澳門理工大學
Universidade Politécnica de Macau
Macao Polytechnic University

**FACULTY OF APPLIED SCIENCES**

**MASTER OF SCIENCE IN BIG DATA AND INTERNET OF THINGS**

**LEARNING MODULE OUTLINE**

| | | | |
|---|---|---|---|
| Academic Year | 2023/2024 | Semester | 2 |
| Module Code | COMP6299 | | |
| Learning Module | Dissertation | | |
| Pre-requisite(s) | Nil | | |
| Medium of Instruction | English | | |
| Credits | 12 | Contact Hours | 90 hrs |
| Instructor | Chan-Tong Lam, Ben Ng, Yapeng Wang, Dennis Wong, Eddie Law, Cissy Yuan, Philip Lei, Amy Luo, June Liu, Rebecca Choi, Patrick Pang | Email | {ctlam, bng, yapengwang, cwong, eddielaw, xcyuan, philiplei, luowuman, yue.liu, rebeccachoi, patrickpang}@mpu.edu.mo |
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**MODULE DESCRIPTION**

Students are required to apply the techniques and technologies which they have learned in a significant advanced research project. Under the supervision of an advisor, the students shall focus on a contemporary research topic and make use of the leading-edge techniques to investigate or produce new research findings. Upon completion, the dissertation is to be submitted and evaluated using the standard criteria for scholarly work.

**MODULE INTENDED LEARNING OUTCOMES (ILOS)**

On completion of this learning module, students will be able to:

| | |
|---|---|
| M1. | Acquire research and problem solving skills; (EA1fl, EA3fl) |
| M2. | Review and critique research literature in information technologies; (EA2fl) |
| M3. | Evaluate and contrast advanced information technologies and practices; (EA2fl) |
| M4. | Determine the research methodology appropriate to the research goals and relevant contexts; (D2fl, ET1fl, ET3fl, EP4fl, ET6fl) |
| M5. | Apply and integrate advanced technologies to produce new solutions for complex problems; (EA1fl, EA3fl, D1fl, D3fl, ET4fl) |
| M6. | Communicate technical knowledge orally; (EP2fl, EP3fl) |
| M7. | Write advanced technical report. (EP2fl, EP3fl) |

These ILOs aims to enable students to attain the following Programme Intended Learning Outcomes (PILOs):

| PILOs | | M1 | M2 | M3 | M4 | M5 | M6 | M7 |
|---|---|---|---|---|---|---|---|---|
| P1. | Master the principles of system engineering and relevant enabling technologies for building of IoT solutions | ✓ | | | ✓ | | | |
| P2. | Critically evaluate scientific methodologies and mathematical models for Big Data and its applications | | ✓ | ✓ | | | | |
| P3. | Master the advanced software and programming tools and techniques for IoT solutions and Big Data | | | | | ✓ | | |
| P4. | Explain the processes involved in IoT solutions and Big Data analytics in a typical business setting | | | | ✓ | | | |
| P5. | Explain different application domains and analyze their requirements for IoT and Big Data | | | | ✓ | | | |
| P6. | Apply knowledge in advanced communication and multimedia technologies for the design and implementation of IoT solutions | | | | | ✓ | | |
| P7. | Apply knowledge in applied statistics, machine learning, leading-edge technologies and programming techniques for Big Data | | | | | ✓ | | |
| P8. | Design and carry out an advanced project following an ethical and professional methodology | ✓ | | | | ✓ | | ✓ |
| P9. | To demonstrate advanced knowledge and R&D techniques in Big Data and IoT | ✓ | | | | | | |
| P10. | To investigate and develop new, emerging ICT technology for Big Data and IoT | | | | | ✓ | | |
| P11. | To develop a global vision on the critical development and new application of Big Data and IoT | | | | | | | |
| P12. | To communicate technically and effectively in both speaking and writing | | | | | | ✓ | |
| P13. | To have a positive attitude towards society and the environment. | | | | | | | |
| P14. | To adhere to high moral standards and commit to excellence in life-long learning. | | | | | | | |

**TEACHING AND LEARNING ACTIVITIES**

Each student carries out the dissertation project under a supervisor who observes and advices him/her in the various activities of project development and / or research. Students are advised to read the Dissertation handbook carefully for details.

**ATTENDANCE**

Attendance requirements are governed by the Academic Regulations Governing Master's Degree Programmes of the Macao Polytechnic University. Students who do not meet the attendance requirements for the learning module shall be awarded an 'F' grade.

**ASSESSMENT**

The examination panel will assess the dissertation and give a single grade for the student upon completing the oral defense examination. There will be no tests or written examination. For details regarding the assessment criteria, please refer to the Dissertation Handbook.

The assessment will be conducted following the University's Assessment Strategy (see www.mpu.edu.mo/teaching_learning/en/assessment_strategy.php). Passing this learning module indicates that students will have attained the ILOs of this learning module and thus acquired its credits.

**REQUIRED READINGS**

There is no required text for this course. As self-learning ability is highly appreciated, students are encouraged to search for relevant reference by themselves. Dissertation supervisor will also recommend suitable reference to individual project on a required basis.