Agensi Kelayakan Malaysia
Malaysian Qualifications Agency

PROGRAMME STANDARDS: INFORMATION SCIENCE

This set of Programme Standards has been prepared to enhance the development of educational programmes in information science and to maintain the quality of graduates. It is hoped that with this document, Higher Education Providers (HEPs) will be able to provide quality education in information science and its related fields.

Malaysian Qualifications Agency
14th Floor, Block B, Menara PKNS-PJ
No 17, Jalan Yong Shook Lin
46050 Petaling Jaya
Selangor Darul Ehsan

Tel +6003-7968 7002
Fax +6003-7956 9496
Email akreditasi@mqa.gov.my
Website www.mqa.gov.my

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FOREWORD

Information Science is an interdisciplinary field, studying the creation, acquisition, analysis, organisation, storage, retrieval and dissemination of information. Practitioners within the field, study the application and usage of knowledge in organizations, along with the interaction between people, organizations and any existing information systems, with the aim of creating, replacing, improving, or understanding information systems. Information Science is not a branch of computer science. It is an interdisciplinary field, incorporating diverse fields such as archival science, records management, knowledge management, library science, museum information management, social sciences and several aspects of computer science. This field has grown rapidly and has a variety of approaches to the relevant branch of expertise. With this regard, the establishment of a program standards in this area is very important and should be given due attention to ensure uniformity and consistency in defining the parameters for the education and development of the relevant competencies required. This Program Standard is intended to serve as a guide in the provision of a foundation for the education of semi-professional and professional positions in the management of information, knowledge, libraries, museums, records and archives and other related fields.

The broad aim of the standards is to ensure that students are equipped with a range of knowledge, skills and competencies at a level that will enable them to take advantage of career opportunities in a variety of jobs related to the field of information science. The document outlines sets of characteristics that describe and represent guidelines on the minimum levels of acceptable practices that cover all the nine Malaysian Quality Assurance areas: programme aims and learning outcomes, curriculum design and delivery, assessment of students, student selection, academic staff, educational resources, programme monitoring and review, leadership, governance and administration, and continual quality improvement. The Programme Standards for Information Science describes the different levels of standards leading to the award of individual qualifications: Diploma (MQF Level 4), Bachelor's Degree (MQF Level 6), Master's Degree (MQF Level 7) and Doctoral Degree (MQF Level 8). The aim of the programme standard is to elevate the information science discipline that can bring benefits and advantages to a wider audience, especially for the information science community in Malaysia.

I would like to express my appreciation to all the panel members (Appendix 1), the various stakeholders who have given their input, and all the officers from MQA who have contributed to the development of this Programme Standards: Information Science document.

Thank you.

Dato' Dr. Syed Ahmad Hussein
Chief Executive Officer
Malaysian Qualifications Agency (MQA)
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ABBREVIATIONS

APEL	Accreditation of Prior Experiential Learning
CGPA	Cumulative Grade Point Average
COPIA	Code of Practice for Institutional Audit
COPPA	Code of Practice for Programme Accreditation
CPD	Continuous Professional Development
GGP	Guidelines to Good Practices
GP	Grade Point
HEPs	Higher Education Providers
ICT	Information and Communication Technology
KM	Knowledge Management
MOE	Ministry of Education Malaysia
MQA	Malaysian Qualifications Agency
MQF	Malaysian Qualifications Framework
ODL	Open and Distance Learning
PS	Programme Standards
SKM	*Sijil Kemahiran Malaysia*
STAM	*Sijil Tinggi Agama Malaysia*
SPM	*Sijil Pelajaran Malaysia*
STPM	*Sijil Tinggi Persekolahan Malaysia*

1. INTRODUCTION

The recommended standards have been set to guide the provision of a foundation for the education for semi-professionals and professionals in the management of information, knowledge, libraries, museums, records and archives and related fields. The broad aim of these standards is to ensure that students are equipped with a range of knowledge, skills and competencies at a level that will enable them to take advantage of career opportunities in a variety of jobs related to the field of Information Science. Students should also acquire an understanding of the historical and theoretical context of the subjects covered.

Students following programmes in this discipline should develop competencies related to creation, identification, acquisition, organisation, preservation, retrieval and dissemination of information. There are substantial differences in both the content and the title of programmes, reflecting their particular disciplinary focus. They are all intended to provide students with a sound foundation for professional practice in their chosen domain. This spectrum of provisions is reflected in a variety of degrees, some of which are cross-departmental.

DEFINITION

Information Science

Information Science is an interdisciplinary field, studying the creation, acquisition, analysis, organisation, storage, retrieval and dissemination of information. Information analysis has been carried out by scholars at least as early as the time of the Abyssinian Empire with the emergence of cultural depositories; what is known today as libraries, museums and archives. Institutionally, Information Science emerged in the 19th century along with many other social science disciplines.

The American Society for Information Science and Technology (earlier known as the American Documentation Institute) defined Information Science as:
"A discipline that investigates the properties and behavior of information, the forces governing the flow of information, and the means of processing information for

optimum accessibility and usability. It is concerned with that body of knowledge relating to the origination, collection, organization, storage, retrieval, interpretation, transmission, transformation and utilization of information. This includes the investigation of information representations in both natural and artificial systems, the use of codes for efficient message transmission, and the study of information processing devices and techniques such as computers and their programming systems. It is an interdisciplinary science derived from and related to such fields as mathematics, logic, linguistics, psychology, computer technology, operations research, the graphic arts, communications, library science, management, and other similar fields. It has both a pure science component, which inquires into the subject without regard to its application, and an applied science component, which develops services and products" (Borko, 1968, pp.3).

The above definition is still relevant with today's concepts of Information Science which takes into consideration the emerging new areas and converging technologies. It describes Information Science, basically within the context of intellectual content and activities of information science. The topics in information science have been expanded in succeeding years by several authors. From the social perspective, Information Science was regarded as a body of knowledge providing an understanding of the means through which society's information needs are met (Hoshovsky and Massey, 1968). Information Science is an interdisciplinary field that includes such topics as behavioural science, classification, transfer and language and linguistics (Harmon, 1971). Information Science cuts across several conventional academic disciplines and the domain of Information Science is the universe of recorded information and knowledge. Addressing the context of recorded information, Information Science is the study of the gathering, organising, storing, retrieving and dissemination of information (Bates, 1999). Summers, Oppenheimer, Meadows, McKnight and Kinnell (1999) present the Institute of Information Scientists' criteria for Information Science, which is divided into three major areas: the Information Science core area, Information Management and Information Technology. Saracevic (1997) had expanded and refined these ideas, listing three general characteristics of information science: it is interdisciplinary, it is connected to information technology, and it has a strong social and human dimension. Today's Information Science discipline has developed and included the following newly emerging areas:

interaction studies, multimedia and multi language information retrieval, digital libraries, and internet searching and social informatics.

It can be deduced that Information Science is an interdisciplinary field concerned with the theories and practices, as well as technologies, laws and industry dealing with knowledge transfer and the information sources; the generation, organisation, processing, distribution, communication and uses of information, as well as communications among users and their behaviour as they seek to satisfy their information needs.

Under the rubric of Information Science, its inter-disciplinary nature is taken into account, especially in the areas of computer science and information and communications technology (ICT). In view of the fact that ICT applications are the state of art in almost all subject areas and practices, the curriculum development would be structured in consonance with these new technological changes as well as the societal and environmental changes. It is thus inevitable that the curriculum of the specific module(s) or programmes has to include these elements. Recognising the fact that Information Science disciplines are very wide, the development of a programme that encompass the areas of computer science and ICT would only cater for those that require the application of the softer side of computer sciences and ICT, as opposed to those related to the pure/technical aspects of computing.

The subject coverage of Information Science centres on three major areas: information management, information retrieval, and implementation of information technologies in libraries, archives, museums and other information agencies. For the purpose of the Malaysian Higher Education sector, the areas covered in this Program Standards: Information Science include the following:

i. Information Management
ii. Library Science
iii. Archival Science
iv. Records Management
v. Knowledge Management
vi. Museum and Heritage Information Management

The breadth and depth of the required Information Science body of knowledge should reflect the different levels of study from Diploma to Doctoral Degree level. Higher Education Providers (HEPs) are required to develop programmes to reflect the current best practices. The figure below provides an overview of the Information Science discipline and its sub disciplines.

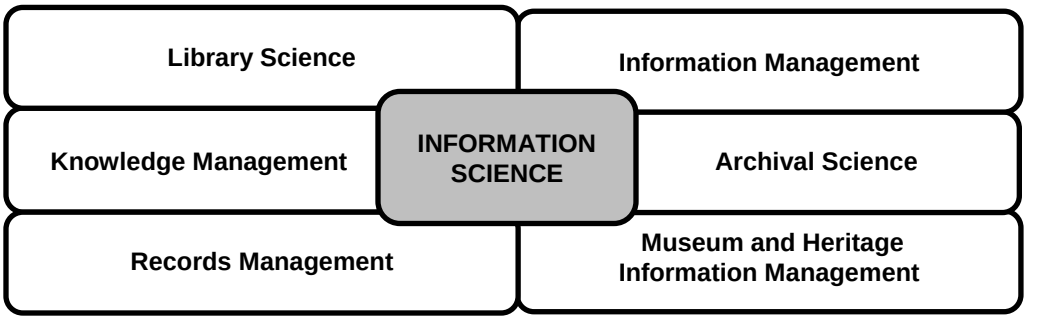

Figure 1: Information Science and subdisciplines

The common core areas for the six subdisciplines in Information Science are

i. Epistemology of Information Science
ii. Information/Knowledge Resources
iii. Information Management Organisation
iv. Information/Knowledge Organisation
v. Information/Knowledge and Retrieval
vi. Information Services
vii. Information Preservation and Conservation
viii. Information/Knowledge Technologies
ix. Information Security
x. Legal aspect
xi. Ethics and Professionalism
xii. Information Entrepreneurship

Information Management

Information Management concerns the collection and management of information from one or more sources, and the distribution of that information to users. Information management means the organisation of and control over the structure, processing and delivery of information, both electronic and physical information. The organisational structure must be capable of managing this information throughout the

information life-cycle regardless of source or format (data, paper documents, electronic documents, audio, social business, video, etc.) for delivery through multiple channels that may include cell phones and web interfaces. Given these criteria, the focus of information management is the ability of organisations to capture, manage, preserve, store and deliver the right information to the right people at the right time (Association for Information and Image Management, AIIM, 2006).

Library Science

Library Science refers to procedures within a library and the management of the libraries dealing with identification, gathering, handling, storage, retrieval and dissemination of information resources. Library science is an interdisciplinary field that applies the practices, perspectives and tools of management, information technology, education and other areas related to libraries. It is concern with the collection, organisation, preservation of information resources and provision of information services, and the political economy of information (ALA Standards Manual, 2003).

Archival Science

Archival Science is the theoretical, methodological and practical study of policies and procedures relating to archival functions. In other words, it is a systematic body of theory that supports the practice of appraising, acquiring, arranging and describing, authenticating, preserving and providing access to records and archives. On the practical aspect, the term 'Archives Administration' is used to include the archival programme's mission and goals, securing resources and evaluating performance. Archive management is distinguished from the library, museum and manuscript management by the principles of provenance, original order and collective control to preserve archival materials (International Council on Archives, 2008).

Records Management

Records Management is the control of the creation, receipt, maintenance, use and disposal of records in accordance with professional and international standards of practice. Records are information created, received and maintained as evidence and information, by an organisation or person, in pursuance of legal obligations or in the transaction of a business and administration. Records management is distinct from document management, which is typically concerned with the provision of access,

collaborative working and version control of documents, rather than the management of authenticity, reliability, integrity and usability over time (International Council on Archives, 2008).

Knowledge Management

Knowledge Management is an integrated approach involving identifying, capturing, evaluating, retrieving and sharing of an organisation's tacit and explicit knowledge with the use of information systems and technologies. These assets may include un-captured expertise and experience in individual workers, databases, documents, policies and procedures. Knowledge Management is also about learning organisations that include processes, methods, techniques and culture in managing knowledge assets (AS 5037-2005 Knowledge Management – a Guide).

Museum and Heritage Information Management

Museum and Heritage Information Management refers to the standards of managing different kinds of records, knowledge and information concerning museum collections, in accordance to professional and international ethics (ICOM: International Council of Museums, 2007). Museum and Heritage Information Management can be categorised into 4 different concepts:

i. Collections of information, which includes the documentation, loan, catalogue records and images of or about objects in the collection.
ii. Records generated through processes such as conservation and digitisation.
iii. Interpretive information which includes knowledge assets generated through research, the production of educational materials and users generated content.
iv. Management information which include personnel, financial and other administrative records arising from the museum and heritage activites.

SCOPE OF THE STANDARDS

Programme Standards for Information Science describes the different levels of standards leading to the award of individual qualifications; Diploma (MQF Level 4), Bachelor's Degree (MQF Level 6), Master's Degree (MQF Level 7) and Doctoral Degree (MQF Level 8). This standards are designed to encourage diversity of approach within a framework that is compatible with the national and global human resource requirements, and the socio-economic needs. They cannot be seen as a

syllabus and no form of prescription is intended for the amount of time devoted to each component, or the order in which the material is presented. Higher Education Providers (HEPs) are expected to combine, teach and assess the subject matter creatively. Future developments of the programme are depended on 3 main aspects which are: societal changes, environmental changes and technological changes.

The Programme Standards provide an inventory of content, delivery and assessment of programmes, thus enabling identification of vital components of qualifications from Diploma to Doctoral awards. Statements within the Programme Standards should be viewed as benchmark statements, therefore, HEPs are encouraged to go beyond the basic minimum.

This document is valuable to potential students, parents, guardians, employers, professional and regulatory bodies, universities, colleges and schools. Assessors and Auditors are guided by these standards in arriving at their recommendations and conclusion. The development and implementation of these Programme Standards ensure graduates meet the professional requirements and expectations in their respective fields. HEPs must take cognisance of the rapidly evolving subject matter and introduce effective and sustainable programme improvements. In doing so, the providers should also ensure that graduates obtain the necessary skills to function effectively.

All collaborative programmes should accommodate, as much as possible, the requirements of this Programme Standards. As the purpose of this Programme Standards is to provide guidelines in relation to the development and conduct of programmes in the identified fields, it is of paramount importance that this document be read with other quality assurance documents and policies by the Malaysian Qualifications Agency and related agencies. These include but are not limited to:

i. Malaysian Qualifications Framework (MQF);
ii. Code of Practice for Programme Accreditation (COPPA);
iii. Code of Practice for Institutional Audit (COPIA); and
iv. Relevant Guidelines to Good Practices (GGP).

2. PROGRAMME AIMS

"A Programme's stated aim reflects what it wants the learner to achieve. It is an overarching statement on the purpose, philosophy and rationale in offering the programme. It is crucial for these aims to be expressed explicitly and be made known to learners and other stakeholders alike" (COPPA, 2008, pp. 10).

GENERIC PROGRAMME AIM

The programme aims to produce graduates who are competent in the identification, creation, collection, organisation, storage, retrieval, interpretation, dissemination, transmission, transformation, preservation, disposition and utilisation of information.

DIPLOMA (Malaysian Qualifications Framework, MQF Level 4)

The programme aims to produce graduates who possess a command of Information Science knowledge and information handling skills needed to serve the information needs of users.

BACHELOR'S DEGREE (MQF Level 6)

The programme aims to produce graduates who possess a comprehensive Information Science knowledge and information handling skills needed to serve the information needs of users with the ability to plan, manage and offer information sources and services.

MASTER'S DEGREE (MQF Level 7)

The programme aims to produce graduates who possess advanced knowledge in Information Science with the ability to critically evaluate, analyse, synthesise and conduct research in Information Science.

PhD BY MIXED MODE AND RESEARCH (MQF Level 8)

The programme aims to produce graduates with the ability to carry out advanced research in the field of Information Science with the aim of facilitating discovery and contributing to new knowledge and practice.

3. LEARNING OUTCOMES

Learning Outcomes are detailed statements described in explicit terms of the learners' achievement and are achievable and assessable upon completion of a period of study.

"The quality of a programme is ultimately assessed by the ability of the learner to carry out their expected roles and responsibilities in society. This requires the programme to have a clear statement of the learning outcomes to be achieved by the learner" (COPPA, 2008, pp. 11).

These learning outcomes should cumulatively reflect the 8 domains of learning outcomes, which are significant for Malaysia, (MQF, 2007, para 15, pp. 4) and are related to the various levels of taxonomy accordingly, in line with national and global developments.

The eight domains of learning outcomes are:

i. Knowledge;
ii. Practical skills;
iii. Social skills and responsibilities;
iv. Values, attitudes and professionalism;
v. Communication, leadership and team skills;
vi. Problem solving and scientific skills;
vii. Information management and lifelong learning skills; and
viii. Managerial and entrepreneurial skills.

DIPLOMA

Upon completion of the programme, graduates should be able to:

i. comprehend basic knowledge and skills of information science and related fields;
ii. communicate effectively at all levels within the organisation and with the public;
iii. identify issues and challenges in information science and related field;

iv. perform effectively as an individual and in a group, with leadership, entrepreneurial and managerial skills;
v. apply lifelong learning and sustain the capacity to do so;
vi. display values, ethics, morality and professionalism in their fields;
vii. apply technical competency and preservation of physical and intellectual content; and
viii. comprehend knowledge of contemporary issues in information and communication technology (ICT) based management of information resources.

BACHELOR'S DEGREE

Upon completion of the programme, graduates should be able to:

i. comprehend knowledge and skills in information science and related fields;
ii. communicate effectively at all levels within the organisation and with the public;
iii. use the systems approach to design and evaluate the operational performance of information systems;
iv. perform effectively as an individual and in a group, with leadership, entrepreneurial and managerial skills;
v. incorporate social, cultural, environmental and global responsibilities and ethics of professional information managers, as well as the need for sustainable development;
vi. acquire lifelong learning and sustain the capacity to do so;
vii. display values, ethics, morality and professionalism in their field;
viii. apply technical competency in preservation of physical and intellectual content;
ix. analyse and evaluate information and knowledge for the enhancement of information management services; and
x. comprehend knowledge of contemporary issues in information and communication technology (ICT) based management of information resources.

MASTER'S DEGREE

Upon completion of the programme, graduates should be able to:

i. demonstrate advanced knowledge in information science and related fields;
ii. apply practical skills in information science;
iii. relate ideas to societal issues in information science;
iv. conduct research and adhere to legal, ethical and professional codes of practice;
v. demonstrate leadership qualities through communicating and working effectively with peers and stakeholders;
vi. generate solutions to problems using scientific and critical thinking skills;
vii. manage and advocate information for lifelong learning;
viii. apply values, ethics, morality and professionalism in the pursuit of their goals;
ix. formulate and express ideas effectively in written and verbal forms;
x. prepare, publish and present technical material to a diverse audience;
xi. incorporate social, cultural, environmental and global responsibilities and ethics of professional information managers, as well as the need for sustainable development; and
xii. acquire competency in the preservation of physical and intellectual content.

PhD BY MIXED MODE AND RESEARCH

Upon completion of the programme, graduates should be able to:

i. demonstrate a systematic comprehension and in-depth understanding of the discipline;
ii. demonstrate a mastery of research methods related to the field of information science and other related fields;
iii. critically analyse, evaluate and synthesise new and complex ideas;
iv. show scholarly capabilities to generate, design, implement and adopt the integral part of the research process;
v. contribute to original research that broadens the boundary of knowledge through an in-depth study, which has been presented and defended according to international standards, including writing in refereed publications;

vi. communicate with peers, scholarly communities and society at large through the preparation, publication and presentation of scholarly materials;

vii. promote technological, social and cultural progress in a knowledge based society in both the academic and professional contexts;

viii. demonstrate behaviour that is consistent with codes of professional ethics, legal requirements and responsibility;

ix. display leadership qualities through communicating and working effectively with peers and stakeholders;

x. manage and advocate information for lifelong learning;

xi. generate solutions to problems using scientific and critical thinking skills; and

xii. apply values, ethics, morality and professionalism in the pursuit of their goals.

4. CURRICULUM DESIGN AND DELIVERY

"The term 'curriculum design and delivery' is used interchangeably with the term 'programme design and delivery'. 'Programme' refers to an arrangement of courses that are structured for a specified duration and the learning volume to achieve the stated learning outcomes that usually leads to an award of a qualification" (COPPA, 2008, pp. 12).

This section of the Programme Standards contain statements pertaining to the structure and delivery of a programme within the field of Information Science. The matrices below represent the minimum requirements for all levels of qualifications and include the requirements for the various classifications of modules (e.g. core, concentration and electives). Specific requirements as to the body of knowledge for the different Levels (Diploma – Master's Degree) and disciplines is provided in Appendix 2. Examples of the programme nomenclature are provided in Appendix 3. Industrial training is crucial in the development of students' maturity and experience. Hence, HEPs need to allocate a minimum number of units for this purpose according to the formula of 1 credit = 2 weeks training.

This section of the Programme Standards provides as an example, the description and division relating to the Body of Knowledge, specific to the six subdisciplines identified. However, HEPs are encouraged to develop the programme to reflect the current best practices, achieve higher standards and develop specialisations.

CURRICULUM STRUCTURE

DIPLOMA MINIMUM GRADUATING CREDIT - 90		
Components	**Percentage (%)**	**Credits**
Compulsory Modules (General* and HEPs modules)	10 – 20	9 – 18
Core Modules (Common & Discipline)	74 – 88	67 – 79
Industrial Training	2 – 6	2 – 5
Total	100	90

*9 – 11 credits as prescribed by the Ministry of Education.

Recommended delivery methods:

i. Lectures/Industry guest speakers
ii. Practical classes/Laboratory work
iii. Field visits
iv. Role play
v. Blended learning
vi. Open and Distance Learning (ODL)

BACHELOR'S DEGREE MINIMUM GRADUATING CREDIT- 120		
Components	**Percentage (%)**	**Credits**
Compulsory Modules (General* and HEPs modules)	10 – 17	12 – 20
Common Core	18 – 25	21 – 30
Concentration/Specialisation including project paper	27 – 55	32 – 65
Elective Modules/Minor	9 – 25	10 – 30
Industrial Training	5 – 10	6 – 12
Total	100	120

*12 – 14 credits as prescribed by the Ministry of Education.

Recommended delivery methods:

i. Lectures/Tutorials/Industry guest speakers
ii. Practical classes/Laboratory work
iii. Field visits
iv. Industrial training
v. Academic exercises
vi. Case study
vii. Role play
viii. Blended learning
ix. Open and Distance Learning (ODL)

MASTER'S DEGREE BY COURSEWORK MINIMUM GRADUATING CREDIT - 40		
Components	**Percentage (%)**	**Credits**
Core Modules (Common & Discipline & Research Project)	80 – 85	32 – 34
Elective Modules	15 – 20	6 – 8
Total	100	40

Note: Coursework components must include courses in theory and research methodology.

Recommended delivery methods:

i. Lectures/Tutorials/Industry guest speakers
ii. Practical classes/Laboratory work
iii. Field visits
iv. Case study
v. Seminar/Workshop
vi. Problem based learning (PBL)
vii. Blended learning
viii. Open and Distance Learning (ODL)

MASTER'S DEGREE BY MIXED MODE MINIMUM GRADUATING CREDIT- 40		
Components	**Percentage (%)**	**Credits**
Dissertation	50 – 70	20 – 28
Core Modules	30 – 50	12 – 20

Note:

i. Coursework components must include courses in theory and research methodology.

ii. Ratio of coursework to dissertation should be either 50:50 or 40:60 or 30:70.

Recommended delivery methods:

i. Lectures/Tutorials/Industry guest speakers
ii. Practical classes/Laboratory work
iii. Field visits
iv. Case study
v. Seminar/Workshop
vi. Problem-based learning (PBL)
vii. Blended learning
viii. Open and Distance Learning (ODL)

MASTER'S DEGREE BY RESEARCH		
Components	**Percentage (%)**	**Credits**
Dissertation	100	No given credit value.

Note:

i. Candidates must follow a research methodology course.
ii. The following requirements must be decided by the HEPs:
    a. Relevant prerequisite courses
    b. Maximum period of candidature
    c. Format of the dissertation

Recommended delivery methods:

i. Lectures/Industry guest speakers
ii. Laboratory work
iii. Consultation/Supervision
iv. Seminar/Colloquium/Workshop

PhD BY MIXED MODE MINIMUM GRADUATING CREDIT- 80		
Components	**Percentage (%)**	**Credits**
Thesis	50 – 70	40 – 56
Core Modules	30 – 50	24 – 40

Note:

i. Coursework components must include courses in theory and research methodology.

ii. Ratio of coursework to thesis should be either 50:50 or 40:60 or 30:70.

PhD BY RESEARCH		
Components	**Percentage (%)**	**Credits**
Thesis	100	No given credit value.

Note:

i. Candidates must follow a research methodology course.

ii. The following requirements must be decided by the HEPs:

   a. Relevant prerequisite courses

   b. Maximum period of candidature

   c. Format of the thesis

Recommended delivery methods:

i. Lectures/Industry guest speakers

ii. Laboratory work

iii. Consultation/Supervision

iv. Seminar/Colloquium/Workshop

5. ASSESSMENT OF STUDENT LEARNING

"Student assessment is a crucial aspect of quality assurance because it drives student learning. It is one of the most important measures to show the achievement of learning outcomes. The result of the assessment is also the basis for awarding the necessary qualifications. Hence, methods of student assessment have to be clear, consistent, effective, reliable and in line with current practices and must clearly support the achievement of learning outcomes" (COPPA, 2008, pp.15).

The methods of assessment will depend on the specific requirements of each module. However, as a general guide, the following must be considered:

i. The combination of the various assessment methods should show the achievement of the learning outcomes.
ii. Summative and formative assessments should be used.
iii. Knowledge and understanding (the cognitive domain) should be tested through written, oral or other suitable means but practical skills should be tested by practical evaluation.
iv. In modules requiring practical skills, a pass in a practical evaluation is compulsory (A pass implies that the examiner is satisfied that the candidate has met the learning outcomes of that particular subject).
v. The types of assessments indicated below are merely examples. HEPs are encouraged to use a variety of methods and tools appropriate for the learning outcomes and competencies.
vi. Candidates must pass both the continuous and the final evaluation. A pass implies that the examiner is satisfied that the candidate has met with all the learning outcomes of the particular subject.

Students shall be evaluated where appropriate through:

i. Examination
    a. Final examination, test, viva voce, closed/open book

ii. Coursework
    a. Assignments, quiz, laboratory report

iii. Project
    a. Individual/group

iv. Others
    a. Class participation, group activities, seminar/colloquium and presentation.

For Master's and PhD **by Research** only:

i. Formative assessment must include:
    a. Monitoring of research progress periodically (for example, through a progress report or a proposal defence). This will assess the candidate's knowledge, critical thinking, practical, technical, professional, scientific and problem solving skills;
    b. Research presentation/colloquium/seminar/workshop. This will enhance the candidate's communication skills, teamwork, leadership, organisational skills, lifelong learning and professionalism.

ii. Summative assessment is used to assess all learning outcomes of a master's programme, and must include:
    a. completion of prescribed courses;
    b. dissertation; and
    c. viva voce (if required by HEPs).

iii. Summative assessment is used to assess all learning outcomes of a doctoral programme, and must include:
    a. completion of prescribed courses;
    b. thesis; and
    c. viva voce.

The types of assessment indicated in the final column below are **examples**. HEPs are encouraged to use a variety of methods and tools appropriate for measuring learning outcomes and competencies.

Qualifications	Modules		Suggested forms of assessment
	Continuous assessment (%)	Final assessment (%)	
Diploma	50 – 70	30 – 50	• Written assessment • Oral assessment • Practical assessment • Oral presentation
Bachelor's Degree	40 – 70	30 – 60	• Written assessment • Oral assessment • Practical assessment • Industrial attachment/ internship • Project • Oral presentation
Master's Degree by Coursework	Subject to HEPs requirements		• Written assessment • Presentation • Research project
Master's Degree by Mixed Mode	Subject to HEPs requirements		• Written assessment • Dissertation • Presentation • Project paper
Master's Degree by Research	Subject to HEPs requirements		• Presentation • Dissertation • Viva voce (if required by HEPs) • One (1) refereed publication

Qualifications	Modules		Suggested forms of assessment
	Continuous assessment (%)	Final assessment (%)	
PhD by Research	Subject to HEPs requirements		• Thesis • Viva voce • Two (2) refereed publications
PhD by Mixed Mode	Subject to HEPs requirements		• Written assessment • Presentation • Thesis • One (1) refereed publication

Note:

Compositions of dissertation/thesis examiners are as follows:

i. Master's Degree by Mixed Mode

The dissertation is to be examined by at least 2 examiners.

ii. Master's Degree by Research

The dissertation is to be examined by at least 2 examiners, 1 of whom is an external examiner.

iii. PhD by Mixed Mode

The thesis is to be examined by at least 2 examiners, 1 of whom is an external examiner.

iv. PhD by Research

The thesis is to be examined by at least 3 examiners, 2 of whom are external examiners.

The Table of Specifications is a blueprint for the preparation of an exam. It serves as the "map" or guide to assign the appropriate percentage of questions to the level of taxonomy identified for a specific semester. In this Programme Standards, the focus group has proposed a recommended Table of Specifications for Diploma (MQF Level 4), Bachelor's Degree (MQF Level 6) and Master's Degree (MQF Level 7) as below:

DIPLOMA

YEAR	SEMESTER	LEVEL OF COGNITIVE TAXONOMY (%)					
		C1 KNOWLEDGE	C2 COMPREHENSION	C3 APPLICATION	C4 ANALYSIS	C5 SYNTHESIS	C6 EVALUATION
		ELEMENTARY		INTERMEDIATE		ADVANCE	
1	1	80-90	20-30				
	2	70-80	30-40	5-10			
2	3	60-70	30-40	5-10	5-10		
	4	50-40	20-30	10-20	10-20		
3	5	40-30	20-30	10-20	10-20	5-10	
	6	30-20	20-30	10-20	10-20	5-10	5 - 10

BACHELOR'S DEGREE

YEAR	SEMESTER	LEVEL OF COGNITIVE TAXONOMY (%)					
		C1 KNOWLEDGE	C2 COMPREHENSION	C3 APPLICATION	C4 ANALYSIS	C5 SYNTHESIS	C6 EVALUATION
		ELEMENTARY		INTERMEDIATE		ADVANCE	
1	1	70-80	20-30	10-20			
	2	60-70	30-40	5-10	5-10		
2	3	50-60	30-40	10-20	10-20		
	4	40-50	30-40	10-20	5-10	5-10	
3	5	30-40	30-40	20-30	10-20	10-20	
	6	20-30	30-40	30-40	10-20	10-20	10-20

MASTER'S DEGREE BY COURSEWORK/MIXED MODE

YEAR	SEMESTER	LEVEL OF COGNITIVE TAXONOMY (%)					
		C1 KNOWLEDGE	C2 COMPREHENSION	C3 APPLICATION	C4 ANALYSIS	C5 SYNTHESIS	C6 EVALUATION
		ELEMENTARY		INTERMEDIATE		ADVANCE	
1	1	30-40	30-40	20-30	10-20	10-20	
	2	20-30	20-30	20-30	20-30	10-20	10-20
2	3	10-20	10-20	10-20	20-30	20-30	30-40

6. STUDENT SELECTION

This section of the Programme Standards concerns the recruitment of students into the individual programme of study. In general, admission policies of the Programme need to comply with the prevailing policies of the Malaysian Ministry of Education (MOE).

"There are varying views on the best method of student selection. Whatever the methods used, the Higher Education Providers (HEPs) must be able to defend its consistency. The number of students to be admitted to the programme is determined by the capacity of the HEPs and the number of qualified applicants. HEPs admission and retention policies must not be compromised for the sole purpose of maintaining a desired enrolment. If a HEPs operates in a geographically separated campuses or if the programme is a collaborative one, the selection and assignment of all students must be consistent with national policies" (COPPA, 2008, pp. 17).

The standards are formulated with the generic national higher education policies in mind, pertaining to the minimum student entry requirements. HEPs must take cognisance of any specific policies that may apply to their individual Institution. Special consideration will be given to candidates with working experience based on the Accreditation for Prior Experiential Learning (APEL) criteria. The minimum entry standards are as follows:

DIPLOMA

i. A pass in *Sijil Pelajaran Malaysia* (SPM) or its equivalent, with at least 3 credits, and a pass in Mathematics or Additional Mathematics;
   OR
ii. A pass in *Sijil Tinggi Persekolahan Malaysia* (STPM) or its equivalent, with a minimum of Grade C (GP 2.00) in any subject and a pass in Mathematics or Additional Mathematics at SPM level;
   OR

iii. A pass in *Sijil Tinggi Agama Malaysia* (STAM) with a minimum grade of *Maqbul* and a pass in Mathematics or Additional Mathematics at SPM level;

OR

iv. A Certificate or its equivalent in any discipline and a pass in Mathematics or Additional Mathematics at SPM level;

OR

v. A pass in *Sijil Kemahiran Malaysia* (SKM) Level 3 and a pass in SPM with a minimum of 1 credit and a pass in Mathematics or Additional Mathematics.

BACHELOR'S DEGREE

i. A pass in STPM or its equivalent, with a minimum of Grade C (GP 2.00) in any two subjects and a pass in Mathematics or Additional Mathematics at SPM level or its equivalent;

OR

ii. A pass in STAM with a minimum grade of *Jayyid* and a pass in Mathematics or Additional Mathematics at SPM level;

OR

iii. A Diploma or its equivalent, with a minimum CGPA of 2.00 and a pass in Mathematics or Additional Mathematics at SPM level or its equivalent;

OR

iv. Matriculation/Foundation or equivalent, with a CGPA of 2.00 and a pass in Mathematics or Additional Mathematics at SPM level or its equivalent**.**

MASTER'S DEGREE BY COURSEWORK

i. A Bachelor's Degree with a minimum CGPA of 2.50 or its equivalent, as accepted by the HEP Senate;

OR

ii. A Bachelor's Degree or its equivalent not meeting CGPA of 2.50, can be accepted subject to a minimum of 5 years working experience in relevant field.

MASTER'S DEGREE BY MIXED MODE

i. A Bachelor's Degree with a minimum CGPA of 2.75 or its equivalent, as accepted by the HEP Senate;

OR

ii. A Bachelor's Degree or its equivalent with minimum CGPA of 2.50 and not meeting CGPA of 2.75, can be accepted subject to rigorous internal assessment;

OR

iii. A Bachelor's Degree or its equivalent not meeting CGPA of 2.50, can be accepted subject to a minimum of 5 years working experience in relevant field.

MASTER'S DEGREE BY RESEARCH

i. A Bachelor's Degree in a related area with a minimum CGPA of 2.75 or its equivalent, as accepted by the HEP Senate;

OR

ii. A Bachelor's Degree or its equivalent in a related area with minimum CGPA of 2.50 and not meeting CGPA of 2.75, can be accepted subject to rigorous internal assessment;

OR

iii. A Bachelor's Degree or its equivalent in a related area not meeting CGPA of 2.50, can be accepted subject to a minimum of 5 years working experience in relevant field.

PhD BY MIXED MODE AND RESEARCH

i. A Master's Degree accepted by the HEP Senate;

OR

ii. Other qualifications equivalent to a Master's Degree that are accepted by the HEPs Senate.

Note:

i. There shall be no direct entry from bachelor's degree level to PhD level.

ii. However, candidates with bachelor's degree qualification, registered for master's degree programmes may apply to convert their candidacy to PhD programmes.

iii. Application of conversion must be done within one year after candidate registers for master's degree programmes

iv. Application approval is subjected to:

   a. having shown competency and capability in conducting research at PhD level;

   b. rigorous internal assessment by the HEP; and

   c. approval by the HEP Senate.

7. ACADEMIC STAFF

"The quality of the academic staff is one of the most important components in assuring the quality of Higher Education, and thus every effort must be made to establish proper and effective recruitment, service, development and appraisal policies that are conducive to staff productivity" (COPPA, 2008, pp.21).

DIPLOMA

Academic staff qualification:

i. A Bachelor's Degree in a relevant field.

Academic staff ratio:

i. Full-time and part-time teaching faculty - At least 60% of the staff are full-time.
ii. At least 30% of the staff have industry experience/attachment in a related field.

Staff-student ratio:

i. Overall staff-student ratio – 1:30.

BACHELOR'S DEGREE

Academic staff qualification:

i. A Master's Degree in the related field - At least 30% of the staff with working experience in a related field.

Academic staff ratio:

i. Full-time and part-time teaching faculty - At least 60% of the staff are full-time.
ii. At least 30% of the staff have industry experience/attachment in a related field.

Staff-student ratio:

i. Overall staff - student ratio – 1:25.

MASTER'S DEGREE

Academic staff qualification:

i. A PhD in a relevant field;

OR

ii. A Master's Degree with at least 5 years experience in teaching and research or as a co-supervisor (The Programme should not employ more than 20% of the staff in this category).

Academic staff ratio:

i. Full-time and part-time teaching faculty – At least 60% of the staff are full-time.

Staff-student ratio:

i. Overall staff-student ratio – 1:10.
ii. Overall supervisor-student ratio – 1:7.

Supervisor requirement:

i. Where there is only one supervisor, the supervisor must be a full-time staff of the conferring HEPs.
ii. Where there is more than one supervisor, the principal supervisor must be a full-time staff of the conferring HEPs.

PhD BY MIXED MODE AND BY RESEARCH

Academic staff qualification:

i. A staff/supervisor must have a minimum qualification of the equivalent degree level enrolled in by the candidate and at least 2 years experience in teaching and research or as a co-supervisor;

OR

ii. Where a staff/supervisor is without the required qualifications, extensive experience in research and supervision are an additional criteria and are subject to the approval of the HEP's Senate.

Supervisor-student ratio:

i. Overall supervisor-student ratio – 1:7.

Supervisor requirement:

i. Where there is only one supervisor, the supervisor must be a full-time staff of the conferring HEPs.

ii. Where there is more than one supervisor, the principal supervisor must be a full-time staff of the conferring HEPs.

Staff Development

Academic staff are vital to deliver quality programmes and to perform teaching effectively, as well as to produce competent graduates that are employable and accepted by the industry. As the industry is dynamic and globally influenced, the academic staff need to continually update themselves with changes around the globe. Thus, HEPs must ensure that all academic staff are well-equipped with the latest knowledge and skills for their teaching and learning activities. It is expected that HEPs provide the following development programmes, amongst others:

i. Continuous Professional Development (CPD) for full-time staffs according to the specialisation needs with at least 40 hours (equivalent to 7 days) of relevant training per year or participation or involvement in their respective fields of expertise.
ii. Training on basic teaching and learning.
iii. Industry attachments participation.
iv. Research, consultation and community service involvement.

8. EDUCATIONAL RESOURCES

"Adequate educational resources are necessary to support the teaching-learning activities of the Programme. These resources include finance, expertise, physical infrastructure, ICT, and research facilities. The physical facilities of a programme are largely guided by the needs of the specific field of study" (COPPA, 2008, pp. 23).

For Information Science programmes, HEPs are required to provide sufficient resources conducive to support teaching and learning in the field. For lecture, tutorial rooms and computer labs, sufficient space to accommodate student-centred learning must be provided. For research in postgraduate programmes, candidates should be provided with a conducive work area. The resources include:

i. Bibliographic laboratories
ii. Computer laboratories
iii. Other laboratories for relevant courses
iv. Lecture rooms (with sufficient Audio Visual facilities)
v. Seminar rooms
vi. Library (including on-line resources and sufficient reading resources)
vii. Internet access.
viii. Sufficient access to relevant software and hardware according to the needs of the programmes and students
ix. Work space/station (postgraduate student)

Recommended educational resources:

i. Conservation and preservation lab
ii. Experimental library
iii. Mock records and archives repository
iv. Mock gallery/museum
v. Multimedia studio
vi. Digitisation facilities
vii. Individual work space/station (postgraduate student)

9. PROGRAMME MONITORING AND REVIEW

"Quality enhancement calls for programmes to be regularly monitored, reviewed and evaluated. This includes the monitoring, reviewing and evaluating of institutional structures and processes (administrative structure, leadership and governance, planning and review mechanisms), curriculum components (syllabi, teaching methodologies, learning outcomes) as well as student progress, performance and employability.

Feedback from multiple sources such as students, alumni, academic staff, employers, professional bodies and parents assist in enhancing the quality of the programme. Feedback can also be obtained from an analysis of student performance and from longitudinal studies.

Measures of student performance would include the average study duration, assessment scores, passing rate at examinations, success and dropout rates, students' and alumni's report about their learning experience, as well as time spent by students in areas of special interest. Evaluation of student performance in examinations can reveal very useful information. If student selection has been correctly done, a high failure rate in a programme indicate something's amiss in the curriculum content, teaching-learning activities or assessment system. The programme committees need to monitor the performance rate in each programme and investigate if the rate is too high or too low.

Student feedback for example, through questionnaires and representation in programme committees, are useful for identifying specific problems and for continual improvement of the programme.

One method to evaluate programme effectiveness is a longitudinal study of the graduates. The department should have mechanisms for monitoring the performance of its graduates, and for obtaining the perceptions of society and employers on the strengths and weaknesses of the graduates and to respond appropriately" (COPPA, 2008, pp. 27).

10. LEADERSHIP, GOVERNANCE AND ADMINISTRATION

"There are many ways of administering an educational institution and the methods of management differ between HEPs. Nevertheless, governance that reflects the leadership of an academic organisation, must emphasise excellence and scholarship. At the departmental level, it is crucial that the leadership provides clear guidelines and direction, builds relationships amongst the different constituents based on collegiality and transparency, manages finances and other resources with accountability, forge partnership with significant stakeholders in educational delivery, research and consultancy and dedicates itself to academic and scholarly endeavours. Whilst formalised arrangements can protect these relationships, they are best developed by a culture of reciprocity, mutuality and open communication" (COPPA, 2008, pp.28).

This document will not raise issues pertaining to the governance and administration, as these are at the institutional rather than at the programme level. In this programme, academic leadership is largely focused on suitable qualified persons to carry out the necessary curriculum monitoring and review of Information Science development. The leaders of the programme should demonstrate knowledge reflecting the attributes of good ethical values in work practices.

The leadership requirement of this standard is complimentary to Area 8 in the COPPA document. Thus, the specific positions and the programme leadership positions (e.g. Coordinator, Head of Department or Head of Programme) offered at different levels in the Institution must preferably fulfil the qualifications and experience as follows:

DIPLOMA

A Bachelor's Degree in the related field with a minimum of 5 years relevant teaching or administrative experience.

BACHELOR'S DEGREE

A Master's Degree in the related field with a minimum of 5 years relevant teaching or administrative experience.

MASTER'S DEGREE

A Doctoral Degree in the related field with a minimum of 2 years relevant teaching or administrative experience;

OR

A Master's Degree in the related field with a minimum of 10 years relevant teaching or administrative experience.

PhD BY RESEARCH AND MIXED MODE

A Doctoral Degree with 3 years experience in the relevant area;

OR

A Master's Degree with a minimum of 10 years relevant experience and actively involved in research and publication.

11. CONTINUAL QUALITY IMPROVEMENT

"Increasingly, society demands greater accountability from HEPs. Needs are constantly changing because of the advancements in science and technology, and the explosive growth in global knowledge, which are rapidly and widely disseminated. In facing these challenges, HEPs have little choice but to become dynamic learning organisations that need to continually and systematically review and monitor the various issues so as to meet the demands of the constantly changing environment" (COPPA, 2008, pp. 30-31).

The HEPs are expected to provide evidence of the ability to keep pace with changes in the field and the requirements of stakeholders. These may be demonstrated by, but not limited to:

i. Annual module review.
ii. Programme curriculum review, conducted at least once every 2-3 years.
iii. Appointment of external reviewer/industrial adviser.
iv. Linkages with industry.
v. Continuous review of industrial attachment practices.
vi. Dialogue sessions with stakeholders.
vii. Participation of academic staff at relevant conferences, seminars, workshops and short courses.
viii. Presentations by invited speakers, local or international.
ix. Organisation of conferences, seminars and workshops.
x. Participation of academic staff in research and consultancy.
xi. Institutional benchmarking programme every 5 years.

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APPENDIX 1

LIST OF PANEL MEMBERS

Malaysian Qualifications Agency would like to thank the following panel members for their support and contribution towards the production of this document.

NO	PANEL MEMBERS	ORGANISATION
1.	Zuraidah Abd Manaf (Dr.) -Chairperson-	Universiti Teknologi MARA (UiTM)
2.	Diljit Singh A/L Balwant Singh (Assoc. Prof. Dr.)	University of Malaya
3.	Juhana Salim (Prof. Dr.)	Universiti Kebangsaan Malaysia
4.	Maizan Ismail	Perpustakaan Negara Malaysia
5.	Mohd Azmi Mohd Yusof	Jabatan Muzium Malaysia
6.	Puteri Saniah Megat Abdul Rahman	Persatuan Pustakawan Malaysia
7.	Raja Abdullah Raja Yaacob (Prof. Dr. Dato')	Universiti Teknologi MARA (UiTM)
8.	Thami Munisah Mohd Yusoff	Asia e University Library

APPENDIX 2

BODY OF KNOWLEDGE

COMMON CORES FOR INFORMATION SCIENCE

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
1.	Epistemology of Information Science	Theories and Principles of Information Science	/	/	/
		Information/Knowledge Spectrum	/	/	/
2.	Information/Knowledge Resources	Types, category and format of resources	/	/	/
		Information/Knowledge Acquisition	/	/	/
		Information/Knowledge Creation	/	/	/
		Information/Knowledge Repositories	/	/	/
3.	Information Management Organisation	Strategic Information Management		/	/
		Project Management		/	/
		Information Society	/	/	/
		Information Management Systems	/	/	/
		Information Agencies	/	/	/
		Information Risk Management		/	/
		Information Governance/Policy	/	/	/
		Information Audit		/	/
		Management of Records Repository	/	/	/
		Measurement and Evaluation of Information Services		/	/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
4.	Information/Knowledge Organisation	Information Storage & Retrieval	/	/	/
		Information Organisation	/	/	/
		Organisational Informatics		/	/
		Knowledge Reasoning and Representation		/	/
5.	Information/Knowledge Retrieval	Information/Knowledge Storage & Retrieval			/
		Databases		/	/
		Computers and Information Processing	/		
		Information Analysis		/	/
		Information Protocol and Standard	/	/	/
		Recordkeeping System	/	/	/
		Information/Knowledge/Records Repository	/	/	/
6.	Information Services	Information Sources and Services	/	/	/
		Dissemination of Information	/	/	/
		Marketing and Promotion of Information Services	/	/	/
		Information Literacy	/	/	/
		Information Skills	/	/	/
		Communication and User Services	/	/	/
		Information Packaging		/	
		Information Seeking Behaviour	/	/	/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
7.	Information Preservation and Conservation	Digitisation	/	/	/
		Recordkeeping System	/	/	/
		Physical Preservation		/	/
		Management of Electronic and Digital Resources	/	/	/
8.	Information/Knowledge Technologies	Natural Language Processing		/	/
		Knowledge Representation	/	/	/
		Information Visualisation		/	/
		Taxonomy and Semantic Web		/	/
		Computers and Information Processing	/		
		Collaborative Technologies (groupware, etc.)		/	/
		Social Software (wikis, blogs, etc.)	/	/	/
		Artificial Intelligence		/	/
		Computer-Supported Services	/	/	/
		Information Architecture		/	/
		Basic Programming		/	/
		Web Programming		/	/
		Web Design	/	/	/
		Digital Library/Archives	/	/	/
		System Analysis and Design	/	/	/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
9.	Information Security	Information Security and Assurance		/	/
		Network Security		/	/
		Database and Storage Security		/	/
		Web Application Security		/	/
		Social Network Security and Privacy		/	/
10.	Legal Aspect	Measuring and Reporting Intellectual Capital			/
		Laws and Legislation		/	/
		Intellectual Property	/	/	/
		Information Privacy	/	/	/
11.	Ethics and Professionalism	Information Professional Code of Ethics	/	/	/
12.	Information Entrepreneurship	Information and Knowledge Creation	/	/	/
		Information Brokerage and Packaging	/	/	/
		Fee based Information Services	/	/	/

RECOMMENDED CORES FOR THE SIX (6) SUBDISCIPLINES OF INFORMATION SCIENCE

1) INFORMATION MANAGEMENT

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
1.	Information and Knowledge Resources	Type of information	/	/	/
		Category of information	/	/	/
		Format of information	/	/	/
		Management of Information Sources	/	/	/
2.	Information Management System	Management of Information Resources	/	/	/
		Non Numeric Information Retrieval		/	/
		Evaluation of Information Services		/	/
		Taxonomy and Semantic Web			/
		Information Governance Structure			/
		Database Management	/	/	/
		Information Management System		/	/
		System Analysis and Design		/	/
		Support Service and Maintenance	/	/	/
		Web Design and Content Management	/	/	/
		Multimedia for Information Professionals	/	/	/
		Information Analysis for Decision Making		/	/
		Problem Solving and Algorithm		/	/
		Project Management		/	/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
		Decision Theory and Expert Systems		/	/
		Information System Interaction and Consultation		/	/
		Data Centre Operational and Services	/	/	/
		Competitive Intelligence			/
		Social Media	/	/	/
3.	Enterprise Content Management	Data Mining			/
		Content Management		/	/
		Document Management System		/	/
		Electronic Records Management	/	/	/
		Digital Preservation	/	/	/
		Information Storage and Retrieval	/	/	/
		Taxonomy Management			/
4.	Information Security Management	Security and Privacy		/	/
		Security Services		/	/
		Database Privacy and Security		/	/
		Network Security		/	/
		Database and Storage Security		/	/
		Web Application Security		/	/
		Social Network Security and Privacy		/	/

2) LIBRARY SCIENCE

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
1.	Information Resources and Collection	Resources and Collection	/	/	/
		Access to Information	/	/	/
		Collection Management	/	/	/
		Evaluation of Collection and Resources		/	/
		Preservation and Conservation	/	/	/
2.	Information Organisation and Retrieval	Information Seeking Behaviour		/	/
		Information Storage and Retrieval Systems	/	/	/
		Organisation of Information	/	/	/
		• Cataloging/Classification	/	/	/
		• Indexing/Abstracting/ Thesauri	/	/	/
		• Metadata		/	/
		Measurement and Evaluation of Information Retrieval		/	/
3.	Information Literacy	Information Skills	/	/	/
		Information Literacy	/	/	/
		User Education	/	/	/
		Evaluation of User Services		/	/
		Lifelong Learning		/	/

No.	Body of Knowledge	RecommendedTopic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
4.	Information Services	Communication and Interpersonal Skills	/	/	/
		Evidence Based Practice		/	/
		Reference Services	/	/	/
		Knowledge Management		/	/
		Specialised Information Services		/	/
		Information Packaging	/	/	/
		Public Relations	/	/	
		Community Information Services	/	/	
		Promotion and Marketing Information Services		/	/
		Information Entrepreneurship	/	/	/
		Dissemination of Information	/	/	/
		User Needs	/	/	/
		Publishing	/	/	
5.	Information Agencies and Professional Institutions	Library Management and Information Agencies	/	/	/
		Roles of Professional Organisations and Bodies	/	/	/
		Planning and Design		/	/
		National Information Policy		/	/
		Policy and Governance	/	/	/
6.	Information Environment and Policy	Information, Library and Society	/	/	/
		Legal and Regulatory Framework	/	/	/
		Information Infrastructure		/	/

No.	Body of Knowledge	RecommendedTopic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
7.	ICT Application	Library Automation/Computerisation	/	/	/
		ICT Application in Libraries and Information Centre	/	/	/
		E-Learning	/	/	/
		Digital Libraries	/	/	/
		Online Information Searching	/	/	/
		Social Media Application	/	/	/

3) RECORDS MANAGEMENT

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
1.	Information and Knowledge Resources	Type of Records	/	/	/
		Category of Records	/	/	/
		Format of Records	/	/	/
2.	Recordkeeping Framework	Theories and Principles	/	/	/
		• Life Cycle of Records	/	/	/
		○ Creation	/	/	/
		○ Maintenance and Use	/	/	/
		○ Disposition	/	/	/
		Legal Issues	/	/	/
		Policy and Governance	/	/	/
		Administrative History	/	/	/
		Business Functions	/	/	/
		Metadata		/	/
3.	Records Management	Recordkeeping Practices and Processes	/	/	/
		Records Risk Management		/	/
		Management of Records Repository	/	/	/
		Management of Electronic Records	/	/	/
		Strategic Planning Management		/	/
		Forensic Records			/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
		Disaster Planning and Preparedness	/	/	/
		Quality Records Management		/	/
		Recordkeeping Audit		/	/
		Records Security		/	/
		Planning and Design of Records Repositories		/	/
4.	Services	Communication and Interpersonal Skills	/	/	/
		Awareness and Services	/	/	/
5.	ICT Application	Electronic Record Management System/Electronic Document Management System	/	/	/
		E-Records Recovery	/	/	/
		Recordkeeping System	/	/	/
		Digitalisation of Records	/	/	/

4) ARCHIVAL SCIENCE

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
1.	Information and Knowledge Resources	Types of information	/	/	/
		Category of information	/	/	/
		Format of information	/	/	/
2.	Archival Theories	Theories and Principles	/	/	/
3.	Archival Function	Selection and Acquisition	/	/	/
		Arrangement and Description	/	/	/
		Reference and Access	/	/	/
		Outreach and User Education	/	/	/
		Oral History		/	/
4.	Archive Dissemination and Services	Research and Consultation Services		/	/
		Document and Fact Verification		/	/
		Reprographic Services		/	/
		Transliteration		/	/
		Translation		/	/
5.	Management	Governance	/	/	/
		Risk Management	/	/	/
		Disaster Planning and Preparedness		/	/
		Disaster Recovery		/	/
		Management and Administration	/	/	/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
		Preservation Strategies		/	/
		Administrative History		/	/
6.	Archival Profession	History of Archives and Archival Profession	/	/	/
		Records and Cultural Memory	/	/	/
		Ethics and Value	/	/	/
7.	ICT Application	Digital Archives		/	/
		Archival Management System		/	/
		Digitisation	/	/	/
8.	Preservation	Conservation		/	/
		Restoration	/	/	/

5) KNOWLEDGE MANAGEMENT

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
1.	Information and Knowledge Resources	Types of Knowledge		/	/
		Category of Knowledge		/	/
		Format of Knowledge		/	/
2.	Dimensions of Knowledge Management	Epistemology of Knowledge		/	/
		Knowledge Management Cycle		/	/
		Organisational Memory		/	/
		Culture Behavioral Perspectives		/	/
3.	Knowledge Management Strategies and Process	Knowledge Organisation and Metadata Creation		/	/
		Learning Organisation and Organisational Learning		/	/
		Knowledge Audit		/	/
		Competence Management		/	/
		Knowledge Use and Rights Management		/	/
		Knowledge Retention		/	/
		Knowledge Sharing		/	/
		Knowledge Intergration and Discovery		/	/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
4.	Knowledge Management Instruments	Knowledge Distribution and Promotion		/	/
		Knowledge Representation		/	/
		Cross-Project Learning		/	/
		After Action Reviews (AAR)			/
		Inter-Project Knowledge Transfer			/
		Communities of Practice			/
		Expert Directories			/
		Best Practice Transfer		/	/
		Oral Documentation		/	/
		Social Media Tools		/	/
		Knowledge Taxonomy		/	/
		Competitive Intelligence		/	/
		Document Management		/	/
5.	ICT Application	Collaborative Technologies (groupware, etc)		/	/
		Artificial Intelligence		/	/
		Computer-Supported Services		/	/
		Management Systems		/	/
		Expert Systems		/	/
		Decision Support System		/	/
		Intranets		/	/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
		Data Mining			
		Knowledge Repositories		/	/
		Databases			/
		Semantic Networks			/
		Simulation Tools			/
		Storage Technologies (cloud, etc)			/
6.	Knowledge Management Measurement	Knowledge Management Model			/
		Intellectual Capital Measurements			/
		Performance Measurement			/
		Knowledge Gap Assessments			/
		Balanced Scorecard			/
		Return of Knowledge			/

6) MUSEUM AND HERITAGE INFORMATION MANAGEMENT

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
1.	Museum Information and Knowledge Resources	Types of Resources	/	/	/
		Category of Resources	/	/	/
		Format of Resources	/	/	/
2.	Museums and Heritage Management	Introduction to Museology and Heritage	/	/	/
		History and the Development	/	/	/
		Museums and Heritage Management (Concepts, Theories and Practices)	/	/	/
		Policy, Governance and Leadership		/	/
3.	Curatorial Management	Introduction to Curatorship	/	/	/
		Roles of the Curator	/	/	/
		Code of Conduct and Professional Ethics	/	/	/
		Specialisation and Practices		/	/
4.	Museums and Heritage Information Management	Introduction into Museums and Heritage Information Management	/	/	/
		Research and Information Collecting Process	/	/	/
		Appraisal and Evaluation Process	/	/	/
		Museum Security and Risk Management	/	/	/
5.	Collection Information Management	Collections Management/Maintenance Policy	/	/	/
		Repository Management/Corporate Memory	/	/	/
		Registration and Digitisation Management	/	/	/

No.	Body of Knowledge	Recommended Topic	MQF Level		
			Diploma (4)	Bachelor's (6)	Master's (7)
		Database, Documenting and Capturing Management	/	/	/
		Access, Retrieval and Conservation Management	/	/	/
		Resource Description	/	/	/
6.	Information Services	Museum Education	/	/	/
		Exhibition	/	/	/
		Publication	/	/	/
		E-Learning	/	/	/
		Lifelong Learning	/	/	/
		Networking	/	/	/
		Marketing and Promotion		/	/
		Communication and Interpersonal Skills	/	/	/
		Information Entrepreneurship and Innovation		/	/
		E-gallery and Virtual Museums	/	/	/
7.	ICT Application	Museum Information System		/	/
		Digitisation		/	/
		Curatorial and ICT		/	/
		Legislative	/	/	/
8.	Preservation	Conservation and Restoration	/	/	/

APPENDIX 3

PROGRAMME NOMENCLATURE

The nomenclature of the programme must reflect the content of the programme.
E.g.

i. Diploma in Information Science, Diploma in Library Management, Diploma in Museum Information Management.

ii. Bachelor of Information Science (Information Management System), Bachelor of Information Science (Library Science), Bachelor of Information Science (Records Management), Bachelor of Information Science (Resource Centre Management), Bachelor of Information Management System.

iii. Master in Information Science, Master in Library and Information Science, Master of Science in Information Management, Master of Science in Knowledge Management, PhD (Information Science).

GLOSSARY

1)	Academic Load	A quantitative measurement for all learning activities required to achieve the learning outcomes.
2)	Academic Staff	Refers to university personnel who are involved in teaching and research supervision (including research fellows).
3)	Dissertation	The documentation of the original research prepared and submitted by the candidate for the award of the degree for the Master's programme by research and mixed mode.
4)	External Stakeholders	External parties who have indirect interest in the programme. Examples are alumni, industries, parents, collaborators, fund providers and professional associations.
5)	Internal Stakeholder	Internal parties who have direct interest in the programme. Examples are university management, supervisors and candidates.
6)	Summative Assessment	Summative assessment is the assessment of learning, which summarises the progress of the learner at a particular time and is used to assign the learner a course grade.

AGENSI KELAYAKAN MALAYSIA
Malaysian Qualifications Agency
Level 14, Block B, Menara PKNS-PJ
No. 17, Jalan Yong Shook Lin
46050 Petaling Jaya
Selangor Darul Ehsan

Tel: +603-7968 7002
Fax: +603-7956 9496
Email: akreditasi@mqa.gov.my

Website: www.mqa.gov.my

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