



RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

FACULTY OF SCIENCE

DIRECTION NO. 31OF2012

EXAMINATION LEADING TO ONE YEAR ADVANCED POST GRADUATE DIPLOMA IN WILDLIFE CONSERVATION AND MANAGEMENT

WHEREAS, the Maharashtra Universities Act, 1994 hereinafter referred to as Act, has come into force from 22nd July, 1994 and was amended from time to time.

AND

WHEREAS, the university under its power and duties is expedient to make provision for research and for the advancement and dissemination of knowledge in various branch of studies. The proposals in this regard being recommended by the respective Board of Studies, Faculties and Academic Council are to be approved by the Management council for the institution of such Degrees, diplomas, Certificates and other academic distinctions by giving effect to it by virtue of promulgating suitable Ordinances and syllabus for the respective courses to be started from the academic session 2013-14 and onwards.

AND

WHEREAS, as per recommendation of the Board of Studies in Zoology under Faculty of Science has approved the syllabus of One Year Advanced Post Graduate Diploma In Wildlife Conservation And Management course along with scheme of examination in its meeting held on 22-03-2012 and accepted by Faculty of Science held on 18.9.2012 .The faculty recommendation was accepted by the Hon'ble Vice-Chancellor on behalf of the Academic Council & Management council under Section 14(7) of the Maharashtra Universities Act, 1994 on 5.10.2012.

(2)

AND

WHEREAS, the same course should be implemented by way of issuing appropriate direction under section 14(8) of Maharashtra University act, 1994, by the Hon'ble Vice- Chancellor

AND

WHEREAS, the University Grants Commission, New Delhi has approved and recommended its financial assistance to various colleges of excellence to promote this programme under the **UGC Scheme of Innovative Programme – Teaching and Research in Interdisciplinary and Emerging areas** under time bound programme and the same is mandatory to implement by all the universities under the jurisdiction of University Grants Commission by granting necessary affiliation to run this course at the respective colleges **OR** in broader terms if any colleges under the jurisdiction of the university desires to run the course by seeking any financial assistance from any apical body or at self sustainable level by following standard procedure of seeking new regular course to be started from the session 2013-14 and onwards.

AND

WHEREAS, the Academic session 2013-14 would commence from 1st July, 2013 it is felt expedient in the interest of the student to give effect to the decision of Academic Council & Management Council to start One Year Advanced Post Graduate Diploma In Wildlife Conservation And Management Course From The Session 2013-14.”

AND

WHEREAS, the Ordinance making is a time consuming process.

Now, therefore, I, **Dr. V.S. Sapkal, Vice-Chancellor**, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of the power vested under section 14(8) of the Maharashtra University Act of 1994 do hereby issue the following direction.

1. Title of the Direction:

This Direction may be called **“Examination leading to One Year Advanced Post Graduate Diploma In Wildlife Conservation And Management**

2. Nature of the Course:

This one year P.G. Diploma course shall be a full time regular course.

3. Eligibility Criteria:

The students seeking admission to this course should have obtained B.Sc. Degree of R.T.M.Nagpur University or of any UGC recognized and other Deemed University possessing second division with one of its subject as Zoology or Environmental Science at degree level.

4. Application of other Ordinances of University:

The students admitted to this Diploma course shall be governed by the general Ordinances of the University which are applicable to all the regular or ex-students. These Ordinances includes complete as well as relevant provision of Ordinance No. 1,2,6,7-A,9,10,19,109, Ordinance No. 30 of 2006, (amended Ordinance No. 4 of 006), Direction 9 of 2008, Direction 5 of 2004 wherever applicable accordingly.

5. Fee Structure & Intake Capacity for the course:

As per the rules and guidelines of UGC for such programmes or the fees decided at university level or any other competent authority with students intake of 10(ten).

6. Syllabus:

The syllabus for this course as prescribed by the Board of Studies in terms of annual pattern.

7. Medium of Instruction/Examination:

The medium of instruction and writing of examination shall be in English only.

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8. Conduct of Examination:

The Examination leading to the course of One Year Advanced Post Graduate Diploma In Wildlife Conservation And Management shall be held once in a year only (i.e. Summer) at such place and on such dates as may be decided by the university.

9. Scheme of Examination:

The scheme of Examination shall be as per Appendix-A (Annual Pattern). However, the scheme of examination reflects the basic structure of theory, practical and Project work. The details/title of the theory paper can be suitably modified in future considering the need of the subject without disturbing the main structure.

10. Project :

Project shall be assessed by the external examiner and project guide as internal examiner. However, final marks shall be awarded by external examiner. The project examination shall be held alongwith practical examination.

11. Other Rules:

(i) Successful examinee obtaining 60% or more marks in the aggregate at both of the examination shall be placed in the First division and those obtaining less than 60% in the second division and those obtaining less than 45% marks of aggregate but not less 35% of marks shall be placed in third division.

(ii) An examinee who is unsuccessful at the examination will be eligible for admission to the next written and practical examination on payment of fresh fees prescribed for the examination together with an ex-student fee as applicable and on compliance of the conditions of the Ordinance enforced from time to time.

(5)

(iii) For being eligible for exemption in a paper or practical or project work, the candidates must have obtained not less than 35% of marks.

(iv) Provision of Ordinance No. 7-A relating to the condonation of deficiency of marks for passing the examination and of Ordinance No. 10 relating to the exemptions and compartments shall apply to the examination under this Ordinance.

(v) As soon as possible after the examination, but not later than 30th June, next following in case of examination held in April the Management council shall publish the list of successful examinees. The names of the first three examinees passing the examination with more than 60% marks in the minimum prescribed being arranged in order of merit.

(vi) An examinee who is successful at an examination and obtains not less than 75% of the total marks prescribed in a subject shall be declared to pass the examination with Distinction in that subject.

(vii) Notwithstanding anything to the contrary in this ordinance no person shall be admitted to this examination, if he/she has already passed this examination or an equivalent examination of any other statutory university.

12. Award of Diploma:

A successful examinee shall be awarded DIPLOMA in prescribed form signed by the Vice-Chancellor of the University.

Nagpur.

Dated:

(Dr. V.S. Sapkal)
Vice-Chancellor

One Year Advanced Post Graduate Diploma in Wildlife Conservation and Management

Examination	Maximum Marks	Minimum Pass Marks Per Paper	Aggregate Marks
Paper – I Wildlife conservation and sustainable development	100	35	450
Paper – II Advances in wildlife management	100	35	
Practical	100	35	
Seminars	50	25	
Dissertation	100	35	
TOTAL MARKS			450

Eligibility:

Obtained B.Sc. Degree from any UGC recognized / Other UGC recognized deemed University with any one subject from Life sciences at degree level.

Note: Interested applicants from other faculties shall be scrutinized by their aptitude test and relevant publications in the field.

No. of Seats: 10**Instruction to Theory Paper Setters:**

Each paper will have five questions of 20 marks each. The break-up of each question is as follows:

Q.1 Long Questions	20 Marks
OR	
a) Short Questions	10 Marks
b) Short Questions	10 Marks
Q.2 Long Questions	20 Marks
OR	
a) Short questions	10 Marks
b) Short questions	10 Marks
Q.3 Short Questions	4x5=20 Marks
Q.4 Short Questions	4x5=20 Marks
Q.5 Objective Questions	10x2=20 Marks

Each long question and short question will be from each units as given in the syllabus. Whenever necessary diagrams, illustrations is required.

SYLLABUS
Prescribed UGC Sponsored Innovative
“One Year Advance Post Graduate Diploma in Wildlife Conservation and Management”

The syllabus is based on 6 theory periods each of 50 Min. duration and two practical periods each of 3 periods duration, for two days per week. The students will devote 6 periods duration per week for carrying out dissertation work. The dissertation will have to submit for evaluation as partial fulfillment for award of Advanced P.G. Diploma in Wildlife conservation and Management, by R.T.M Nagpur University, Nagpur.

The examination shall comprise of two theory papers and a practical. Each theory paper shall be of three hours duration and carry 100 marks. The practical shall be of 10 hours duration for two days and carry 100 marks. The students shall have to pass separately in both theory and practical examination.

Paper – I
(Wildlife Conservation and Sustainable Development)

Total Periods : 120

Max. Marks : 100

Unit-I: (Wildlife habitat and conservation)

Habitat ecology- features, Habitat suitability indices (HIS), habitat evaluation procedure.

Forest biome- Distribution & composition of tropical, temperate, and grassland forests in India and faunal composition.

Zoogeography- Zoogeographical regions, barriers, means of dispersal of animals, continental drift.

Biodiversity degradation and conservation- Mega-diversity countries in the world, Reduction of wild diversity, strategy and methods of In-situ and Ex-situ conservation, Biological diversity and future changes in climate. Restoration of degraded habitats. Concepts of Zoo, National parks, Sanctuaries, Biosphere reserves. National parks and sanctuaries in India.

Unit-II: (Growth, succession, eco-development planning & sustainable development)

Growth and history of conservation biology - History of conservation. The IUCN categories of conservation status of species. World Conservation Union (WCU), World Wildlife Fund (WWF), WWF-India, IBWL, NWAP, Red data book.

Succession – Causes, types, process and examples of succession. Inter-specific interaction (positive interaction), Inter-specific competition (negative interaction),

Eco-development planning for wildlife conservation : significance of community participation in eco-development, significance of local and traditional knowledge in conservation, community benefits and value systems governing conservation, Stakeholders in conservation, Gender issues in conservation.

Sustainable development : Basic objectives of environmental Management. The strategy of environmental management. Environmental education. Sustainable use of natural resources. Halting degeneration of biodiversity.

Unit-III: (Population distribution diversity and behaviour of wildlife)

Population dynamics and models of population regulation Competition (Introduction, Intra-specific, Interspecific competition and its effects- regulation of population size,

Mammology and Indian Mammals: An introduction to mammology, Mammalian characteristics, classification. Adaptation in mammals. Behaviour and social organization in mammals, territories, hierarchies, predatory behavior.

Ornithology and Indian Birds: Origin of birds, Morphological and physiological adaptations, Taxonomy, Bio-geographic pattern of Indian avifauna, Sexual selection in birds, Migration, navigation. Conservation of bird habitats.

Indian Herpatofauna: Factors affecting distribution and abundance of amphibian and reptiles of Indian subcontinent. Conservation issues and problems of herpatofauna

Ichthyology and Entomology: Threats to fish biodiversity, conservation status of fish fauna. Forest pests and their life cycle and management. Beneficial and harmful insects.

Unit-IV : (Migration, behaviour, remote sensing and biotechnology.)

Migration: migration in birds- causes of migration, navigation, communication in animals, Types of migrations.

Behaviour: Social behavior in animals, Courtship behavior, parental care in mammals, colouration, Camouflaging, mode of colour change in animals, Industrial melanism, Mimicry, Deceptive appearance, Batesian mimicry, Mullerian mimicry, Aggressive mimicry,

Remote sensing: Principles and practical application of remote sensing techniques like aerial photography and satellite sensing techniques. Use of photographs as maps and in map preparation. Geographical information systems – Application in wildlife use and values of GIS approaches to wildlife ecology and management.

Use of biotechnology in conservation of organisms: Recombinant DNA technology, Gene transfer technology, Transgenic animals, Ethical, legal, social, environmental, and wildlife health issues related to gene technology.

Paper – II **(Advances in Wildlife Management)**

Total Periods : 120

Max. Marks : 100

UNIT – I: (Visitor use and captive management)

Visitor use management and planning in protected areas –

Tourism scenario in India, Revenue collection, domestic and foreign arrivals, Recent trends, Policies and guidelines regarding wildlife tourism and international conventions. Wildlife tourism, significance of ensuring sustainability in tourism. Role of wildlife conservation in rural development.

Captive management :

conservation objectives and principles, world zoo conservation strategy, national zoo policies, Indian regional and global scenario., Zoo management Animal management- Concepts of exhibit designing, designing for conservation breeding and rescue centers, Management of important faunal groups.

UNIT –II: (Wildlife health and integrated management)

Wildlife health management :

Need for wildlife Health Management. Health care management of zoo animals, health care protocols for endangered faunal groups, Determinants of wildlife diseases, transmission and maintenance of infection, disease surveys, field investigations. Infectious diseases of wild animals- bacterial, viral and parasitic diseases. Non-infectious diseases of wildlife: Pesticides induced threats, decline of populations, mortality, diseases of wildlife due to malnutrition.

Integrated wildlife management planning-

National and global management strategies. Cooperative movements for wildlife management. Use of NGO's, private societies and institutions, govt agencies in integrated management.-

UNIT – III: (EIA, RA and wildlife laws)

Environmental and social impact assessment : Role of EIA in society, Status of EIA in India, Salient features of MEF notification, 1994. Checklists of impact assessment. Impact evaluation methodologies

Risk assessment : Risk management cycle, Assessing risks to ecosystems, presentation, EIRA, Development of environmental management strategies.

Policies and laws in wildlife management :

Overview of wildlife policies at the global and country level, Salient features of wildlife laws in India. Legal procedures and prosecution, criminal complaints, Public interest legislation in wildlife cases. Application of Forensic science in wildlife cases, International agencies mandated to support wildlife conservation, Salient features of Wild Life protection Act 1972 (Amended in 1983,1986 and 1991, Forest conservation act, 1980 (Amended in 1988), Water prevention and control of pollution Act, 1974 (Amended in 1988).

UNIT – IV: (Resource conservation and protected area management)

Principles and practices of wildlife and protected area management –

Conservation planning and protected area network in south and south east Asia. Protected Area System Planning : IUCN PA classification- Evaluating protected area management, Natural Heritage conservation, processes and frame work. Conservation of forest (significance of forest, Cause of concern, Indian efforts), Social forestry, forest cover, deforestation and a-forestation.

Natural resources, conservation and management

Range management (grassland management), Water resource and its management, Land use planning and management, conservation of water resources, Wildlife of India and its management, Endangered and rare species of India, Threatened Indian fauna, World's most endangered species, Criteria of IUCN to decide the conservation status of the species, Reasons of depletion of wildlife. National parks and wildlife sanctuaries, National and state animals, Conservation projects, Save Barasingha campaign, Gir Lion Project, Project Tiger, Project crocodile, Project elephant, Project Musk-deer, Project brow-antlered deer, Project lion tailed Macaque,

PRACTICALS AND FIELD VISITS

The practical of this course is based on the management and conservation of wildlife and most of the practical's are to be performed in the fields.

Total Periods : 120

Max. Marks : 100

1. Classification of higher wild animals up to order.
2. Identification and preparation of foot prints of animals.
3. Assessment of potable water quality of water bodies, and quantitative estimation of zooplanktons and phytoplanktons.
4. Exploration of animal diversity from given forest area.
5. Study habitats and nutrition of exotic migratory birds in national park.
6. Collecting data on threatened birds of India. Use of internet for collection of data.
7. Study of management of National park, and reserved forest.
8. Study of cattle diseases
9. Wildlife photography–preparation of wildlife photograph during different animal behaviours.
10. Study of animal foods in given forest area
11. Visit to National park, sanctuary, Zoo and reserved forest in India (any two)
12. Visit to animal projects and study of its management
13. Collection and identification of plant seeds from forest.
14. Exploration of animal diversity from water bodies.
15. Questionnaire survey of rural society by visiting nearby forest lands, decision making and formation of wildlife conservation strategies for rural development.

16. Survey of tribal society and collection of traditional knowledge about wildlife.
17. Survey of forest areas to point out the decline flora and fauna with the help of global positioning meter.
18. Seminars in rural societies for social education.

Distribution of Practical Marks :

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|--|----------|
| 1. Identification, classification and comment on sports 1 to 10 | 20 marks |
| 2. Estimation of water quality parameters any two | 10 marks |
| 3. Preparation of animal foot print | 10 marks |
| 4. Preparation of status report on given protected area | 20 marks |
| 5. Evaluation of given forest area to locate decline flora and fauna | 20 marks |
| 6. Submission of wildlife behaviour photographs | 10 marks |
| 7. Submission of study tour reports and collection | 10 marks |

Total – 100 marks

DISSERTATION

Total Periods : 120

Max. Marks : 100

Research Project

Research / Review/data collection based projects will be assigned to the students on different topics of Wildlife management and conservation. Evaluation of the project will be carried out by the external practical examiner for award of Degree by the University.

SUGGESTED READINGS :

1. **Wildlife Conservation in India : Report of Expert Committee, Indian board of Wildlife- Part – I**, by Indian Board of Wildlife Committee, 1970, 149 pgs, Publ. IUCN.
2. **A Treatise on Wildlife Conservation In India**, by Chanda Das, 2007, 184 pgs., Publ. Daya Books
3. **Wildlife in India**, by V.B.Saharia, 1982, 278 pgs. Publ. Natraj publication.
4. **Concept of Wildlife Management**, by B. B. Hosetti, 2005, 322 pgs., Publ. Daya book publication.
5. **Wildlife of India : Conseration and Management**, by K. C. Agrawal, 2000, 169 pgs, Nidhi publishers India. ISBN- 8190118102, 97881901181001.
6. **National Parks of India**, by Ranvir Singh Bisht. Publication Div. Govt. of India, 1995, ISBN – 8123001789, 9788123001784.
7. **Hand book of National parks, Wildlife Sanctuaries and Biosphere reserves in India**, by S.S.Negi, Indus Publishing house, 2002, ISBN – 8173871280, 9788173871283.
8. **Restoring Wildlife : Ecological Concepts and Practical Applications**, by Michal Morrison, Island Pr. Publication, 2009, ISBN – 9781597264938.
9. **Wildlife and society** : The Science of Human dimensions, by Jerry Vask, Perry Brown, Michel M. and Esther Duke., Island pr. Publication, 2008, ISBN – 9781597264082.

10. **Ecosystem Management** : Applications for Sustainable Forest and Wildlife resources, by Mark S. Boyce, Alan Haney, Yale University press., 199, ISBN – 9780300078589.
11. **Monitoring animal Populations and their Habitats : A Practitioners Guide**, by Benjamin Z., David V. Christopher J. and Brend McComb., CRC Pr. I LIC publication, ISBN – 9781420070552.
12. **Urban Wildlife Habitat** : Landscape Perspective, by Lowell W. Adams, University of Minisota Pr. Publication, 1994, ISBN – 9780816622139.
13. **Diseases in Wild Animals** : Investigation and Management Application, by Gary A. Wobeser, Springer veriang Publication, 2007, 293 pgs. ISBN – 9783540489740.
14. **Wildlife Habitat Management** : Concepts and Application in Forestry, by Brend C. McComb, CRC Pr. I LIC Publicsation, 319 pgs, 2007, ISBN – 9780849374890.
15. **Wildlife tourism**, by David Newsome, Susan Moore, Ross Dowling, Channes View books Publication, 2005, 299 pgs, ISBN – 9781845410063.
16. **Wildlife Tourism** : Impacts, Management and Planning, by Karen Higginbottom, 277 Pgs, 2003, ISBN – 9781863355483.
17. **Endangered Wildlife on the Brink of Extinction**, by, George C. McGavin, Firefly books ltd. 2006, 192 pgs, ISBN – 9781554071838.
18. **Mammology** (5th Edn), by Terry A. Vaughan, James M. Ryan, Nicholas J. Czaplewski, Jones and Bartlett Publication, 2010, 750 pgs, ISBN – 9780763762995.
19. **GPS : Global Positioning System**, by Jeanne Sturn, Rourke Publication Group, 2009, ISBN – 9781606949924.
20. **Understand GPS : Principles and Application (2nd Edn.)**, by Christopher Hegarty and Elliott D. Kaplan, Artech House Publication, 2005, 703 pgs., ISBN – 9781580538947.
21. **Remote Sensing for Biodiversity and Wildlife Management : Synthesis and Applications**, by Steven E. Franklin, Mc Graw- Hill Professional Publication, 2009, 346 pgs., ISBN – 9780071622479.
22. **Icthyology Hand Book**, by B. G. Kapoor, Bhavna Khanna, Narosa Publication House, 2004, 1080 pgs., ISBN – 9788173194177.
23. **Essential Entomology : An Order by Order Introduction**, by George C. McGavin, Richard Lewington, Oxford University Press publication, 2001, ISBN – 9780198500025.
24. **Conserving Asia's Natural Heritage : The Planning and Management of Protected Areas in Indomalayan Relam**, by J.W. Thorsell, IUCN Commission Publicastion, 1985, 9782880328061.
25. **A Text Book of Zoogeography**, by Frank Evoss Beddard, Bibliobazar Publication, 2008, 168 pgs. ISBN – 9780554819594.
26. **Environmental Problem and Solution**, by Asthana and Asthana, S.Chand and Co. NewDelhi, India.
27. **Birds of Indian Subcontinent** : A Field Guide. 2011. By Manakadan R. Ranjit, J.C Daniels, Nikhil Bhopale, Bombay Natural History, Society and OUP.
28. **Handbook on the Birds of India and Pakistan Vol I to 10**, by Salim Ali and S. Dillon. Ripley, OUP India hardcover 3121 pgs, illustrated ISBN -0 0195655060.

29. **Elements of Biotechnology** by R.C. Gupta, S. Chand publ. New Delhi.
30. **An Introduction to zoology, Chordates**, by R.L. Kotpal, Rastogi Publication, Meerut.
31. **An Introduction to zoology, Non-Chordates** by R.L. Kotpal, Rastogi Publication, Meerut.
32. **Taxonomy Analysis in Biology**, by L.A. Abbott et al , 2006, ISBN – 8121105463.
33. **Animal Welfare : Assessing Animal Welfare Standards in Zoological and Recreational Parks in South East Asia**, Author: Govindasamy Agoramoorthy, Year: 2008, ISBN: 9788170355366
34. **Forests, Forestry and Wildlife in North-East India**, Author: S.S. Negi
Year: 2007, ISBN: 9788173872075, [pp. 262]
35. **Wildlife & Disease in India**, Author: S.S. Negi
Year: 2007
ISBN: 9788173872075
[pp. 262]
36. **A Treatise on Wildlife Conservation in India**, Author: Das, Chhanda
Year: 2007
ISBN: 8187616229
[pp. xvi+184]
37. **Western Ghats**, Author: R.J. Ranjit Daniels & Jayashree Vencatesan
Year: 2008
ISBN: 9788129113108
[pp. 168]
38. **Wildlife Tourism and Conservation**, Author: Mallya, Abhilash, Year: 2006
ISBN: 8189012096
39. **Wild India : The Wildlife and Landscapes of India**, Author: Guy Mountfort & Hashim Tyabji, Year:
2007, ISBN: 9788174365859