M.Phil in Environmental Management (M. Phil. EM)

Post P.G. Programme

Under Self-financing Scheme

Department of Environmental Science
Maharshi Dayanand Saraswati University, Ajmer - 305 009

Examination 2013
Semester Scheme

MAHARHI DAYANAND SARASWATI UNIVERSITY, AJMER
Ordinance 123 (V) relating to M.Phil Examination
According to Minimum standard and procedure for awards of M.Phil degree as per the guidelines of U.G.C. Regulation, 2009

Scheme of Examination

1. For starting or continuing M.Phil course in the University and its affiliated colleges, it must be ensured that at least two qualified teachers are available in that subject. A teacher who possesses Ph.D. Degree shall be eligible to teach M.Phil classes. A teacher who possesses Ph.D Degree and three years P.G. teaching experience shall be eligible to supervise M.Phil dissertation.

2. A candidate for admission to the course of study for the Degree of M.Phil must have obtained a Master's Degree in the concerned Subject with at least 55% marks at the post graduate Examination of this University or of any other University/Institution. A candidate with second division at post graduate examination (with less than 55% marks) shall be eligible for the M.Phil. If he/she has second division at the graduate examination. Relaxation in the eligibility will be given to SC/ST/OBC/PH etc as per rules of the University /State Government.

3. **Admission to M.Phil Programme**

i)   University shall issue notification regarding Eligibility test for admission to M.Phil Programme. Research Eligibility Test (RET- M.Phil) in the national /regional news papers etc.

ii)   University shall conduct RET-M.Phil on the date notified once every year.

iii)   Candidates who have qualified the UGC/CSIR (JRF)/NET/SET/GATE/ or any equivalent examinations conducted by the State/Central government/ Teacher Fellowship holder are exempted from RET.

iv)   The University shall prepare a merit list of the eligible candidates.

4. **Procedure for Admission to M.Phil Programme**

A merit list shall be prepared of the eligible candidates based on the weightage of percentage of the academic record such as Sr. Secondary, Graduation, Post Graduation, publication in the peer reviewed journal, presentation of paper in National/International Conference/Seminar/Workshop shall be as follows:

1. Sr. Secondary   10% of the percentage obtained
2. Graduation   20% of the percentage obtained
3. Post Graduation   60% of the percentage obtained
4. Publication   05*
5. Conference/seminar   05**

(*2.5 marks for each publication with maximum 5 Marks,
**2.5 marks for each conference/seminar with maximum 5 marks)

The number of candidate called for interview shall be twice the availability of seats. Allocation for the candidates for the University and colleges shall be faculty wise and centralized at the University campus.

5. **Students allotment Committee**
The composition of the committee shall be as follows:
i)   Dean P.G. Studies

ii)   Dean Concerning Faculty
iii)   Head of the Department/Incharge/Director of the concerning teaching Department of the University/College
iv)   Principal or his/her nominee(in the case of College)
v)   Director Research (Member Secretary)

6. Research Eligibility Test (RET- M.Phil)

A. Procedure

There shall be a Research Eligibility Test for M.Phil. of 200 marks comprising of two papers of 100 marks of two hours duration each. Both the papers will be held on the same day with a gap of one hour. A candidate who does not appear in paper I shall not be allowed to appear in paper II. First paper shall be of Research aptitude and the second paper shall be subject paper based on the concerned subject.

B. Syllabus

Syllabus of paper First shall be based on research aptitude and the second paper shall be based on the common papers of syllabus of M.D.S. University, Ajmer of their post graduation of the concerned subject. (Except special/ optional papers.)

Paper I- Research Aptitude

The questions shall be of general nature, intended to assess the research aptitude of the candidate. It will primarily be designed to test reasoning ability, comprehensive divergent thinking, computer skill, elementary statistical methods and general awareness of the candidate. A total of 50 multiple choice questions (MCQ's) will be set. Each question shall carry 2 marks. There will be no negative marking.

Paper II- Subject Paper

There shall be only one subject paper based on the syllabus of the common papers candidate has studied at the post graduation. There will be three sections in this paper.

Section A: 20 question of multiple choice 2 marks each = 40
Section B: 10 question of short answers   3 marks each = 30
Section C: 2 questions of long answers   15 marks each = 30

(All question in Section A and B shall be compulsory. In section C there will be four questions out of which candidate shall be required to attempt any two questions.)

7. The candidate after getting admission in the M.Phil. programme will carry out the M.Phil. Studies as per the scheme mentioned below.

Semester Scheme for M.Phil Courses

(i)   M.Phil Course shall be of one academic session to be run under semester scheme and credit system. There will be two semesters in the academic session. Each semester will be of about 20 weeks duration having a minimum of 90 days (16weeks) of actual teaching, one week for preparatory leave and remaining days for the conduction of examination and other activities.

The tentative schedule is as below:

First Semester : July to November
Internship : > 2 weeks (December)
Second Semester: January to May

(ii) There will be six (6) theory papers in one academic session divided equally into two semesters. The dissertation is lieu of IV and VIII theory papers in Semester I and II, respectively.

(iii) The M.Phil Course shall be of 32 credit hours, i.e. 16 credits per semester.

(iv) Each theory credit hour shall be designated as 1L that shall be equal to as 1hour of instruction and one dissertation credit hour shall be designated as 1 D credit that shall be equal to 1.5 hour per week. (L = Lecture: D= Dissertation)

(v) Each theory papers shall be of 4L credits per semester with total 64 hrs of instructions. The semester shall be of about 16 weeks, 4 hrs instruction shall be given to each theory paper per week.

(vi) The dissertation shall carry 4 D in each semester with total 96 hours of instruction hours per semester. Since a semester shall be of about 16 weeks, 6 hrs instructions per week shall be given to dissertation.

(vii) Each theory paper shall be of 50 marks and dissertation shall be of 50 marks. There shall be no evaluation of the dissertation at the end of first semester because the work carried out during the first semester shall be continued in the second semester. Evaluation of the dissertation shall be done at the end of the second semester.

(viii) The distribution of credits and the examination scheme are as below:

Paper	Title	Max. Marks	Credits	Minimum hours of Instruction		Minimum hours of Self Study	
				Per Week	Per Semester	Per Week	Per Semester
Semester I							
EM 01	Research Methodology	50	4	4	64	4	64
EM 02	Environment – Issues and Concerns	50	4	4	64	4	64
EM 03	Environmental Management Systems and Environmental Legislation	50	4	4	64	4	64
EM 04	Dissertation	-----	4	6	96	12	192
Semester I Total		150	16	18	288	24	384
Semester II							
EM 05	Advance Research Methodology	50	4	4	64	4	64
EM 06	Environmental Impact Assessment ,	50	4	4	64	4	64

	Environmental Auditing						
EM 07	Disaster Management and Restoration Ecology	50	4	4	64	4	64
EM 08	Dissertation*	100	4	6	96	12	192
Semester II Total		250	16	18	288	24	384
Grand Total of Semester I & II		400	32		576		768

There will be internship of two to three weeks between two semesters
*Dissertation will begin from semester I and shall complete at the end of the second semester.

- (ix) The total maximum marks for evaluation in M.Phil. Shall be 400.
- (x) The time allotted for self study is the minimum time expected to be spent on various activities like practical, field work, library reference work, use of computer and internet and such other facilities.
- (xi) There shall be one paper on Research methodology (paper – I) in semester I and on Advance Research Methodology in semester II.
- (xii) Paper II, III shall be optional paper in Semester I and paper VI and VII shall be optional in II Semester.
- (xiii) Out of maximum of 50 marks in each paper 15 marks (30%) shall be for the continuous sessional assessment to be done internally based on assignment (5 marks), written test (5 marks) and seminar/group discussion (5 marks). The internal assessment marks should be sent to the university by the various Departments/ Affiliated Colleges of the University before the commencement of theory examination. The theory examination will be held at the end of each semester. Each theory papers shall be assessed out of a maximum of 35 marks.
- (xiv) All papers setters and examiners for the external assessment shall be external persons (i.e. those who are not working either in the M.D.S. University or in any of its affiliated colleges). The board of studies shall prepare a separate panel of Examiners for M.Phil. Theory papers as well as dissertation. Appointment of the papers setters and examiners shall be made on the recommendations of the committee for the selection of the examiners.
- (xv) The answers books of theory papers of external examination shall be evaluate by single examiner. After declaration of the result the student concerned if desires shall be entitled for re-evaluation in accordance with the provisions of the university. Dissertation shall be evaluated by two examiners
- (xvi) The student will have to carry out the work of dissertation in both the semester and shall submit the thesis for evaluation within two weeks after the last theory examination of II Semester.
- (xvii) Dissertation work shall be conducted by the candidate under supervision of any teacher who is registered as M.Phil. Supervisor with the teaching department concerned. An M.Phil. Supervisor can normally guide five dissertations at a time. However, the maximum limit may be relaxed by the

Vice- Chancellor on the recommendation of the Head. The work load for dissertation shall be six hours per week per class

(xviii) For dissertation work the placement of every candidate under a supervisor shall be decided within one month from the last date of admission.

(xix) The dissertation will be divided into two parts. Part I of Semester I will constitute preparation of plan of work that should be presented by the student in front of the faculty of the department, who will assess the feasibility and recommend suggestions, if any, for the improvement. The student must suitably incorporate the changes, if any, in the synopsis in consultation with the supervisor. Following this he/she must write and submit the written draft of chapters on review of literature and methodology to the supervisor. He/She may also conduct some preliminary work/experiments to understand the techniques. The supervisor shall submit a report of satisfactory progress to the Head of the Department before beginning of the theory examination. The latter shall forward it to the university along with marks for internal assessment. The dissertation shall be of 100 marks to be evaluated out of 70 marks by an external examiner. The marks obtained, shall be added to the marks obtained in the viva voice examination to be held subsequently.

(xx) In the second part of dissertation in semester II, the student will have to complete the work as per the aims and objectives of the study and submit a dissertation. Prior to final submission of the dissertation, the student shall make a pre- M.Phil presentation in the Department in the presence of all the faculty chaired by the Head of the Department. Suggestions, if any, may be suitably incorporated into the dissertations.

(xxi) The candidate must give a certificate that (1) the dissertation incorporates his/her own work, (2) the work incorporated in the dissertation is not a repetition of earlier work, (3) any part of the dissertation containing information from other sources has been properly cited or has been printed after having obtained due permission from the original author, and (4) any kind of assistance or help taken during the course of work has been properly acknowledged. This certificate must be attached immediately after the title page of the dissertation. Supervisor shall give a certificate according to the prescribed format (Annexure-I)

(xxii) The dissertation must be hard bound and type written dissertation on A-4 size paper. Four hard copies and four soft copies in non- editable PDF format must be submitted to the Head of the Department through the Supervisor. The colour of the cover page of dissertation shall be faculty wise (Annexure-II).

(xxiii) On receipt of satisfactory evaluation report of dissertation, i.e., minimum 50% marks M.Phil students shall undergo a viva voce examination of 30 marks which shall also be openly defended. There will be an examination committee comprising one external examiner and one internal examiner; the later may be the supervisor of the candidate or the Head of the Department in the absence of the supervisor.

(xxiv) Every student shall be required to undertake a compulsory internship of 2-3 weeks in between the two semesters. The internship schedule shall be decided by the concerning Head of the Department. The teaching institution may

decide for the provision of stipend for the student taking internship. The student will be required to submit and present a report of the internship. The participating organization/institution will give the performance appraisal of the student's work. The concerning supervisor of the Department shall certify the satisfactory performance of the student during internship and submit the same to the examination section through the Head of the Department of the University.

(xxv) Every candidate shall be required to attend a minimum of 75% of the lectures, tutorials, seminars and practical (taken together) held in each paper.

(xxvi) Every student of semester I shall be promoted to the next semester at her/his own risk in case he/she qualifies in 50% of papers (2 theory papers of semester I).

(xxvii) The student who fails in any paper of semester Ist or IInd shall appear in the due papers in the next year along with the concerned semester.

(xxviii)The award list should show both, total marks of the continuous internal assessment as well as external assessment in the theory papers separately and the third column must have the aggregate marks of the two. The candidate will be considered pass on the basis of the combined total marks secured in each paper.

8. For a pass, a student will have to obtain (a) at least 40% marks in each paper separately and (b) a minimum of 50% marks in the aggregate of all the papers prescribed for the examination. In the mark sheet, successful candidates shall be classified as under:

Pass	50% or more but less than 55% marks in the aggregate
Second Division	55% or more but less than 65% marks in the aggregate
First Division	65% or more but less than 75% marks in the aggregate
First Division with Distinction	75% or more marks in the aggregate

A candidate who fails at the examination even in one paper/dissertation shall be required to reappear at the examination in a subsequent year in all the papers/dissertation prescribed for the examination, provided that a candidate who obtains at least 50% marks in dissertation shall be exempted from submitting a fresh dissertation and the marks obtained by him shall be carried forward for working out his result.

9. Depository with UGC

i) Following the successful completion of the evaluation process and announcement of the award of M.Phil the University shall submit a soft copy of the M.Phil dissertation obtained from the candidate to the UGC, for hosting the same in INFLIBNET accessible to all Institution/University.

ii) Along with degree, the University shall issue a Provisional Certificates certifying to the effect that the Degree has been awarded in accordance with the provision to these Regulations of the UGC.

M.Phil in Environmental Management (M. Phil. EM)

EXAMINATION

Semester I

Paper	Title	Marks
EM 01	Research Methodology	50 (15* + 35)
EM 02	Environment – Issues and Concerns	50 (15* + 35)
EM 03	Environmental Management Systems and Environmental Legislation	50 (15* + 35)
EM 04	Dissertation	-----

Semester II

Paper	Title	Marks
EM 05	Advance Research Methodology	50 (15* + 35)
EM 06	Environmental Impact Assessment , Environmental Auditing	50 (15* + 35)
EM 07	Disaster Management and Restoration Ecology	50 (15* + 35)
EM 08	Dissertation	100

Marks Scheme for M.Phil Courses:
        The total maximum marks for evaluation in M.Phil shall be 400.
Out of a maximum of 50 marks in each theory paper 15 marks (30%) shall be for the continuous sessional assessment to be internally based on assignment (5 Marks), written test (5 Marks) and seminar/ group discussion (5 Marks).
The theory examination will be held at the end of each semester. Each theory paper shall be assessed out of a maximum of 35 marks.
        Dissertation shall be of 100 marks. The dissertation will be divided in to two parts. Part I of Semester I will constitute preparation of plan of work and there shall be no evaluation of the dissertation at the end of first semester because the work carried out during the first semester shall be continued in the second semester and in the second will

have to complete the work as per the aims and objectives of the study and submit a dissertation. Evaluation of the dissertation shall be done at the end of the second semester.

SYLLABUS FOR M.PHIL. (ENVIRONMENTAL MANAGEMENT)
EXAMINATION
SEMESTER- I

EM01   **Paper- I Research Methodology**

3 hrs. Duration   Max. Marks. 50 (15* + 35)
Note: Seven questions will be set in the question paper out of which student will be required to attempt any five question. Each question carries seven marks.

Unit –I
Concept of research
Concept of research: purpose, types, significance, objective, research methodology steps.
Selection of research problem, Authenticity of Research Topic

Unit- II
Research Techniques
Sampling techniques: sampling theory, types of sampling, sampling error, selection of sample, sample size.

Unit – III
Data collection: types of data, primary & secondary data, process of data collection.

Unit IV
Measurement of research, data collection measurement & analysis.
Concept of central tendency, standard deviation, standard error,

Unit V
Measuring and scaling techniques: Nominal, Ordinal, Interval and ratio measurement, different methods of scaling.

EM 02   **Environment: Issues and Concerns**

3 hrs. Duration   Max. Marks. 50(15* + 35)
Note: Seven questions will be set in the question paper out of which student will be
required to attempt any five question. Each question carries seven marks.

UNIT 1
Environment, Population and Resources needs: Emerging issues ecosystem
balance. Ecosystem services, Human population problem, predicting future, Global
carrying capacity, Food and environment. Water resources, Conservation and
management, water crisis and water harvesting with reference to Rajasthan, Ground
water pollution, fluoride distribution, health effects and de-fluoridation.

UNIT 2
Environmental biotechnology: Biotechnological approaches in environment, role of
microbes in environmental abatement, genetic manipulation and biodegradation of
pesticides and organic compounds. Bio-safety. Genetically modified organisms,
release of GMO in environment

Unit 3
Biodiversity: Flora and fauna of Aravallis and Rajasthan. Status of biodiversity in
India, Conservation efforts, Intellectual property rights. Convention on biodiversity.
Wildlife protection.

UNIT 4
Global Warming and Acid rains: dimensions, effect of acid rain on aquatic and
terrestrial ecosystems. Acid rain and human health. International collaboration on
pollution control and acid rain. Consequences of global warming. Tackling the
problem of global warning, International approaches to atmospheric pollution control.

UNIT 5
Stratospheric and Ground level Ozone: Ozone depleting compounds, stratospheric
ozone - current debate. Tackling the problem of stratospheric ozone depletion.
Current problem of urban environment, assessment of ground level ozone, sources
and its impact on plants and human beings. Traffic hazards and pollution status in
Indian metro-cities and towns.

EM 03   Environmental Management Systems and Environmental Legislation

3 hrs. Duration   Max. Marks. 50 (15* + 35)
Note: Seven questions will be set in the question paper out of which student will be required to attempt any five question. Each question carries seven marks.

UNIT 1
Environmental management systems: Managing the Environment Environmental Management Plan; Monitoring and measurement; Environmental aspect; Environmental impact study- designing the environmental management system; Knowledge of latest issues in ISO 14000, ISO 14001 standards; Knowledge of EMS related software; Eco-mapping, Auditing of EMS; Alternative environmental management systems: BS7750, EMAS; Health and safety standards and requirements- BS 8800, OSHA, OHSAS 18001 and 18002, Social Accountability (SA 8000).

UNIT 2
Waste minimization and life-cycle assessment: Waste problem: Definition of waste, Benefits of waste management, Objectives of waste management, Criteria for the assessment of raw materials, Process design and management, Principles of waste minimization, assessing the total waste impact; Life Cycle Assessment (LCA): The process of LCA & methodology; Green marketing, packaging and eco- labeling.

UNIT 3
Total Quality Management: Elements of TQM, Total Quality Approach in the SME, and EMS in the small business, Cooperation and networking, Regional development and environmental management, Green entrepreneurship; Role of Information Technology in Environmental Management.

UNIT 4
Pollution and its Management: Techniques to minimize Air, Water, Soil & Noise Pollution. Various standards prescribed by the Bureau of Indian Standards for Water, Air and Noise.

UNIT 5
Legislation: Overview of Environmental laws in India. The Water (Prevention and Control of Pollution) Act, 1974; The Water (Prevention and Control of Pollution) CESS Act, 1977; The Air (Prevention and Control of Pollution) Act, 1981; The Environment (Protection) Act; 1986,Hazardous Wastes (Management and Handling) Rules, 1989; Bio-Medical Waste (Management and Handling) Rules, 1998. Role of Judiciary in Environmental Management.

EM 04   **DISSERTATION**

This paper is a compulsory paper.
Dissertation will begin from Semester I and Shall complete at the end of the II Sem.
Students will be required to submit a dissertation work in the II Semester under the
supervision of faculty members.

SEMESTER II

EM 05   **Paper- II Advance Research Methodology**

3 hrs. Duration   Max. Marks. 50(15* + 35)
Note: Seven questions will be set in the question paper out of which student will be
required to attempt any five question. Each question carries seven marks.

Unit –I
Descriptive data analysis- Simple correlation, regression, T-test, F-test, Chi-Square
test and ANOVA

Unit- II
Research Design: Exploratory, descriptive, experimental.
Multiple regression analysis.

Unit- III
Non- parametric & Parametric Techniques.
Report writing: Interpretation layout of report retrieving and Bibliography.

Unit- IV
Computer Application, Basic of Computer, System Software & application Software.
Computer as a tool of Research: Application in data Analysis, related software,

Unit V
MS Office, SPSS, Data Communication, LAN & WAN Data Exploration using
internet tools, e-journal, e- books, Basic concept of teleconferencing & related
configuration.

EM 06   Environmental Impact Assessment and Environmental Auditing

3 hrs. Duration   Max. Marks. 50(15* + 35)
Note: Seven questions will be set in the question paper out of which student will be required to attempt any five question. Each question carries seven marks.

UNIT 1
Environmental Impact Assessment (EIA): Definition of EIA and its purpose; Sustainable Development with reference to EIA; Aims and objectives of EIA; Origin and development of EIA; Major Trends in EIA; Key Principles of EIA; Costs and benefits of using an EIA process; Indian directive on EIA: EIA guidelines 2006 i.e. Notification of Government of India on EIA; EIA 'best practice' including EIA qualities and expectations from the EIA process.

UNIT 2
EIA Methods and Techniques: Main features of the EIA system, Generalised EIA Process flowchart; checklists, matrices, networks, overlays and geographic information system (GIS), etc.; Main advantages and disadvantages of Impact Identification methods; and Future directions

UNIT3
Environmental Auditing: Definition, aims and objectives of the Environmental Audit; Incentives to undertake the audit; Audit principles; Partial Environmental Audits; Implementing the audit- stages of an environmental audit;

UNIT 4
Need of Environmental Auditing: The scope of the audit; Need for objectivity and independence in audit procedure; using questionnaires for environmental reviews and audits; Audit reports; Frameworks for environmental auditing.

Unit 5
EIA Report: Knowledge of EIA software; Screening, Scoping; Impact analysis; Mitigation and impact management; Reporting; Review of EIA quality; Decision making; implementation and follow up; EIA project management; Social Impact Assessment; Strategic Environmental Assessment.

EM 07   **Disaster Management and Restoration Ecology**

3 hrs. Duration   Max. Marks. 50(15* + 35)

Note: Seven questions will be set in the question paper out of which student will be required to attempt any five question. Each question carries seven marks.

UNIT 1

Disaster Management: Introduction, Concepts in Disaster management- with emphasis on disaster preparedness; Natural and Man Made disasters; Importance of disaster management and introduction to mitigation methods;

UNIT 2

Manmade Disasters and Contingency plan: Concept of Community Contingency plan; Manmade Disasters- Types of manmade disasters (accidents, nuclear, chemical, and biological), concept of WMD (Weapons of Mass destruction).

UNIT 3

Natural Disasters I: Earthquakes- Causes and effects, relative disaster vulnerabilities among people; Earthquakes in India, introduction to seismic zones and related damage, scales for measurement; Preparing for earthquakes; Cyclones- Causes and effects, cyclone prone areas in India, preparing for cyclones;

UNIT 4

Natural Disasters II: Floods- Causes and effects, flood-prone areas in India, preparing for floods; Drought- Concept of slow-onset disaster, causes and effects, drought-prone areas in India and relative vulnerabilities of people, mitigating drought and preparedness;

UNIT 5

Restoration ecology: Land degradation, causes and impacts, Mining lands, remediation of degraded lands of Aravallis, Integrated ecological management and assisted natural regeneration. Eco-restoration through watershed development. Bioinvasions, Ecosystem degradation and management strategies with reference to weeds and other invasive species.

EM 08   **Dissertation**   Max Marks: 100

This is a compulsory paper and in this semester the candidate shall submit the dissertation.