Course Outline (Higher Education)

School: School of Engineering, Information Technology and Physical Sciences

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)

Work Experience:

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

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. 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

Values:

V1. Appreciate major concepts and features that are applicable to mainframe services used by businesses.

V2. Appreciate the contribution that can be made by graduates to the ever increasing global shortage of mainframe professionals.

Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the Higher Education Graduate Attributes Policy (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course	
		Learning Outcomes (KSA)	**Assessment task (AT#)**
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K2, K7, S2, S4, S7	AT1, AT2, AT3
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	K7, S8	AT2
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	K2, S6, A2	AT2, AT3
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	S8	AT2
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	K1, A1	AT2, AT3

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	Learning 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	30%-40%
S1-S8, K7, A1, A2	Self-directed initiatives aimed at producing an artifact that demonstrates skill acquisition.	Assignment(s)/Presentation(s)	30%-40%
K1- K8	Participate in lectures and labs/tutorials, read and summarise theoretical and practical aspects of the course.	Tests and Examinations	20%-30%

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool