DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Sci./B.Sc. & M.Sc. Syll./5/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Science the Academic Council at its meeting held on 30-05-2015 has accepted the **revised semester-wise syllabi as mentioned against their names in the Faculty of Science as under** :-

Sr. No.	Name of the Subject	Semester
[1]	B.Sc. Computer Science Degree Course	III & IV
[2]	B.Sc. Information Technology Degree Course	III & IV
[3]	B.C.A. Science Degree Course	III & IV
[4]	B.Sc. Animation Degree Course	III & IV
[5]	B.Sc. Bioinformatics Degree Course	III & IV
[6]	B.Sc. Computer Science [Optional]	III & IV
[7]	B.Sc. Information Technology [Optional]	III & IV
[8]	B.Sc. Computer Applications [Optional]	III & IV
[9]	B.Sc. Computer Maintenance [Optional]	III & IV
[10]	B.Sc. Environmental Science [Optional]	V & VI
[11]	B.Sc. Bio-Chemistry [Optional]	V & VI
[12]	B.Sc. Forensic Science Degree Course	V & VI
[13]	B.Sc. Industrial Chemistry [Optional]	V & VI
[14]	B.Sc. Electronics [Optional]	V & VI
[15]	B.Sc. Zoology [Optional]	V & VI
[16]	B.Sc. Microbiology [Optional]	V & VI
[17]	B.Sc. Instrumentation Practice [Optional]	V & VI
[18]	B.Sc. Statistics [Optional]	V & VI
[19]	B.A. Statistics [Optional]	V & VI
[20]	B.A. / B.Sc. Mathematics [Optional]	V & VI
[21]	B.Sc. Home Science Degree Course	V & VI
[22]	B.Sc. Textile Interior Decoration Degree Course	V & VI
[23]	B.Sc. Fishery Science [Optional]	V & VI
[24]	B.Sc. Dairy Science & Technology [Optional]	V & VI
[25]	B.Sc. Botany [Optional]	V & VI
[26]	B.Sc. Physics [Optional]	V & VI
[27]	M.Sc. Computer Science	III & IV
[28]	M.Sc. I.T.	III & IV

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SCI./
2015/3761-4160
Date:- 16-06-2015.

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Director,
Board of College and
University Development.

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Copy forwarded with compliments to:-

1] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.Sc. Unit],
4] The Superintendent, [M.Sc. Unit],
5] The Programmer [Computer Unit-1] Examinations,
6] The Programmer [Computer Unit-2] Examinations,
7] The Record Keeper.

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY AURANGABAD.

Syllabus of
B.Sc. – Third Year
(Fishery Science) (optional)
(Semester – V and VI)
(Effective from June 2015 and on words)

BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY AURANGABAD
SYLLABUS
B.Sc. – III (FISHERY SCIENCE)
(Revised syllabus effective from June 2015)
V and VI Semester

COURSE STRUCTURE

Semester	Course code	paper	Title of the paper	Periods	Marks
V	Fish. Sci. 115	XV	Fishery Economics	45	50
V	Fish. Sci. 116	XVI	Modern Trends in Fishery Sci.	45	50
V	Fish. Sci. 117	XVII	Practical based on paper XV	45	50
V	Fish. Sci. 118	XVIII	Practical based on paper-XVI	45	50
VI	Fish. Sci. 119	XIX	Fish statistics Management and Extension	45	50
VI	Fish. Sci. 120	XX	Modern Trends in Fishery Sci. – II	45	50
VI	Fish. Sci. 121	XXI	Practical based on paper -XIX	45	50
VI	Fish. Sci. 122	XXII	Practical based on -XX	45	50

Dr. M.G. Babare.
(Chairman, B.O.S. in Fisheries)

B.Sc. III (Fishery Science)
Semester V
Paper XV
Fish Economics

Unit A: 1. Economic Terminology **10**

1. Scarcity
2. Choice
3. Scale of Preference
4. Definitions in Economics
5. Macro Economic Tools
6. Economic systems
7. Market Economy
8. Disadvantages of market economy
9. Planned economy
10. Mixed economic systems.

2. Functions of an economic system-

a) Aquaculture economics.

Unit B: Demand and Supply of Fish **20**

Introduction

a) Consumer Demand

1. Demand Schedule
2. Demand Curve
3. Demand and quantity Demand
4. Factors affecting the demand for fish and fish products
5. Population size and distribution
6. Consumer income and distribution
7. Prices and availability of substitutes
8. Consumer tastes and preferences

b) Elasticity of Demand

1. Price elasticity of demand
2. Calculation of own price elasticity of demand
3. Determinants of price elasticity
4. Income elasticity
5. Cross-Price elasticity
6. Elasticity, total and marginal revenue
7. Producer supply
8. Elasticity of supply

a) Price elasticity supply
b) Calculating supply elasticity's.
c) Price flexibilities
d) Short and long run supply curves

9. Competitive market equilibrium

Unit C: Fish Marketing **15**

1. Introduction
2. Traditional and modern fish marketing
3. Fish trade on micro and macro levels
4. Selling procedure for fish in India
5. Cost marketing and differential prices
6. Strategic fish marketing
7. Intensive growth
8. Diversification of growth

Total **45**

B.Sc. III (Fishery Science)
Semester V
Paper XVI
Modern trends in Fishery Science – I

Unit A: Principles of Fish Genetics and Biotechnology **10**

1. Fish Genetic (Germ Plasm) Resources
2. Chromosomes and Genes.
3. Karyotyping
4. Cryopreservation of gametes (Gene banking)
5. Sex determination
6. Monosex culture
7. Sterile fish

Unit B: Hybridization **20**

1. Hybridization in Indian Carps
2. Intra Specific and intergenetic hybrids
3. Natural Hybridization
4. Important hybrids
5. Inbreeding, cross breeding and selective breeding
6. Application of hybridization in fisheries

Unit C: Chromosomal engineering **15**

1. Genome
2. Gynogenesis
3. Androgen sis
4. Polyploidy (Triploids or Broiler fish)
5. Production of monosex super male and female by hormonal and six reversal technique.

Total **45**

B.Sc. III (Fishery Science)
Semester V
Paper VXII (Practical)

1. Economics of pond culture (Fish culture, prawn culture). 03
2. Field level data collection, tabulation, analysis and Report writing (Inland fishery catch from nearby villages) 05
3. Study of organizational structure and their role in fisheries viz.
4. Fishermen co-operative society
5. Report writing – State fish organization.
6. State and central Government organization i.e. ministry of fisheries.
7. Visit to Fish processing unit. 08

Total **15×3**

= 45

Study

1. Organizational structure and their role in fisheries Govt. of Maharashtra.
2. Study of Economics of fishermen co-operative society from nearly villages.

B.Sc. III (Fishery Science)
Semester V
Paper XVIII (Practical)

1. Collection and observation of gametes from fresh water fishes	02
2. Polyploidy evaluation using erythrocyte measurements	02
3. Cryopreservation of gametes	03
4. Chromosome karyotyping	03
5. Sex determination in fin-fishes and shell-fishes	03
6. Determination of hybrids in major carps *(Rohu – Catla hybrid)*	02
Total	**15×3**
	= 45

B.Sc. III (Fishery Science)
Semester VI
Paper XIX
(Fish statistics, Management and Extension)

Unit A: Statistics

1. Definition and scope of statistics
2. Collection and organization of data
3. Representation of data by graphs, charts and diagrams
4. Classification of data according to attributes and class intervals
5. Construction of frequency tables and the criteria governing formulations of good table
6. Methods of computing mean, median and mode of grouped and ungrouped data

25

Unit B: Management and Extension

1. Nature of fisheries extension
2. Fisheries extension and traditional management
3. Extension and co-operative development
4. Role of co-operative development in fisheries
5. Fisheries extension system India problems.
6. Future of fisheries extension
7. Communication and flow of information 15

Unit C: 1. Techno Socio-economic problem of fishermen
2. Role of women in fisheries
3. Needs of technical knowledge to fishermen 05

Total 45

B.Sc. III (Fishery Science)
Semester VI
Paper XX
Modern Trends in fishery Science – II

Unit A: Immunology of fishes

1. **Introduction**
2. Methods of immunology
3. Antibodies
4. Immunoglobulin's of fish
5. Specificity of fish antibodies
6. Blood groups in fishes
7. Cellular basis of immunological response 10

Unit B: Microbiology

1. Introduction to aquatic microbiology
2. Distribution of microorganism in environment
   -Aquatic micro organisms in ponds and lakes
   -Aquatic microorganisms in sea
3. Importance of aquatic microbes
   -Productivity of aquatic eco-systems
   -Bio-geochemical transformations
4. Microbiology of sewage or waste water 15

Unit C: Contamination, preservation and spoilage of fish and other sea Foods.

1. Contamination
2. Preservation .
   -Use of heat.
   -Use of low temperature.
   -Use of irradiation.
   -Preservation by drying.
   - Use of preservatives.
3. Spoilage.
   -Enzymatic spoilage.
   *Autolysis.
   -Chemical spoilage.
   * Rancidity.
   * Rego mortis and post-mortem Changes
   -Factors influencing kind and rate of spoilage.
   -Evidences of spoilage.
   -Bacteria and causing spoilage.
   -Spoilage of special kind of fish and sea foods. 15

Unit D: Application of remote sensing techniques for locating pelagic fish Concentration. 05

Total -----
45

B.Sc. III (Fishery Science)
Semester VI
Paper XXI (Practical)

1. Study of socio-economic conditions of fishermen from near by Villages 05
2. Preparation of extension material like pamphlets, leaflets and posters And wall posters 02
3. Preparation of Radio talks and Television.
4. Participation in Exhibitions. 01
5. Interview of fish farmers

A detailed project of the above cited areas should be submitted at the time of examination.

15×3

Total = 45

B.Sc. III (Fishery Science)
Semester VI
Paper XXII (Practical)

1. Microbial analysis of fish	05
E-Coli	
S-aureus	
And identification of Salmonella and V-Cholera	
2. Determination of blood groups in fishes	03
3. Fish hematology	07
4. Total plate count. Fish/prawn	
5. Methods of preservation salting, sundrys (Any locally available fish/prawn).	
Total	**15×3**
	= 45

List of books recommended for paper XVII and XXI

1. Curtis, M.J. and Howard, A.C. (1997) Economics of Aquaculture. Food products press, New York.
2. Rao, P.S. (1993) Fishery economics and management in India. Poineer publishers and distributors D/9, Vanshree opposite Diamond Talkies LT road, Borivali (West), Bombay – 400 092.
3. Mahesh V. Joshi (1996) Economics of fisheries A.P. II. Publishing corporation, 5-Ansari Road, Darya Ganj, New Delhi.
4. P.N. Arora and P.K. Malhan (2002) Biostatistics, Hamalaya Publishing House.
5. Rama Krishna, P. (1995) Biostatics, Saras publication A.R.P. camp Road, Periavilai, Kottar, po. Nagercoli, Kanyakumari Dist. Pin – 629 002.
6. Banerjee, P.K. (2005) Introduction to Biostastics S. Chand and Company Ltd. Ram Nagar, New Delhi – 110 055.
7. Norman T.J. Bailey (2004) statistical methods in biology (Third Edition) Cambridge University press (Low price Editions).
8. Dr. Mungikar A.N. (1997) an introduction to Biometry, saraswati publication, Aurangabad.
9. Ananth P.N. (2000), Marine Fisheries extension Discovery publishing house, New Delhi – 110 002.
10. A Manual in fishery science A.D. Mohekar, S.M. Kamble and D.N. Chinte.

List of books recommended for paper XVII and XXII

1. Beaumont, A.R.: Biotechnology and Genetics in fisheries and Aquaculture, Narendra publishing House – Delhi – 110 006.
2. Dr. Ranga M.M. and Dr. (Ms) Shammi Q.J. (2005) : Fish Biotechnology, published by Agrobios (India) Agrohouse, Behind Nasrani Cinema, Chopasani Road, Jodhpur – 342 002.
3. Shrivastava C.B.L. (2000): A Text book of fishery science and Indian Fisheries Kitab Mahal; 28, Netaji Subhash Road, New Delhi – 110 002
4. Das, P. and Jhingran, A.G. (1976): Fish Genetics in India, Today and Tomorrow publishers, New Delhi.
5. Lakra, W.S. (2000): Fish Genetics and Biotechnology C.I.F.E. Mumbai.
6. Kuruna Sagar and Reilly (1999): Aquaculture and Biotechnology Oxford and IBH pub. Co.Ltd. New Delhi.
7. Mani, A. and Selvaraj and others (1993): Microbiology (General and applied) Saras publication.
8. Frazier W.C. and Westhoff D.C. (1986): Food Microbiology (Third Edition) Tata Mc Graw-Hill pub.co.Ltd, New Delhi.
9. Douglas P.A. Anderson: Fish Immunology, Narendra publishing House- Delhi-110 006.
10. George Iwama and Teruyuki Nakanishi: The fish Immune System. Academic press.
11. Large marine ecosystems: Exploration and Exploitation for sustainable development and conservation of fish stocks (1998) Proceedings of Symposium. Edited by Dr. V.S. Somvanshi and published by FSI, Botawala chambers, Sir. P.M. Road, Mumbai – 400 001.