

**NEW ZEALAND INSTITUTES OF TECHNOLOGY AND POLYTECHNIC  
QUALIFICATIONS IN INFORMATION & COMMUNICATIONS TECHNOLOGY**

**PRESCRIPTION: DB620 DATABASE ADMINISTRATION**

AIM OF MODULE:	To introduce students to database administration so that they will understand the differing roles and responsibilities of database administrators, the need for standards and documentation, and the boundaries between administration and development.
CREDITS:	7
KNOWLEDGE ASSUMED FROM:	DB600 DBMS
STUDENT LEARNING HOURS:	70
CONTENT REVISED:	2000
PRESCRIPTION EXPIRY DATE:	Nov 2011

**Level and Assessment Schedule**

TOPICS	Highest Skill Level				Suggested Assessment Percentage
	R	C	A	P	
1. Database Administration		*			35
2. Database Management Policies, Standards, Procedures and Processes.		*			15
3. Administering Databases			*		50
					100

## LEARNING OUTCOMES

The student will:

- C     1     Explain the need for database administration.
- C     2     Explain the requirements for documentation, policies, procedures and practices associated with well-managed databases.
- A     3     Use the tools and processes required for competent database administration.

## CONTENT

### 1     DATABASE ADMINISTRATION

- The requirements for database administration will be explained in terms of:
  - Availability - the duty of the DBA to ensure the availability of high quality data from databases for the greatest possible continuous period.
  - Reliability - the benefits and potential problems associated with any particular DBMS and its hardware/operating system environment and what is required to maximise its reliability.
  - Production and Development - the conflicts between the need for database development/upgrade implementations and the requirement for “business as usual” high availability and the ways in which conflicts that arise can be mitigated.
  - Security - the issues surrounding database security, the need for restrictions on access to the database other than via the application, the need for regular password changes, the use of roles and views to restrict access; and the limitations of logical security in development and production environments.
  - Performance monitoring and maintaining agreed levels of service to users.

### 2     DATABASE MANAGEMENT POLICIES, STANDARDS, PROCEDURES AND PROCESSES

- The requirements for database management policies, standards, procedures, and processes will be explained in terms of:
  - the critical need for full and accurate documentation of a database, and regular updating, as part of normal duties.
- The required structures and the defining of policies and standards will be outlined to include:
  - database administration standards.
  - general database administration policies.
  - customer or site database administration policies.

- database management standards.
- organisational standard operating procedures and their impact on database administration.
- database administration processes in general and those specific to a particular database.
- negotiation of service level agreements and determination of appropriate performance metrics.
- others as appropriate.

### **3 ADMINISTERING DATABASES**

➤ The application of tools for administering databases will include:

- typical range of database server management tools provided by the DBMS vendor.
- available third party tools and their additional functionality over and above the tools provided by vendors.
- use of database languages such as SQL, DML, DDL, operating system scripts and stored procedures to carry out database administration functions.

➤ The application of processes will include:

- Database and OS system log checks, typical error types and appropriate responses to various kinds of error.
- Disaster recovery, the various forms it can take, the planning and the processes that would be involved in putting a disaster recovery plan into place, testing it and ensuring its currency.
- Database integrity checks.
- use of 'statistics' and how these affect the performance of some DBMS platforms.
- expansion and contraction of file space, extent size including device management for some DBMS.
- reasons for, management of and problems with index rebuilding in a production environment.
- use of log dumps, and various levels of backup.
- Database restoration, including the principles and practice of rollback, rollforward (application of log dumps) and full restore.
- user management including the use of roles.
- security management including management of access through the use of roles, access control lists and views.
- managing locks.
- administration logs and other systems for ensuring communication between database administrators.
- others as appropriate.