

Forest Research Institute, India

(Deemed to be University)

Academic Highlights

Natural Resources Management Education for Restoration at FRI





Greetings from Forest Research Institute,



Established in 1906
Oldest Forestry Institute
Spread over 450 hectares
500 Employee, 80 Scientists
8 Research Divisions

Forest Research Institute

Forest Research Institute (FRI), Dehra Dun made a beginning as Forest School established in 1878

Initially named as Imperial Forest Research Institute in 1906, now Forest Research Institute (FRI) Dehradun

It was conferred the status of Deemed University in 1991 under section 3 of the UGC Act 1956.

The Director General, ICFRE: Ex-officio Chancellor
The Director, Forest Research Institute: Ex-officio Vice Chancellor



Academic Programs



Master's Degree Course in Wood Science & Technology (38)

Master's Degree Course in Forestry (38)

Master's Degree Course in Environment Management (38)

Master's Degree Course in Cellulose and Paper Technology (20)

MEA-FRI Scholarships

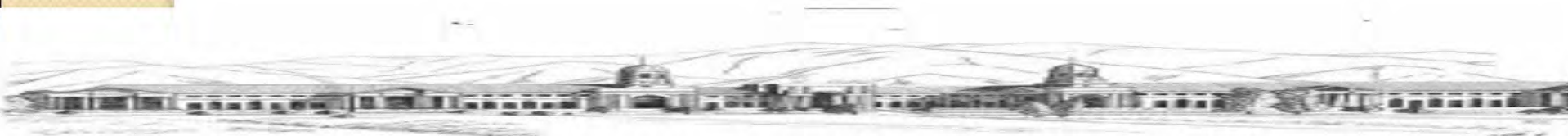
Ministry of External Affairs (MEA), Govt. of India awards 10 Scholarships per year to the students of SAARC nations for pursuing Post-Graduate programmes at Forest Research Institute, India.

Academic year	Bhutan	Nepal	Shri lanka	Afghanistan	Total
2014-16	5	5	-	-	10
2015-17	5	3	1	1	10
2016-18	5	-	-	5	10
2017-19	3	3	-	4	10
2018-20	4	2	-	-	06
2019-21	7	3	-	-	10
2020-22	8	2	-	-	10
2021-23	3	3	-	-	06
2022-24	-	11	-	-	11
Total					93

Choice Based Credit System (CBCS)

Choice Based Credit System has implemented since 2016-2017

- ▶ M.Sc. Forestry- 90 (Total Credit)
- ▶ M.Sc. Environment Management- 89 (Total Credit)
- ▶ M.Sc. Wood Science & Technology- 90 (Total Credit)
- ▶ M.Sc. Cellulose & Paper Technology- 91 (Total Credit)



Academic Features

Program Structure	Credits
Foundation courses	5
Core courses	54
Elective courses	5
Masters thesis	20
Term paper I	2
Term paper II / Industrial attachment	2
Study tour	2
Total	90

Choice of Elective Courses

Forestry	Environment Management	Wood Science and Technology
Forest Genetics and Biotechnology	Natural Resource Conservation and Management	Forest Certification and Nano-technology
Remote Sensing and Geographic Information System	Biodiversity Monitoring and Management	Finger Joints for Efficient Wood Utilization
Wildlife and Habitat Management	Bio Statistics and Computer Application	Vaccum Seasoning Technolog
Sustainable Forest Management	Solid Waste Management	
Agro forestry	Forest, Society and Climate Change	
Forest Pathology	Remote sensing and Geographic Information System Advance and Application in Environmental Management	
Forest Entomology	Environmental Impact Assessment	
Environmental Impact Assessment	Wildlife and Habitat Management	
Plantation Technology	Plant Taxonomy	
Plant Taxonomy	Urban Forestry	
Urban Forestry		

Research Disciplines (24)

- (1) Silviculture
- (2) Forest Seed Technology
- (3) Forest Genetics
- (4) Forest Botany
- (5) Forest Pathology
- (6) Forest Entomology
- (7) Soil Science
- (8) Forest Ecology & Environment
- (9) Forest Management
- (10) Wood Science & Technology
- (11) Chemistry of Forest Products
- (12) Pulp & Paper Technology
- (13) Forestry Extension
- (14) Non Wood Forest Products
- (15) Forest Biotechnology
- (16) Forest Bio Informatics
- (17) Environment Management
- (18) Wildlife Science
- (19) Forest Geo-informatics
- (20) Forest Hydrology
- (21) Plant Pathology
- (22) Application of Information Technology in Forestry
- (23) Climate Change & Forest Influence
- (24) Conservation Social Science



National Presence

INDIA

Himalayan Forest Research Institute
(HFRI), Shimla

ICFRE headquarters
Dehradun

Forest Research Institute
(FRI), Dehradun

Arid Forest Research Institute
(AFRI), Jodhpur

Forest Research Centre for Skill
Development Chhindwara

Tropical Forest Research Institute
(TFRI), Jabalpur

Institute of Wood Science and Technology
(IWST), Bangalore

Institute of Forest Genetics and Tree Breeding
(IFGTB), Coimbatore

Forest Research Centre for Eco-Rehabilitation Prayagraj

Institute of Forest Productivity
Ranchi

Forest Research Centre for
Bamboo & Rattans, Aizawl

Forest Research Center for Livelihood
Extension Agartala

Rain Forest Research Institute
Jorhat

Institute of Forest Biodiversity
Hyderabad

Forest Research Centre for Coastal Ecosystem Visakhapatnam

9 Institutes; 5 Centres



Research Centres

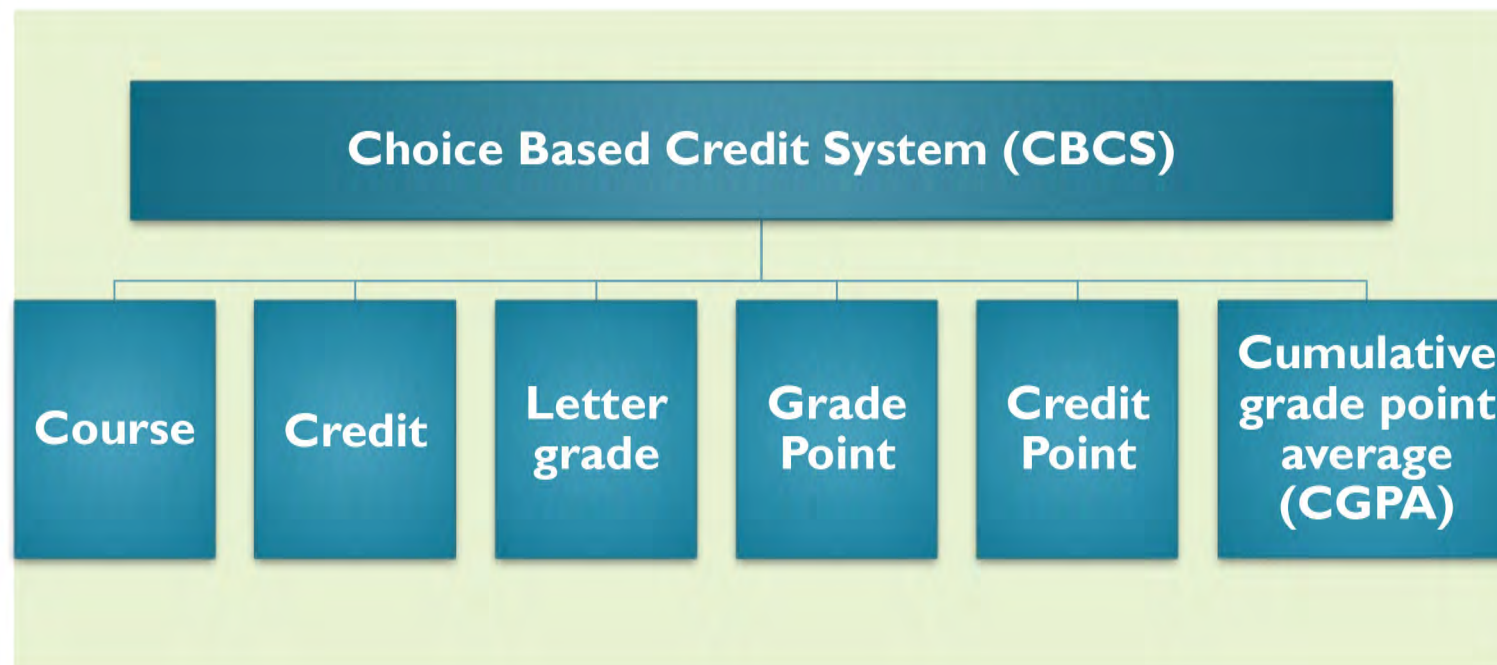
1. Wildlife Institute of India, Dehra Dun
2. Indian Institute of Forest Management, Bhopal, M.P.
3. Tropical Forest Research Institute, Jabalpur
4. Arid Forest Research Institute, Jodhpur
5. Himalayan Forest Research Institute, Shimla
6. Institute of Wood Science & Technology, Bangalore
7. Institute of Rain & Moist Deciduous Forest Research, Jorhat, Assam
8. Institute of Forest Genetics & Tree Breeding, Coimbatore
9. Institute of Forest Productivity, Main Road, Hinoo, Ranchi
10. Forest Research Institute, P.O. New Forest, DehraDun
11. Kerala Forest Research Institute, Kerala
12. Indian Plywood Industries Research & Training Institute, Bangalore
13. Forest Survey of India, Dehra Dun
14. UP Forest Research Institute, Kanpur
15. Indian Institute of Remote Sensing, Dehra Dun
16. G.B. Pant Institute of Himalayan Environment & Development, Almora
17. Central Pulp & Paper Research Institute, Saharanpur
18. Institute of Forest Biodiversity, Hyderabad

Academic Structure

Academic year: July –June

Odd semester: July-Dec

Even semester: Jan-June



Emphasis on Practical Observations



**Slope stabilization of
Koteshwar Dam (THDC)**



Slope stabilization using Mechanical measures



Slope stabilization using mechanical and biological measures

BIOLOGICAL STABILIZATION OF VARUNAVAT LANDSLIDE IN UTTARKASHI



Glimpses of the restored area









Raiwala and Rishikesh Timber Depot (M.Sc. WST)



Industrial attachment



Academic Strength

1. Residential university
2. Choice Based Credit System in its Curriculum
3. Research and teaching blend together
4. Research infrastructure is accessible to students
5. Fully functional placement cell involving students
6. Academic Incubation cell to support and motivate thoughts of students to techno-entrepreneurship



FRI : Repositories of International Repute



Herbarium: Plant Specimens
($>3,50,000$ Accessions)



Xylarium : Wood Samples
($\approx 20,000$ Accessions)



Fungarium: Disease Specimens &
Fruiting Bodies ($12,000$ Accessions)



Entomological Collection
($>23,000$ Insect Species)

FRI - National Forest Library and Information Centre (NFLIC)



The library has a collection of 120000 books, 32000 bounded periodicals and subscribes 118 Indian and 150 foreign periodicals.

Curriculum Revision

CURRICULUM

- **Development**
- **Planning**
- **Transaction**
- **Evaluation**

Stakeholder feedback



Other Universities
/Institution



Board of studies and
Academic council

Continuous Assessment and Evaluation

Components

- a) Attendance
- b) Internal assessment (IA)
- c) Theory
- d) Practical/Experimental learning
- e) Reports writing
(Term paper/Industrial attachment/Master thesis/Study tour)

Placements

- Separate placement provides assistance in placement
- Industries/organizations conduct campus interviews.
- On an average 50-60% of the students get placements through the campus interviews.
- In case of WST & CPT the placement is 100%.
- Students also opt for higher studies in research and teaching.
- Students are also selected in central, state services.



Faculties Involved

2020-2022 batch

Name of Course	Internal Faculty	External Faculty	Total
M.Sc. Forestry	22	06	28
M.Sc. Environment Management	20	12	32
M.Sc. Wood Science and Technology	34	15	49
M.Sc. Cellulose and Paper Technology	13	03	06



Restoration Education in academic programs



M.Sc. Environment Management

Course Structure

Programme Structure

Programme Structure		Credits
Core courses	:	53
Foundation courses	:	5
Elective courses	:	5
Synopsis	:	1
Master's thesis	:	17
Master thesis seminar	:	2
Term paper I	:	2
Term paper II	:	2
Study tour	:	2
Total	:	89

1st Semester Credits

Allotment of credits to different courses

FIRST SEMESTER

Course Code	Course	Credit	
		Theory	Practical
Foundation Course			
ERG 101	Remote Sensing and Geographical Information System	1	1
Core Course			
EFE 111	Fundamentals of Ecology	3	1
EEA 112	Ecosystem Analysis	3	1
EPB 113	Environmental Physics and Biogeochemistry	3	1
ECE 114	Conservation Ecology	3	1
EIA 115	Environmental Impact Assessment	3	1
ETP 116	Term Paper I	2	-
Total credits in first semester		$16^a + 6^b + 2^c = 24$	

2nd Semester Credits

SECOND SEMESTER

Course Code	Course	Credit	
		Theory	Practical
Foundation Course			
ESC 201	Environmental Statistics and Computer Application	2	1
Core Course			
EFM 211	Forestry for Sustainable Management	3	1
ERE 212	Restoration Ecology	3	1
EGF 213	Global Climate Change and Forest	3	1
EFE 214	Forest Economics	2	1
EPM 215	Environmental Pollution Management	3	1
ETP 216	Term Paper II	2	-
Total credits in second semester		$16^a + 6^b + 2^c = 24$	

3rd Semester Credits

THIRD SEMESTER

Course Code	Course	Credit	
		Theory	Practical
Core Course			
EPS 311	Environmental Policy, Law and Sociology	3	1
EEM 312	Environmental Microbiology	3	1
EFC 313	Forest Certification	2	-
EDM 314	Disaster Management	3	1
EST 315	Study Tour	2	-
Elective course 5 Credits			
ENM 321	Natural Resource Conservation and Management	4	1
EBM 322	Bio Diversity Monitoring and Management	4	1
EBC 323	Bio Statistics and Computer Application	4	1
ESM 324	Solid Waste Management	4	1
EPC 325	Forest, Society and Climate Change	4	1
ERG 326	Remote sensing and Geographic Information System- Advance and Application in Environmental Management	4	1
EIA 327	Environmental Impact Assessment	4	1
EWH 328	Wildlife and Habitat Management	3	2
PTN 330	Plant Taxonomy	2	3
UFT 331	Urban Forestry	3	2
Total credits in third semester		$11^a + 3^b + 5^c + 2^d = 21$	

4th Semester Credits

FOURTH – SEMESTER

Code	Particulars	Credit
ESY 441	Synopsis	1
EMT 442	Master's Thesis	17
ETS 443	Master Thesis Seminar	2
Total		20

a- Theory, **b-** Practical, **c-** Term paper, **d-** Study tour, **e-** Elective paper. One lecture credit comprises of one hour teaching of the course in a week, while one practical credit comprises of two hours of practical/assignment work in a week

M.Sc. Environment Management - Second semester

SUBJECT - RESTORATION ECOLOGY (ERE – 212) : Credit 3 + 1

LEARNING OBJECTIVES: To impart knowledge about restoration of degraded land, public participation in conservation and restoration and concept of sustainable development

MODULE I - INTRODUCTION

- Definition, aims and objectives of restoration, principles, concepts and strategies (long term vs. short term), physical, chemical and biological restoration, role of ecological principles in restoration, holistic approach in restoration

• **MODULE II RESTORATION OF NATURAL AND DEGRADED RESOURCES**

- Restoration of degraded lands/waste lands, range land, forest, river corridor, water resources, mine spoils and wet lands
- Methods of soil and water conservation for reclamation of degraded land. The concept of sustainable development, Environmental degradation and conservation issues, Global change and sustainable issues.

MODULE III MICROBIAL MANAGEMENT

- Microbial management and biofertilizers for restoring soil fertility. Biotechnology for restoration of degraded land.

MODULE IV PUBLIC PARTICIPATION IN RESTORATION

- Role of public participation, government agencies and NGOs in conservation and restoration, environmental education and its role in conservation and restoration

PRACTICALS

- Charting and Mapping of Vegetation,
- Root Density
- Fertility Rejuvenation Index
- Infiltration rate
- Field visit to restoration sites

M.Sc. FORESTRY : SECOND SEMESTER

FLM 212 - LANDSCAPE APPROACH TO MANAGEMENT : Credit 2 + 1

- **LEARNING OBJECTIVE:** The objective of the course is to create the awareness regarding soil and water conservation and their management practices.
- **MODULE II LANDSCAPE MANAGEMENT**
- Concept and characteristics of watershed management, their role and importance in management plan, restoration of deteriorated watershed.

Thank you



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