# Course Outline (Higher Education)

**Institute / School:** Institute of Innovation, Science & Sustainability

**Course Title:** BIG DATA AND ANALYTICS (MASTERS)

**Course ID:** ITECH5103

**Credit Points:** 15.00

**Prerequisite(s):** Nil

**Co-requisite(s):** Nil

**Exclusion(s):** (GPSIT1103 and ITECH1103)

**ASCED:** 020303

**Description of the Course:**
This course provides fundamental concepts related to big data and analytics. This course will explore the theory and applications of big data and demonstrate the process from data to decisions. Students will learn big data in various formats, data processing platforms and data analytics tools to transform, visualise, model, and communicate the insights hidden in the data, providing end users with timely knowledge to support decision making. The course will explain the challenges organisations are facing with managing big data.

**Grade Scheme:** Graded (HD, D, C, P, MF, F, XF)

**Work Experience:**

No work experience: Student is not undertaking work experience in industry.

**Does Recognition of Prior Learning apply to this course?** No

**Placement Component:** No

**Supplementary Assessment:** Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

**Program Level:**

| Level of course in Program | AQF Level of Program | | | | | |
|---|---|---|---|---|---|---|
| | 5 | 6 | 7 | 8 | 9 | 10 |
| Introductory | | | | | ✔ | |
| Intermediate | | | | | | |

| Level of course in Program | AQF Level of Program | | | | | |
|---|---|---|---|---|---|---|
| | 5 | 6 | 7 | 8 | 9 | 10 |
| Advanced | | | | | | |

**Learning Outcomes:**

**Knowledge:**

**K1.** Describe the different types of data (e.g. structured, semi-structured, unstructured) and their sources (e.g. sensors, medical, business, social data)

**K2.** Discuss the stages of the big data analytics lifecycle.

**K3.** Outline the main tools and techniques in this area.

**K4.** Explain the importance of big data governance.

**Skills:**

**S1.** Create and deliver reports using an analytical tool(s) on a real-world or simulated dataset.

**S2.** Explore and explain the current range of big data and analytics solutions and emerging trends and future issues.

**S3.** Explain contemporary IT industry practices/presentations relevant to Big Data and Analytics, and relate them to professional standards and your own career aspirations

**Application of knowledge and skills:**

**A1.** Communicate the stages and outcomes of the data analytics process.

**A2.** Apply big data analytics technology to a real-world or simulated dataset.

**Course Content:**

Topics may include:

- Big data concepts, applications and tools;
- Structured data processing such as RDBMS, SQL
- Non-structured data processing
- Data analytics technologies
- Stream mining, real time analytics
- Predictive analytics
- Big data applications.

**FEDTASKS**

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni course, and all must be directly assessed in each program.*

| FEDTASK attribute and descriptor | | Development and acquisition of FEDTASKS in the course | |
|---|---|---|---|
| | | **Learning Outcomes (KSA)** | **Assessment task (AT#)** |
| FEDTASK 1 Interpersonal | Students at this level will demonstrate an advanced ability in a range of contexts to effectively communicate, interact and work with others both individually and in groups. Students will be required to display high level skills in-person and/or online in:<br>• Using and demonstrating a high level of verbal and non-verbal communication<br>• Demonstrating a mastery of listening for meaning and influencing via active listening<br>• Demonstrating and showing empathy for others<br>• High order skills in negotiating and conflict resolution skills<br>• Demonstrating mastery of working respectfully in cross-cultural and diverse teams. | Not applicable | Not applicable |
| FEDTASK 2 Leadership | Students at this level will demonstrate a mastery in professional skills and behaviours in leading others.<br>• Creating and sustaining a collegial environment<br>• Demonstrating a high level of self -awareness and the ability to self-reflect and justify decisions<br>• Inspiring and initiating opportunities to lead others<br>• Making informed professional decisions<br>• Demonstrating initiative in new professional situations | Not applicable | Not applicable |
| FEDTASK 3 Critical Thinking and Creativity | Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in:<br>• Reflecting critically to generate and consider complex ideas and concepts at an abstract level<br>• Analysing complex and abstract ideas, concepts and information<br>• Communicate alternative perspectives to justify complex ideas<br>• Demonstrate a mastery of challenging conventional thinking to clarify complex concepts<br>• Forming creative solutions in problem solving to new situations for further learning | Not applicable | Not applicable |
| FEDTASK 4 Digital Literacy | Students at this level will demonstrate the ability to work competently across a wide range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in:<br>• Mastering, exploring, evaluating, managing, curating, organising and sharing digital information professionally<br>• Collating, managing complex data, accessing and using digital data securely<br>• Receiving and responding professionally to messages in a range of professional digital media<br>• Contributing competently and professionally to digital teams and working groups<br>• Participating at a high level in digital learning opportunities | K1,K2,S1,S2,A1,A2 | AT1 |

| FEDTASK attribute and descriptor | | Development and acquisition of FEDTASKS in the course | |
|---|---|---|---|
| | | Learning Outcomes (KSA) | Assessment task (AT#) |
| FEDTASK 5 sustainable and Ethical Mindset | Students at this level will demonstrate a mastery of considering and assessing the consequences and impact of ideas and actions in enacting professional ethical and sustainable decisions. Students will be required to display skills in:<br>• Demonstrate informed judgment making that considers the impact of devising complex solutions in ambiguous global economic environmental and societal contexts<br>• Professionally committing to the promulgation of social responsibility<br>• Demonstrate the ability to evaluate ethical, socially responsible and/or sustainable challenges and generating and articulating responses<br>• Communicating lifelong, life-wide and life-deep learning to be open to the diverse professional others<br>• Generating, leading and implementing required actions to foster sustainability in their professional and personal life. | Not applicable | Not applicable |

**Learning Task and Assessment:**

| Learning Outcomes Assessed | Assessment Tasks | Assessment Type | Weighting |
|---|---|---|---|
| K1, K2, K3, S1, S2, S3, A1, A2 | Theoretical and practical demonstrations of big data and analytics technologies; including but not limited to modeling and programming, data analyses and report writing. | Lab work and/or Assignment(s) | 60% - 70% |
| K1-K4, S2, A1 | Tests and/or examinations covering a range of taught big data and analytics topics | Oral / Written Test(s) | 30% - 40% |

**Alignment to the Minimum Co-Operative Standards (MiCS)**

The Minimum Co-Operative Standards (MiCS) are an integral part of the Co-Operative University Model. Seven criteria inform the MiCS alignment at a program level. Although courses must undertake MiCS mapping, there is NO expectation that courses will meet all seven criteria. The criteria are as follows:

1. Co-design with industry and students
2. Co-develop with industry and students
3. Co-deliver with industry
4. FedTASK alignment
5. Workplace learning and career preparation
6. Authentic assessment
7. Industry-link/Industry facing experience

MiCS program level reporting highlights how each program embraces the principals and practices associated with the Co-Operative Model. Evidence of program alignment with the MiCS, can be captured in the Program Modification Form.

**MICS Mapping has been undertaken for this course** No

Date: mmm dd, yyyy

**Adopted Reference Style:**

APA

Refer to the library website for more information

Fed Cite - referencing tool