



# Course Outline (Higher Education)

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

**Course Title:** MAINFRAME SYSTEMS AND SERVICES

**Course ID:** ITECH3105

**Credit Points:** 15.00

**Prerequisite(s):** (ITECH2308)

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

**Exclusion(s):** Nil

**ASCED:** 020117

**Description of the Course:**

Mainframes play a central role in cloud computing. Over the years transaction and database management tools for mainframe systems have evolved to fit the needs of enterprise customers. This course introduces major concepts and features that are applicable to principles of major mainframe systems such as Customer Information Control System (CICS), hierarchical and relational database systems including Information Management System (IMS) and Database (DB2), and Storage Management Subsystem (SMS). In addition, the other elements of mainframe system services such as virtualisation, UNIX and Linux are introduced and discussed.

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

**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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Learning Outcomes:****Knowledge:**

- K1.** Explain major concepts and features that are applicable to the mainframe (sub)systems and services in relation to business use.
- K2.** Identify components, architecture and the mechanisms of major mainframe (sub)systems and services.
- K3.** Contrast the structure and usage between relational and hierarchical database (sub)systems.
- K4.** Contrast the transaction management (sub)systems and their services in the context of business transactions.
- K5.** Describe virtualisation services in relation to Linux operating system running in a mainframe environment.
- K6.** Understand and use Unix System Services (USS) running on a mainframe.
- K7.** Interpret, create and implement the code using system-based scripting languages such as REXX and JCL running on a mainframe.
- K8.** Understand and use RACF (Resource Access Control Facility) security (sub)system that provides access control and auditing functionality.

**Skills:**

- S1.** Demonstrate usage of "Unix System Services" (USS) subsystem via a shell command-line interface.
- S2.** Demonstrate usage and application of RACF (Resource Access Control Facility), a security system that provides access control and auditing functionality.
- S3.** Access data set properties through Storage Management Subsystem (SMS).
- S4.** Demonstrate data management using the DB2 database subsystem.
- S5.** Demonstrate usage of CICS subsystem via supplied transactions and programs.
- S6.** Design structures of hierarchical (IMS) and relational (DB2) databases.
- S7.** Plan, create, and implement solutions to business problems using JCL and REXX system-based scripting languages running on a mainframe.
- S8.** Use video demonstrations to communicate and present solutions to a business problem.

**Application of knowledge and skills:**

- A1.** Relate and interpret technologies of mainframe systems and services to ever-increasing business needs.
- A2.** Demonstrate initiative and judgement to apply mainframe services to unique and diverse business contexts.

**Course Content:**

This course introduces major concepts and features that are applicable to the mainframe (sub)systems and services including Unix System Services (USS), transactional services (CICS and IMS), database services (DB2 and IMS), web application service (WebSphere), virtualization services with Linux OS as well as system services such as TSO/ISPF, JES, and RACF. In addition, mainframe scripting languages such as JCL and REXX are covered on an advanced level.

Topics may include:

- Concepts and features of mainframe (sub)systems and services.
- Unix system services.
- Scripting languages on a Mainframe including REXX and JCL.
- DB2 relational database.

- Customer Information Control System (CICS) transactional service.
- Information Management System (IMS) transactional server and hierarchical database.
- Virtual services for Linux with VM hyper-visor.
- RACF (Resource Access Control Facility), a security system that provides access control and auditing functionality.
- WebSphere application service

## 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**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are 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 will demonstrate the ability to effectively communicate, interact and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: <ul style="list-style-type: none"> <li>• Using effective verbal and non-verbal communication</li> <li>• Listening for meaning and influencing via active listening</li> <li>• Showing empathy for others</li> <li>• Negotiating and demonstrating conflict resolution skills</li> <li>• Working respectfully in cross-cultural and diverse teams.</li> </ul>	S8,A2	AT2
FEDTASK 2 Leadership	Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in: <ul style="list-style-type: none"> <li>• Creating a collegial environment</li> <li>• Showing self-awareness and the ability to self-reflect</li> <li>• Inspiring and convincing others</li> <li>• Making informed decisions</li> <li>• Displaying initiative</li> </ul>	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: <ul style="list-style-type: none"> <li>• Reflecting critically</li> <li>• Evaluating ideas, concepts and information</li> <li>• Considering alternative perspectives to refine ideas</li> <li>• Challenging conventional thinking to clarify concepts</li> <li>• Forming creative solutions in problem solving</li> </ul>	Not applicable	Not applicable

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the course	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: <ul style="list-style-type: none"> <li>• Finding, evaluating, managing, curating, organising and sharing digital information</li> <li>• Collating, managing, accessing and using digital data securely</li> <li>• Receiving and responding to messages in a range of digital media</li> <li>• Contributing actively to digital teams and working groups</li> <li>• Participating in and benefiting from digital learning opportunities</li> </ul>	K1-K8,S1-S8	AT1,AT2,AT3
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in: <ul style="list-style-type: none"> <li>• Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts</li> <li>• Committing to social responsibility as a professional and a citizen</li> <li>• Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses</li> <li>• Embracing lifelong, life-wide and life-deep learning to be open to diverse others</li> <li>• Implementing required actions to foster sustainability in their professional and personal life.</li> </ul>	Not applicable	Not applicable

### Learning Task and Assessment:

Students should attend laboratory classes and complete laboratory worksheets. Students should maintain a folio and record for tutors to see at any time throughout the semester. Students should participate in lectures and computer laboratory classes and maintain a notebook with notes and exercises. The assessment for the subject will include at least one test during semester and a final examination will test the understanding of the concepts studied in this course.

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S1-S8, A1, A2	The tasks will develop skills in the analysis and practical application of content introduced.	Lab Exercises and Practical tests	20%-40%
S1-S8, K7, A1, A2	Self-directed initiatives aimed at producing an artifact that demonstrates skill acquisition.	Assignment(s) and Presentation(s)	20%-40%
K1- K8	Participate in lectures and labs/tutorials, read and summarise theoretical and practical aspects of the course.	Tests and Examinations	20%-40%

### Adopted Reference Style:

APA

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)