

**Department of Higher
Education U.P. Government,
Lucknow**



**National Education Policy-2020
Common Minimum Syllabus for all U.P. State
Universities and Colleges for first Three Years of
Higher Education(UG)**

Of

Fisheries

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01/01/2022

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01.01.2022



National Education Policy-2020
Common Minimum Syllabus for all U.P.State Universities/Colleges
Subject: Fisheries

Name	Designation	Affiliation
Mrs. Monika S.Garg. (I.A.S.) Chairperson Steering committee)	Additional Chief Secretary	Dept. of Higher Education U.P., Lucknow
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Prof. Hare Krishna	Professor Dept. of Statistics	CCS University, U.P.
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Supervisory Committee-Science Faculty		
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Dr. Santosh Singh	Dean, Dept. of Agriculture	Mahatma Gandhi Kashi Vidhyapeeth Varanasi
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Dr. Sanjay Jain	Associate Professor, Dept. of Statictics	St. John's College, Agra

Syllabus Developed by:

S.no.	Name	Designation	Department	College/University
1	Dr. Kayam Singh,	Retd. Associate Professor	Deptt. of Fishries,	BVRI Bichpuri, Agra.
2	Dr. Vijay Kumar Singh,	Associate Professor	Deptt. of Zoology,	Agra College, Agra.
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4	Dr. Praveen Ojha	Assistant Professor	Department of Zoology	K R College, Mathura.

**Department of Higher Education
U.P. Government, Lucknow**

**National Educational Policy-2020
Common Minimum Syllabus for all U.P. State Universities**

Semester-wise Titles of the Papers in B.A. Fisheries

Year	Sem.	Course Code	Paper Title	Theory/Practical	Credits
1	I	A490101T	Fish Morphology	T	04
		A490102P	Morphological study of Local fishes	P	02
	II	A490201T	Fish Taxonomy	T	04
		A490202P	Fish Identification	P	02
2	III	A490301T	Fish Ecology (Limnology)	T	04
		A490302P	Limnological Study of a Fish Pond/Farm	P	02
	IV	A490401T	Fish Culture	T	04
		A490402P	Study of Indian Major Carps and Exotic Carps	P	02
3	V	A490501T	Capture Fisheries	T	04
		A490502T	Fish Breeding Technology	T	04
		A490503P	Identification of Fish and record making	P	02
	VI	A490601T	Aquaculture	T	04
		A490602T	Fisheries Administration and Rural Development	T	04
		A490603P	Study of Fish Projects	P	02

Proposed Year wise Structure, of UG Program in B.A. Fisheries

Year	Sem	Course Code	Paper Title	Credits	Teaching Hours
1 Certificate Course in Fisheries Resource Management	I	A490101T	Fish Morphology	04	60
		A490102P	Morphological study of Local fishes	02	60
	II	A490201T	Fish Taxonomy	04	60
		A490202P	Fish Identification	02	60
2 Diploma course in Aquatic Environment Management	III	A490301T	Fish Ecology (Limnology)	04	60
		A490302P	Limnological Study of a Fish Pond/Farm	02	60
	IV	A490401T	Fish Culture	04	60
		A490402P	Study of Indian Major Carps and Exotic Carps	02	60
3 Degree in Bachelor of Arts in Fisheries	V	A490501T	Capture Fisheries	04	60
		A490502T	Fish Breeding Technology	04	60
		A490503P	Identification of Fish and record making	02	60
	VI	A490601T	Aquaculture	04	60
		A490602T	Fisheries Administration and Rural Development	04	60
		A490603P	Study of Fish Projects	02	60

Programme/Class: Certificate		Year: First	Semester: First
Subject: Fisheries			
Course Code: A490101T		Course Title: Fish Morphology	
Course outcomes: The student at the completion of the course will be able to understand fish and fisheries.			
Credits: 4		Core: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0			
Unit	Topics	No. of Lectures (1 hr duration)	
Part I			
I	<ul style="list-style-type: none"> • Study of Indian ancient fish science, scientists and traditions of fisheries • Introduction of Fish. • Fish structure • Fish Morphology. 	8	
II	<ul style="list-style-type: none"> • Fishery as vocational subject • Importance of Fishery. Fishery as • Source of employment. • Economic importance of fishery. 	8	
III	<ul style="list-style-type: none"> • Study of Fish skin structure and functions, • Type of scales • Study of fish scales, importance of scales, • Modification of scales. 	7	
IV	<ul style="list-style-type: none"> • Colouration of fish. • Sources of colouration • Benefits of colouration 	7	
Part II			
V	<ul style="list-style-type: none"> • Fish Locomotion, • Migration Factors • Advantage of migration • Types of fins, • Fish Locomotory organs. 	8	
VI	<ul style="list-style-type: none"> • Food and alimentary canal. • Feeding habits of Fishes. Types based on food contents. • Food cycle in nature 	7	
VII	<ul style="list-style-type: none"> • Respiration, Types of respiratory organs. • Structure of gills. • Mechanism of respiration 	8	
VIII	<ul style="list-style-type: none"> • Reproduction in fishes • Male reproductive organs • Female reproductive organs 	7	

- Parental care.

Suggested Readings:

1. Fish and Fisheries. Written by Vol. I
Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur
2. Fish & Fisheries written by S.D.Kulshratha Vol II
ADB Publishing House Jaipur. (Hindi medium)
3. An Introduction to fishes. Written by S.S.Khanna. English medium
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi.
English Medium.
5. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट,
नई दिल्ली -110012
6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium).
7. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi

This course can be opted as an elective by the students of following subjects: Open for all
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Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
Orientation assignment 05 marks for Class Interaction
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Course prerequisites: To study this course, a student must have had the subject in class/12th/
certificate/diploma.
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Suggested equivalent online courses:
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Further Suggestions:
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At the End of the whole syllabus any remarks/ suggestions:
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Programme/Class: Certificate	Year: First	Semester: First
Subject: Fisheries		
Course Code: A490102P	Course Title: Morphological study of Local fishes	
Course outcomes: The student at the completion of the course will be able to identify the fishes.		
Credits: 2	Core: Compulsory	
Max. Marks: 25+75	Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 0-0-2		
Unit	Topics	No. of Lectures (2 hrs duration)
Part I		
I	Morphological study of Local fishes. Fish identification.	7
II	Preparation or making of file of local Fish studied.	7
III	Dissection of fish to show or study of Internal organs, like, alimentary canal, reproductive organs, slide study of scales etc.	7
IV	Viva.	9
Suggested Readings:		
1. Fish and Fisheries. Written by Vol. I , Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur		
2. Fish & Fisheries written by S.D.Kulshratha Vol II ADB Publishing House Jaipur. (Hindi medium)		
3. An Introduction to fishes. Written by S.S.Khanna. English medium		
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi. English Medium.		
5. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट, नई दिल्ली -110012		
6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium)		
7. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi		
This course can be opted as an elective by the students of following subjects: Open for all		
Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research Orientation assignment 05 marks for Class Interaction		

Course prerequisites: To study this course, a student must have had the subject in class/12th/ certificate/diploma.

Suggested equivalent online courses:

Further Suggestions:

Programme/Class: Certificate		Year: First	Semester: Second
Subject: Fisheries			
Course Code: A490201T		Course Title: Fish Taxonomy	
Course outcomes: The student at the completion of the course will be able to classify and identify the various species of fisheries.			
Credits: 4		Core: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0			
Unit	Topics	No. of Lectures (1 hr duration)	
	Part I		
I	<ul style="list-style-type: none"> • Meaning of fish Taxonomy • General classification of Fishes • Importance of Fish classification 	8	
II	<ul style="list-style-type: none"> • Evolution of Fishes. • Super class Agnathas Explanation in detail • Define ostracoderms • Define cyclostomes • Explain Hag fishes • Explain Lampreys 	8	
III	<ul style="list-style-type: none"> • Study of superclass Gnathostomata • General characters of anathostomes • Define Placoderms. 	7	
IV	<ul style="list-style-type: none"> • Study of class Elasmobranch fishes. • General characters of class elasmobranchii • Fish of commercial importance of the class Elasmobranch. • Special characters of class elasmobranchii. 	7	
	Part II		
V	<ul style="list-style-type: none"> • General characters of class Holocephali . • Special characters of Holocephali • Economic importance of the class 	8	
VI	<ul style="list-style-type: none"> • General characters of Dipnoi • Special characters of class Dipnoi or Lung Fishes. • Distribution of lung Fishes. • Economic importance of Lung fishes. 	7	
VII	<ul style="list-style-type: none"> • General characters of Teleostomi class. • Classify teleostomi group of fishes. • Define Modern group or class of fishes. 	8	
VIII	<ul style="list-style-type: none"> • Define carp -fishes • Define cat fishes 	7	

- General characters of commercial fishes.

Suggested Readings:

1. Fish and Fisheries. Written by Vol. I
Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur
2. Fish & Fisheries written by S.D.Kulshratha Vol II
ADB Publishing House Jaipur. (Hindi medium)
3. An Introduction to fishes. Written by S.S.Khanna. English medium
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi.
English Medium.
5. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट,
नई दिल्ली -110012
6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium)
7. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi

This course can be opted as an elective by the students of following subjects: Open for all
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Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
Orientation assignment 05 marks for Class Interaction

Course prerequisites: To study this course, a student must have had the subject in class/12th/
certificate/diploma.

Suggested equivalent online courses:
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Further Suggestions:
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Programme/Class: Certificate	Year: First	Semester: Second
Subject: Fisheries		
Course Code: A490202P	Course Title: Fish Identification	
Course outcomes: The student at the completion of the course will be able to identify the fishes present in various water bodies.		
Credits: 2	Core: Compulsory	
Max. Marks: 25+75	Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 0-0-2		
Unit	Topics	No. of Lectures(2 hrs duration)
	Part I	
I	Study of common river fishes.	7
II	Study of Marine fishes	7
III	Making of record.	7
IV	Viva.	9
Suggested Readings:		
8.	Fish and Fisheries. Written by Vol. I Dr. S.D.Kulshrestha. (Hindi medium). ABD Publishers Jaipur	
9.	Fish & Fisheries written by S.D.Kulshratha Vol II ADB Publishing House Jaipur. (Hindi medium)	
10.	An Introduction to fishes. Written by S.S.Khanna. English medium	
11.	A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi. English Medium.	
12.	मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट, नई दिल्ली -110012	
13.	Fishes. Written by Mary Chandy. National Book Trust India (English Medium).	
14.	Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi	
This course can be opted as an elective by the students of following subjects: Open for all		

Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
Orientation assignment 05 marks for Class Interaction

Course prerequisites: To study this course, a student must have had the subject in class/12th/
certificate/diploma.

Suggested equivalent online courses:

Further Suggestions:

Programme/Class: Diploma	Year: Second	Semester: Third
Subject: Fisheries		
Course Code: A490301T	Course Title: Fish Ecology (Limnology)	
Course outcomes: The student at the completion of the course will be able to maintain fish environment.		
Credits: 4	Core: Compulsory	
Max. Marks: 25+75	Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0		
Unit	Topics	No. of Lectures(1 hr duration)
Part I		
I	<ul style="list-style-type: none"> • Meaning of Environment. • Different components of environment of Fish Pond. Abiotic Factors of pond. • Physical factors of Pond as Depth of pond, Temperature of Pond, • Sun/solar energy/Light, Turbidity, Transparency • Importance of Physical factors in fish Culture. 	8
II	<ul style="list-style-type: none"> • Meaning and types of chemical factors of Fish Pond importance of chemical factors in fish Pond environment. • Types of chemical factors as • Dissolved O₂, Dissolved CO₂, or Dissolved Carbon di oxide, PH, Inorganic Salts, Nutrients, Minerals. • Role of chemical factors in Pond environment. • Affects of chemicals on plant & animal life. 	8
III	<ul style="list-style-type: none"> • Meaning and types of biological properties of Fish Pond • Plants found in a Fishery Pond or Types of Aquatic plant of a fish Pond • Types of animals found in a fishery pond. • Relationship between aquatic plants & aquatic animals • Biological properties of a fish Pond. 	7
IV	<ul style="list-style-type: none"> • Planktonology, Definition of Planktons Zooplanktons, Phytoplanktons • Nectons, Algal blooms, Swarms • Role or importance. 	7
Part II		
V	<ul style="list-style-type: none"> • Weeds of Pond. • Definition of weeds • Weeds Management of fish pond, • Demerits/Merits of weeds 	8
VI	<ul style="list-style-type: none"> • Life of fish and impact of its environment. • Stress created by environment & Fish life. • Co-relations of Temperature, light, dissolved gases O₂, CO₂, PH of pond water, Bicarbonates and Acidity 	7

VII	<ul style="list-style-type: none"> • Pond construction Methodology Sight selection of Pond. Soil Properties • Water quality. Water resources. 	8
VIII	<ul style="list-style-type: none"> • Types of Ponds and their ecological properties. • Hapa, Nursery ponds, rearing • Ponds, Stocking ponds , Breeding • Ponds, Temporary ponds, Prenticed Ponds. 	7

Suggested Readings:

1. Fish and Fisheries. Written by Vol. I
Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur
2. Fish & Fisheries written by S.D.Kulshratha Vol II
ADB Publishing House Jaipur. (Hindi medium)
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Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
Orientation assignment 05 marks for Class Interaction

Course prerequisites: To study this course, a student must have had the subject in class/12th/
certificate/diploma.
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Suggested equivalent online courses:
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Further Suggestions:
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Programme/Class: Diploma	Year: Second	Semester: Third
Subject: Fisheries		
Course Code: A490302P	Course Title: Limnological Study of a Fish Pond/Farm	
Course outcomes: The student at the completion of the course will be able to study the limnological parameters required for fisheries.		
Credits: 2	Core: Compulsory	
Max. Marks: 25+75	Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 0-0-2		
Unit	Topics	No. of Lectures(2 hrs duration)
	Part I	
I	Study of a Fish Pond/Farm.	7
II	Making a report on physical Parameters of fish pond project	7
III	Making a report on weeds of the pond Record,	7
IV	Viva	9
Suggested Readings:		
1. Fish and Fisheries. Written by Vol. I Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur		
2. Fish & Fisheries written by S.D.Kulshratha Vol II ADB Publishing House Jaipur. (Hindi medium)		
3. An Introduction to fishes. Written by S.S.Khanna. English medium		
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi. English Medium.		
5. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट, नई दिल्ली -110012		
6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium).		
7. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi		
This course can be opted as an elective by the students of following subjects: Open for all		

Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
Orientation assignment 05 marks for Class Interaction

Course prerequisites: To study this course, a student must have had the subject in class/12th/
certificate/diploma.

Suggested equivalent online courses:

Further Suggestions:

Programme/Class: Diploma	Year: Second	Semester: Fourth
Subject: Fisheries		
Course Code: A490401T	Course Title: Fish Culture	
Course outcomes: The student at the completion of the course will be able to culture and forming of fishes.		
Credits: 4	Core: Compulsory	
Max. Marks: 25+75	Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0		
Unit	Topics	No. of Lectures(1 hr duration)
	Part I	
I	<ul style="list-style-type: none"> Basic principals of fish culture / fish farming Primary Producer, Secondary Producer, Tertiary producer of fish pond carbon cycle, Nitrogen cycle, Phosphorous cycle of Pond. 	8
II	<ul style="list-style-type: none"> Culturable fishes of India (Major carps), Types of culture. Monoculture, Polyculture, Mixed Farming Brief Idea on culturable fishes in India, Indigenous Exotic etc. Characteristics of culturable in a cultured animal like reproductive behaviour, Food habits. Team behaviour.. 	8
III	<ul style="list-style-type: none"> Food and feeding of culturable fishes food of carp fry, Food of carp fingerlings, Food of yearlings and adults. Artificial food feeding of carps. 	7
IV	<ul style="list-style-type: none"> Fish culture in paddy fields. Fish culture in man made lakes. Sewage fed Fisheries Technology, sewage treatment plant study. Science or method of sewage. Filtration. 	7
	Part II	
V	Exotic fishes . Definition. Types of fishes introduced in India. Cultural or farming Importance. Indian and Exotic fish composite farming.	8
VI	Integrated fish farming. Fish cum Poultry farming Fish cum Horticulture Fish cum duck Culture, Fish cum prawn culture, Fish cum dairy farming.	7
VII	Fish seed, Definition, Fish Seed collection from Natural resources. Rivers etc. New Technology in seed production, Chinese Hatcheries, Modern Fish Hatcheries, CIFED- 80 Model CIFED – 81 model.	8
VIII	Economics of fish culture and integrated fish farming Economics of Composite fish Farming , Fish cum paddy culture.	7

Suggested Readings:

1. Fish and Fisheries. Written by Vol. I
Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur
2. Fish & Fisheries written by S.D.Kulshratha Vol II
ADB Publishing House Jaipur. (Hindi medium)
3. An Introduction to fishes. Written by S.S.Khanna. English medium
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English Medium.
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7. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi

This course can be opted as an elective by the students of following subjects: Open for all
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Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
Orientation assignment 05 marks for Class Interaction

Course prerequisites: To study this course, a student must have had the subject in class/12th/
certificate/diploma.
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Suggested equivalent online courses:
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Further Suggestions:
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Programme/Class: Diploma	Year: Second	Semester: Fourth
Subject: Fisheries		
Course Code: A490402P	Course Title: Study of Indian Major Carps and Exotic Carps	
Course outcomes: The student at the completion of the course will be able to identify various carps fishes found in India.		
Credits: 2	Core: Compulsory	
Max. Marks: 25+75	Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 0-0-2		
Unit	Topics	No. of Lectures(2 hrs duration)
	Part I	
I	Making records of Indian major carps.	7
II	Preparing records of Exotic fishes	7
III	Practical Record	7
IV	Viva	9
Suggested Readings:		
1. Fish and Fisheries. Written by Vol. I Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur		
2. Fish & Fisheries written by S.D.Kulshrestha Vol II ADB Publishing House Jaipur. (Hindi medium)		
3. An Introduction to fishes. Written by S.S.Khanna. English medium		
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi. English Medium.		
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6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium)		
7. Introduction to Fishes by H.S. Bhumrah, Kavita Juneja. Anmol Publication New Delhi		
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Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research Orientation assignment 05 marks for Class Interaction		
Course prerequisites: To study this course, a student must have had the subject in class/12 th / certificate/diploma.		

Suggested equivalent online courses:

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Further Suggestions:

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Programme/Class: Degree	Year: Third	Semester: Fifth
Subject: Fisheries		
Course Code: A490501T	Course Title: Capture Fisheries	
Course outcomes: The student at the completion of the course will be expert in management of capture fisheries, fish health management and fish preservation.		
Credits: 4	Core: Compulsory	
Max. Marks: 25+75	Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0		
Unit	Topics	No. of Lectures(1 hr duration)
Part I		
I	Concept or Meaning of capture Fisheries. Capture Fishery resources of India. Fresh Water capture resources of India. Riverine resources of India, Marine water resources of India History of capture fishery Importance of capture fishery capture Fishery and Employment.	8
II	Methods of fishing and fishing gears. Historical background of capture fishery. Fishing Without gear. Fishing gears , Fishing old methods. Modern methods of fish capturing Fish screens, Nets, Electrical fishing, Nets Preservation & safety.	8
III	Fish Preservation and Processing. Principals of fish Preservation. Methods of Fish Processing -old methods of fish Preservation. Modern Technology of Fish Preservation Causes of fish rot, fish By- Products.	7
IV	Fish disease and control. Common disease of fish. Disease caused by-Bacteria, Virus, Fungus, Nematodes etc.	7
Part II		
V	Disease caused by environmental stress as Temperature, light, Dissolved gases as O ₂ & CO ₂ Ph, Acidity, Nutritional deficiency disease.	8
VI	Preparation and maintenance of fish Aquarium Benefits of fish aquarium. Making of fish aquarium. Aquarium plants. Aquarium fishes. Aquarium care. Food of aquarium fishes Aquarium and health. Aquarium business.	7
VII	Plans to develop capture fishery of India present status of capture Fishery. Modern Technology employed in capture fishery. Need of capture resources conservation due to over exploitation problems of capture resources.	8
VIII	Fishery Extension. Methods employed to develop fishery sector, importance of fishery education.	7

Suggested Readings:

1. Fish and Fisheries. Written by Vol. I
Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur
2. Fish & Fisheries written by S.D.Kulshratha Vol II
ADB Publishing House Jaipur. (Hindi medium)
3. An Introduction to fishes. Written by S.S.Khanna. English medium
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi.
English Medium.
5. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट,
नई दिल्ली -110012
6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium)
7. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi

This course can be opted as an elective by the students of following subjects: Open for all
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Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
Orientation assignment 05 marks for Class Interaction

Course prerequisites: To study this course, a student must have had the subject in class/12th/
certificate/diploma.
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Suggested equivalent online courses:
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Further Suggestions:
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Programme/Class: Degree	Year: Third	Semester: Fifth
Subject: Fisheries		
Course Code: A490502T	Course Title: Fish Breeding Technology	
Course outcomes: The student at the completion of the course will be able in fish breeding technologies.		
Credits: 4		Core: Compulsory
Max. Marks: 25+75		Min. Passing Marks: as per rules
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0		
Unit	Topics	No. of Lectures (1 hr duration)
Part I		
I	Types of Fish breeding, Natural Fish breeding habits of major Indian carps, Catla, Labeo, cirrhina mrigala.	8
II	Bund breeding of Indian major carps . Dry Bundh breeding Wet Bundh Bundh breeding . Bundh breeding Techniques Factors influencing spawning of carps.	8
III	Fish seed collection from Natural resources Techniques of Fish seed collection. Traditional Methods. Modern methods.	7
IV	Construction of Fish seed farm criteria for site collection Topography, Soil type, Water supply	7
Part II		
V	Different Ponds used in Fishery. And their importance. Nursery Ponds. Rearing ponds. Stocking ponds. Feeding pits. Hapa Embankment	8
VI	Fish seed Production Modern Technology Induced breeding or Forced breeding Techniques.	7
VII	Environment of survival of fish & Sparm. Temperature, Dissolved Oxygen, PH, Silt management	8
VIII	Hatchery.Circular cistern Hatcheries. Fish Hatcheries and breeding unit. CIEF D-80 Model. Modern carp Hatchery, (CIFED-81-MODEL)	7
Suggested Readings:		
1. Fish and Fisheries. Written by Vol. I Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur		
2. Fish & Fisheries written by S.D.Kulshratha Vol II ADB Publishing House Jaipur. (Hindi medium)		

3. An Introduction to fishes. Written by S.S.Khanna. English medium
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi. English Medium.
5. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट, नई दिल्ली -110012
6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium)
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Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
 Orientation assignment 05 marks for Class Interaction

Course prerequisites: To study this course, a student must have had the subject in class/12th/
 certificate/diploma.

Suggested equivalent online courses:

Further Suggestions:

Programme/Class: Degree	Year: Third	Semester: Fifth
Subject: Fisheries		
Course Code: A490503P	Course Title: Identification of Fish and record making	
Course outcomes: The student at the completion of the course will be able to identify fishes and maintenance of records.		
Credits: 2		Core: Compulsory
Max. Marks: 25+75		Min. Passing Marks: as per rules
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 0-0-2		
Unit	Topics	No. of Lectures(2 hrs duration)
	Part I	
I	Aquarium Preparation. Chart formation.	7
II	Aquatic fishes identification and Diagram making	7
III	Aquatic plants Identification and diagramme formation Record Making	7
IV	Viva, Record submission	9
Suggested Readings:		
1. Fish and Fisheries. Written by Vol. I Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur		
2. Fish & Fisheries written by S.D.Kulshratha Vol II ADB Publishing House Jaipur. (Hindi medium)		
3. An Introduction to fishes. Written by S.S.Khanna. English medium		
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi. English Medium.		
5. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट, नई दिल्ली -110012		
6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium)		
7. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi		
This course can be opted as an elective by the students of following subjects: Open for all		
Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research Orientation assignment 05 marks for Class Interaction		

Course prerequisites: To study this course, a student must have had the subject in class/12th/ certificate/diploma.

Suggested equivalent online courses:

Further Suggestions:

Topic	Duration	Notes
Part I		
Part II		
Part III		
Part IV		
Part V		
Part VI		
Part VII		
Part VIII		
Part IX		
Part X		
Part XI		
Part XII		
Part XIII		
Part XIV		
Part XV		
Part XVI		
Part XVII		
Part XVIII		
Part XIX		
Part XX		
Part XXI		
Part XXII		
Part XXIII		
Part XXIV		
Part XXV		
Part XXVI		
Part XXVII		
Part XXVIII		
Part XXIX		
Part XXX		

Programme/Class: Degree		Year: Third	Semester: Sixth
Subject: Fisheries			
Course Code: A490601T		Course Title: Aquaculture	
Course outcomes: The student at the completion of the course will be expert in aqua culture.			
Credits: 4		Core: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0			
Unit	Topics		No. of Lectures(1 hr duration)
	Part I		
I	<ul style="list-style-type: none"> • Principals of Aquaculture • Scope of aquaculture. 		8
II	<ul style="list-style-type: none"> • Fresh water aquaculture 		8
III	<ul style="list-style-type: none"> • Ornamental Fish production & management. 		7
IV	<ul style="list-style-type: none"> • Mass Production of Fish Food organism. 		7
	Part II		
V	<ul style="list-style-type: none"> • Fish Nutrition and artificial food 		8
VI	<ul style="list-style-type: none"> • Coastal aquaculture & Mariculture. 		7
VII	<ul style="list-style-type: none"> • Prawn culture & Technology. 		8
VIII	<ul style="list-style-type: none"> • Aquaculture & animal care. 		7
Suggested Readings:			
1. Fish and Fisheries. Written by Vol. I Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur			
2. Fish & Fisheries written by S.D.Kulshratha Vol II ADB Publishing House Jaipur. (Hindi medium)			
3. An Introduction to fishes. Written by S.S.Khanna. English medium			
4. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi. English Medium.			
5. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट,			

नई दिल्ली -110012

6. Fishes. Written by Mary Chandy. National Book Trust India (English Medium)
7. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi

This course can be opted as an elective by the students of following subjects: Open for all
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Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research
Orientation assignment 05 marks for Class Interaction

Course prerequisites: To study this course, a student must have had the subject in class/12th/
certificate/diploma.
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Suggested equivalent online courses:
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Further Suggestions:
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Programme/Class: Degree	Year: Third	Semester: Sixth
Subject: Fisheries		
Course Code: A490602T	Course Title: Fisheries Administration and Rural Development	
Course outcomes: The student at the completion of the course will be able to maintain fisheries administration and rural development.		
Credits: 4		Core: Compulsory
Max. Marks: 25+75		Min. Passing Marks: as per rules
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0		
Unit	Topics	No. of Lectures(1 hr duration)
Part I		
I	<ul style="list-style-type: none"> • Meaning of Fishery Administration • Importance of Fishery administration. • Structure of Fishery administration. • Central Govt. fishery infrastructure and objectives. Financial and Technical support to states. Role of central fishery ministry. 	8
II	<ul style="list-style-type: none"> • State Fishery administration. • Infrastructure of state fishery administration administrative hierarchy from state to Block or panchayat level. Objective of state fishery administration, Problems of Administration. 	8
III	<ul style="list-style-type: none"> • Role of Fisheries in rural development of India Government schemes for rural Development problems in Fishery development, solutions for fishery development Sector. 	7
IV	<ul style="list-style-type: none"> • Role of fishery education for rural development. Problems & prospects of fishery Education. Need of Fishery research to develop Fishery sector. Present status Problems and Prospects, Fishery Technical Institutes of India Different Training Institutes of Fisheries sponsored or funded by central & State governments, administrative legislative structures 	7
Part II		
V	<ul style="list-style-type: none"> • Role of Planning department to develop Fishery Sector Basics for Fishery planning (Survey etc) . Resource planning , Field planning, Human resource & training Financial Support. 	8
VI	<ul style="list-style-type: none"> • Fishery Marketing , Types of Fish market. Regulated & unregulated market. Local Market, Regional, National & Global market . Role of Transport facilities in Fish Marketing . Role of store facilities Govt. support scheme for Fishery marketing. Role of Co-operative marketing & benefits. 	7
VII	<ul style="list-style-type: none"> • Socio- Economics of Fisheries. Status of Fisherman and Fishermen Community of India. Problems of Fishery Communities. Define 	8

	Economic problems of Fishery Communities & Scheme of Eradication	
VIII	<ul style="list-style-type: none"> Role of (FFD'Cts) Fish Farmers development agencies Role of KVK'S for Fishery Development Structure of KVK's . Objective of KVK's Structure of FFDA. Structure of MFFDA. (Marine fish farmers development Agencies.) 	7
Suggested Readings:		
15. Fish and Fisheries. Written by Vol. I Dr. S.D.Kulshrestha. (Hindi medium.). ABD Publishers Jaipur		
16. Fish & Fisheries written by S.D.Kulshratha Vol II ADB Publishing House Jaipur. (Hindi medium)		
17. An Introduction to fishes. Written by S.S.Khanna. English medium		
18. A Hand book of Fish Farming by S.C. Agrawal. Narendra Publishing House, Delhi. English Medium.		
19. मछली पालन एक उद्योग, लेखक डॉ० विश्व रमण प्रसाद सिन्हा, कृषि अनुसंधान, पूसा गेट, नई दिल्ली -110012		
20. Fishes. Written by Mary Chandy. National Book Trust India (English Medium)		
21. Introduction to Fishes by H.S. Bhumrah, Kavita Junea. Anmol Publication New Delhi		
Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research Orientation assignment 05 marks for Class Interaction		
Course prerequisites: To study this course, a student must have had the subject in class/12 th / certificate/diploma.		
Suggested equivalent online courses:		
Further Suggestions:		

Programme/Class: Degree	Year: Third	Semester: Sixth
Subject: Fisheries		
Course Code: A490603P	Course Title: Study of Fish Projects	
Course outcomes: The student at the completion of the course will be able to study and prepare various projects related to fisheries and its production.		
Credits: 2	Core: Compulsory	
Max. Marks: 25+75	Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 0-0-2		
Unit	Topics	No. of Lectures (2 hrs duration)
	Part I	
I	Project Formation Making a project on Newly developed fish Farm, with special reference to cost incurred.	7
II	A survey project report of a government Fish Farm Located near Bichpuri campus at Laramada.	7
III	A survey project report of a government sewage. Treatment plant Located near BVRI, Bichpuri campus.	7
IV	Making a project on Fishery farm (Lay-out.)	9
This course can be opted as an elective by the students of following subjects: Open for all		
Suggested Continuous Evaluation Methods: 20 marks for Test / Quiz / Assignment / Seminar/ Research Orientation assignment 05 marks for Class Interaction		
Course prerequisites: To study this course, a student must have had the subject in class/12 th / certificate/diploma.		
Suggested equivalent online courses:		
Further Suggestions:		