Master of Science in Information Science: A Proposal.
(Education in library and information science. 4).

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[The need for a Masters degree course in Information Science is discussed. A syllabus, entrance requirements, etc, for a course leading to M Sc in Information Science, are proposed.]

1 Introduction

Fresh approaches and new structures are called for to meet the information requirements emerging from the dynamic developments — scientific, technological, economic, political, social, and cultural —in the country. Further, global developments in information handling techniques and in information transfer programmes influence, in an appreciable measure, the framework of our considerations in developing national infrastructure. A very important component of this infrastructure is manpower— that is, the information personnel support needed for the changing information environment in the country.

There is an urgent and growing demand for specialised information scientists having a good subject background and professional knowledge for designing, organising, developing, operating and managing information systems and information services, especially in the industrial and commercial sector, in government departments, in R & D establishments and in other specialised organisations, programmes and missions. During the last few years, more than 300 industries have set up R & D facilities and increasingly there is demand for information specialists in these organisations for repacking of information for the immediate use of research workers, production engineers, decision-makers, etc. The information scientist should be capable of "talking the same language" as the scientists, engineers, and managers who require and use information. The information scientist should also be capable of information analysis and evaluation, preparation of critical reviews and trend reports, and develop data banks and data services, plan information technology applications in library operations and information storage, retrieval and dissemination work. The existing B Lib Sc course has not attracted qualified subject specialists. It is forseen that the demand in the 1980's for information scientists would be high even in the academic environment.

Experience over the past decade in the DRTC and INSDOC indicate that persons with good basic

qualifications in science subjects are more attracted to information science courses of the MSc type and these professionals are also absorbed in good positions with adequate opportunities to use their training in the design, development, operation and management of the information systems and services in a variety of institutions, programmes and missions.

In order to raise such information science personnel there is need for a new stream in the pattern of higher education in library and information science. In the succeeding sections the elements of the curriculum—syllabus, admission requirements etc—for the MSc degree in Information Science are presented. The suggestions have been based on actual interactions with and demands expressed by, R & D establishments, industries, government departments, etc, over the past several years, both in DRTC and the INSDOC.

2 Master of Science in Information Science

21 OBJECTIVES

The educational objectives of the course leading to the Master of Science in Information Science [MSc (IS)] are:

1 To acquaint the students with (a) the role of information in society — in research and development activity, in planning, in decision making, in problem solving, in the learning process, and in the day-to-day life of individuals; (b) the information needed for the different kinds of activities; and (c) the economics of information.

2 To acquaint the students with the different modes and patterns in the information seeking behaviour of people and the methods of studying the patterns.

3 To give the students knowledge about the characteristics of the information resources in society —within the governments, the industry and business sector, the R & D institutions, programmes and missions, the academic institutions, the professional associations and learned bodies, and the regional and international resources—and practical insight and skill in accessing and utilizing these resources.

4 To familiarize the students with the basic theories and methods and their application for the analysis, organization, and presentation of infor

mation in different types of information services and suitable for different user groups.

5 To famliarize the students with the basis and methodology of planning, designing and development of information systems and services at the local, national, regional and global levels.

6 To provide the students basic knowledge of the application of information technology, computer technology, communication technology, reprography and printing technology in information systems and services.

7 To give the students an understanding of the application of modern management ideas and techniques in the management — that is, design, operation, control, development and evaluation — of information systems and services.

8 To develop the ability of the students to identify problem areas, apply methods of research, and design experiments in finding solutions to problems, to formulate research proposals, and to effectively present project reports and dissertations.

22 COURSE OF STUDIES

The course of studies shall consist of the following areas and papers (See Sec 24 for outline of the syllabus):

Area I. *Foundations*
Paper 1. Foundations of Information Science (100 marks)

Area II. *Information Resources and Materials*
Paper 2. Information Sources and Communication Media (100 marks)
Paper 3. Information Systems and Programmes (100 marks)

Area III. *Methods of Information Handling*
Paper 4. Information Processing and Organization (100 marks)
Paper 5. Information Transfer and Dissemination (100 marks)
Paper 6. Information Technology and Systems Design (100 marks)

Area IV. *Planning and Management*
Paper 7. Information Centre/System Planning and Management (100 marks)

Area V. *Electives*
Paper 8. One elective subject (See Sec 24) (100 marks)

Area VI. *Guided Research*
Project Work and Dissertation (200 marks)

Area VII. *Supporting Courses*
(Selected topics from other disciplines helpful in the better understanding of information science. See Sec 24. No examination)

23 DURATION

The course of studies shall be divided into two academic years as follows:

1 First year of formal course work, consisting of classes, examinations etc.

2 Second year completely devoted to project work and dissertation (Area VI). During this period class attendance is not required.

The first year course work may be organized according to the semester system as follows:

I Semester (July–December): Areas I, II and VII
II Semester (January–May): Areas III, IV and V.

24 SYLLABUS OUTLINE

Area I *Foundations*
1 FOUNDATIONS OF INFORMATION SCIENCE
Nature of information. Theories of human communication. Information diffusion. Use of information. Information models and theories. Sociology of information. Economics of information. Relationship of information science with other disciplines. Key issues in information science.

Area II. *Information Resources and Materials*
2 INFORMATION SOURCES AND COMMUNICATION MEDIA
a) Identification, organization, utilization, limitations, and other relevant characteristics of information sources. For example,
— Documentary sources, with emphasis on periodicals, technical reports, conference and discussion papers, patents, specifications, standards, drawings, data sources, trade catalogues, etc, and non-book materials.
— Human sources including experts, consultants, vendors, suppliers, contractors, etc.: the invisible college.
— Institutional sources including government departments, R & D organizations and missions, academic institutions, professional associations, etc.
b) Types, organization, utilization, limitations and other characteristics of information communication media, including mass media, and extension services; Barriers to communication and information transfer.

3 INFORMATION SYSTEMS AND PROGRAMMES
Structure, functions, products, and services of different categories of information systems, such as documentation centres, information clearing houses, referral centres, information analysis centres, data banks, etc.
National, regional and global information systems, services, and programmes; systems interconnection.

Area III. *Methods of Information Handling*

4   INFORMATION PROCESSING AND ORGANIZATION
Universe of subjects: structure and development.
Content analysis, abstracting, digesting, and other condensation methods.
Indexing and indexing languages.
Information organisation.
Data handling: source, analysis, evaluation, organisation, interpretation.
Document description: standards.

5   INFORMATION TRANSFER AND DISSEMINATION
Category of users, user needs, user studies.
Information diffusion patterns and studies.
Organization, structure and provision of information services including
— Current awareness services, SDI, abstracting services, digests, technical notes, news briefs, product and process bulletins, state-of-the-art and trend reports, products of information analysis, data service, etc.
— translation service.
— extension service and technology transfer.
Presentation of information.
Marketing of information services.
Information resource sharing.

6   INFORMATION TECHNOLOGY AND SYSTEMS DESIGN
Brief overview of computer technology, communication technology, and reprography/printing technology as applied to information storage, retrieval and dissemination.
Systems analysis and systems design concepts.
Information theory, coding, etc.
Data selection and acquisition. Flow charting, decision tables, etc. File organization, data structures. Data base management.
Performance testing, checking; editing, error correction typesetting.
Automatic, text processing.
Computer hardware and software developments
Networking and communication technology applications.
(*See also* Paper P)

Area IV. *Planning and Management*
7   INFORMATION SYSTEM/CENTRE PLANNING AND MANAGEMENT
Planning methodology. National information system planning; information policy.
Organizational structures.
Management: Personnel, financial, materials and other resources management, and the application of modern management ideas and techniques.
System evaluation.
Librametry and bibliometry.

Area V. *Electives (Illustrative)*
8   a) Industrial information service
    b) Information system for R & D
    c) Information system for planning
    d) Management information system
    e) Health sciences information systems and services
    f) Environmental information systems and services
    g) Social sciences information systems and services
    h) Computer-based information systems and services

Area VI. *Guided Research Project*
Project work and dissertation on an assigned topic.

Area VII. *Supporting courses*
Relevant selections from:
Research methodology
Statistical methods
Operations research and systems analysis
Linguistics
Communication
Technical writing

25   ADMISSION REQUIREMENTS
The minimum qualification for admission to the course shall be a good Masters degree in a science subject (incuding social sceinces)or B E, M B B S, or other equivalent professional degree. Preference may be given to candidates who have a mathematics background.
Not more than ten students shall be admitted to a course.
If found necessary, applicants may be tested and/or interviewed before admitting to the course.

3   CONCLUSION
The proposed course details were discussed at the recent DRTC–INSDOC Seminar on Library and Information Manpower Development. The response from the participants was favourable and enthusiatic. The following recommedation was unanimously adopted.
" *Appreciating* (i) the expressed, growing and anticipated demand for information scientists for designing, developing, operating and managing information systems and services particularly in R and D establishments, industrial and commercial sectors, in government departments, and in other specialized organisations, programmes and missions, and that (ii) the performance of their specialised functions of information and data analysis and critical evaluation, preparation of

critical reviews and tend reports, provide data service, plan information technology applications in information systems and services, and participate in developments in national, regional, and global information systems and networks, requires personnel with a good subject background in the natural sciences and social sciences and high level intensive training in the information science area, and

recognising that the present provision in the country for the education, training and development of such information scientist personnel is inadequate,

recommends that

(i) a course lending to the M Sc degree in Information Science be offered, to begin with, in not more than three institutions of higher learning having adequate resources,

(ii) the entrance requirements, duration, syllabus, etc suggested in Paper 1 of the background material submitted to the seminar, be adopted as a starting point,

(iii) this be taken up as a project in information manpower development and bodies, such as the University Grants Commission, the Department of Science and Technology, and the Indian Council of Social Science Research, be requested to support and assist the project; and

(iv) the experiences and the situation be reviewed after a period of five years of starting the course in each of the institutions undertaking the project."