Hashim (Course Owner)<br>Signature:<br>Date: August 2017 | Certified by:<br>Name: PM. Dr. Roliana Ibrahim (Head of Department)<br>Signature:<br>Date: |

| | | | |
|---|---|---|---|
| **School/ Faculty:** | Computing/ Engineering | **Page:** | 2 of 4 |
| **Course code:** | SCSP3843 | **Academic Session/Semester:** | 20202021/2 |
| **Course name:** | Special Topic Data Engineering | **Pre/co requisite (course name and code, if applicable):** | - |
| **Credit hours:** | 3 | | |

*** T – Test; Q – Quiz; A – Assignment; PR – Project; Pr – Presentation

**Details on Innovative T&L practices:**

| No. | Type | Implementation |
|---|---|---|
| 1. | Active learning | Conducted through in-class activities |
| 2. | Project-based learning | Conducted through case study assignment. Tasks are given in sequential steps throughout the semester. Students in a group of 3 are given a case study that require fundamental bioinformatics knowledge. The report must comply to the case study specifications and be given in the form of written report. |
| 3. | Work-based learning | Lecture from invited guest-lecturer from industry. |

**Weekly Schedule:**

| | |
|---|---|
| Week 1 (21/3/22) | Ice Breaking Session |
| Week 2 (28/3/22) | Data Engineer vs Data Engineering vs Data Science |
| Week 3 (4/4/22) | Data Integration<br>Tools and Software<br>**Assignment 1 – Exploring Top Data Integration Tools** |
| Week 4 (11/4/22) – Week 5 (18/4/22) | Unstructured vs Semi-structured vs Structured Data Model<br>NoSQL Databases |
| Week 6 (25/4/22) | **Project: Phase 1 – Identifying Business Requirement** |
| Week 7 (1/5/22 – 7/5/22) | **MID-SEMESTER BREAK** |
| Week 8 (9/5/22) – Week 9 (16/5/22) | Data Retrieval (Data Scrapping)<br>Application Programming Interface (API)<br>**Project: Phase 2 – Data Scrapping and Data Storing** |
| Week 10 (23/5/22) | Data Wrangling & Tools |
| Week 11 (30/5/22) | Introduction to Machine Learning & Deep Learning<br>**Assignment 2** |
| Week 12 (6/6/22) – Week 13 (13/6/22) | Cloud Computing<br>Microsoft Azure<br>**Assignment 3 – Individual** |
| Week 14 (20/6/22) | **Project: Phase 3 – Full Dashboard Development & Presentation** |
| Week 15 (27/6/22) | **ALTERNATIVE ASSESSMENT** |

| | | | |
|---|---|---|---|
| **School/ Faculty:** | Computing/ Engineering | **Page:** | 2 of 4 |
| **Course code:** | SCSP3843 | **Academic Session/Semester:** | 20202021/2 |
| **Course name:** | Special Topic Data Engineering | **Pre/co requisite (course name and code, if applicable):** | - |
| **Credit hours:** | 3 | | |

**Transferable skills (generic skills learned in course of study which can be useful and utilised in other settings):**

In undergoing this learning, students will also acquire other value-added skills such as:

1. Ability to work in teams through group project and assignments.
2. Ability to communicate confidently through presentations and written assignments.
3. Ability to learn basic knowledge of leadership.

**Student learning time (SLT) details:**

| Distribution of student Learning Time (SLT) Course content outline | Guided Learning (Face to Face) | | | | Teaching and Learning Activities | | TOTAL SLT |
|---|---|---|---|---|---|---|---|
| | | | | | Guided Learning Non-Face to Face | Independent Learning Non-Face to face | |
| **CLO** | **L** | **T** | **P** | **O** | | | |
| CLO 1 | 33 | - | - | 10 | - | 15 | **58** |
| CLO 2 | 4 | - | - | 40 | - | 24 | **68** |
| CLO 3 | 5 | - | - | 10 | - | 5 | **20** |
| **Total SLT** | **42** | **-** | **-** | **60** | **-** | **44** | **146** |

| Continuous Assessment | | PLO/CLO | Percentage | Total SLT |
|---|---|---|---|---|
| 1 | Assignment 1<br>Assignment 2<br>Assignment 3 | PLO4/CLO1<br>PLO7/CLO2<br>PLO4/CLO3 | 10<br>10<br>10 | **As in CLO1, CLO2, and CLO3** |
| 3 | Project | PLO4/CLO1<br>PLO7/CLO2 | 15<br>15 | **As in CLO1 and CLO2** |
| 4 | Presentation | PLO7/CLO2 | 10 | **As in CLO2** |
| 5 | Alternative Assessment | PLO4/CLO1<br>PLO7/CLO2 | 15<br>15 | **3** |
| **Grand Total SLT** | | | | **150h** |

**Special requirement to deliver the course (e.g: software, nursery, computer lab, simulationroom):**

**Learning resources:**

**Text book (if applicable)**

**Main references**

1. Selected articles related to topics of discussions from journals, proceedings, etc.
2. Websites related to topics of discussion.

**Additional references**

**Online**
**http://elearning.utm.my**

**Academic honesty and plagiarism:**

- Assignments are either individual or group work, as required by the lecturer.
- Copying of work (texts, lab results etc.) from other students/groups or from other sources is not allowed. Briefquotations are allowed and then only if indicated as such. Existing texts should be reformulated with your own wordsused to explain what you have read. It is not acceptable to retype existing texts and just acknowledge the source as a reference.
- Be warned: students who submit copied work will obtain a mark of **zero** for the assignment and exams and disciplinary actions may be taken by the faculty. It is also unacceptable to do somebody else's work, to lend your work to them or to make your work available to them to copy.

**Other additional information (Course policy, any specific instruction etc.):**

1. Attendance is compulsory and will be taken in every lecture session. Student with less than 80% of total attendance is not allowed to sit for final exam.
2. Students are required to behave and follow the University's dressing regulation and etiquette while in the class, lab, and exam hall.
3. Exercises and tutorial will be given in class and some may be taken for assessment. Students who do not do the exercise will lose the coursework marks for the exercise.
4. Assignments must be submitted on the due dates. Some points will be deducted for late submissions. Assignments submitted three days after the due date will not be accepted.
5. Make up exam/ test will not be given, except to students who are sick and submit medical certificate which is confirmed by UTM panel doctors. Make up exam/test can only be given within one week of the initial date of exam.
6. Student attendance in meeting with industry is compulsory and will be taken in every meeting.
7. While students are at industry, students are required to behave and follow industry policy in every meeting.

**Disclaimer:**