

University of Mumbai



No. UG/ 179 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges, the Head of the University Departments and Directors of the recognized Institutions in Faculty of Science & Technology.

They are hereby informed that the recommendations made by the Board of Studies in Zoology at its meeting held on 19th September, 2019 and subsequently approved by the Board of Deans at its meeting held on 1st October, 2019 vide item No. -63 have been accepted by the Academic Council at its meeting held on 3rd October, 2019 vide item No. 4.15 and subsequently approved by the Management Council at its meeting held on 23rd October, 2019 vide item No.8 and that in accordance therewith, in exercise of the powers conferred upon the Management Council under Section 74(4) of the Maharashtra Public Universities Act, 2016 (Mah. Act No. VI of 2017) the Ordinances No. 6520 & 6521 Regulations No. 9266 to 9267 and the syllabus of "Certificate Course in Total Quality Management in Fisheries (TQM in Fisheries)" has been introduced and the same have been brought into force with effect from the academic year 2019-20, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

30th December, 2019

To ,

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Faculty of Science & Technology. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.15/3/10/2019

M.C/8/23/10/2019

No. UG/ -A of 2019

MUMBAI-400 032

December, 2019

Copy forwarded with Compliments for information to:-

- 1) The Chairman, Board of Deans,
- 2) The I/c Dean, Faculty of Science & Technology,
- 3) The Chairman, Board of Studies in Zoology,
- 4) The Director, Board of Examinations and Evaluation,
- 5) The Director, Board of Students Development,
- 6) The Co-ordinator, University Computerization Centre,

(Dr. Ajay Deshmukh)
REGISTRAR

UNIVERSITY OF MUMBAI



Syllabus for Approval

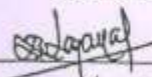
AC 03.10.2019
Item No. 415

Sr. No.	Heading	Particulars
1	Title of the Course 0.6520	Certificate Course in Total Quality Management in Fisheries (TQM in Fisheries)
2	Eligibility for Admission 0.6521	HSC or equivalent with biology background
3	Passing Marks	40 for each theory and 10 for internal marks for the paper
4	Ordinances / Regulations (if any)	As per University rules
5	No. of Years / Semesters	One/One Semester
6	Level	Certificate
7	Pattern	Yearly
8	Status	New
9	To be implemented from Academic Year	From Academic Year -2019-20

Date: 20/09/2019

Signature :

Name of BOS Chairperson / Dean:


Dr. D. L. Bhayani

UNIVERSITY OF MUMBAI
SINDHU SWADHYAY SANSTHA
(SCHOOL OF INTERGRATED AQUATIC
EDUCATION)



Syllabus for
Certificate Course in Total Quality Management in
Fisheries
(TQM in Fisheries)
(Oceanography under SSS)

Course: Zoology (Oceanography)
(USZOOCN)

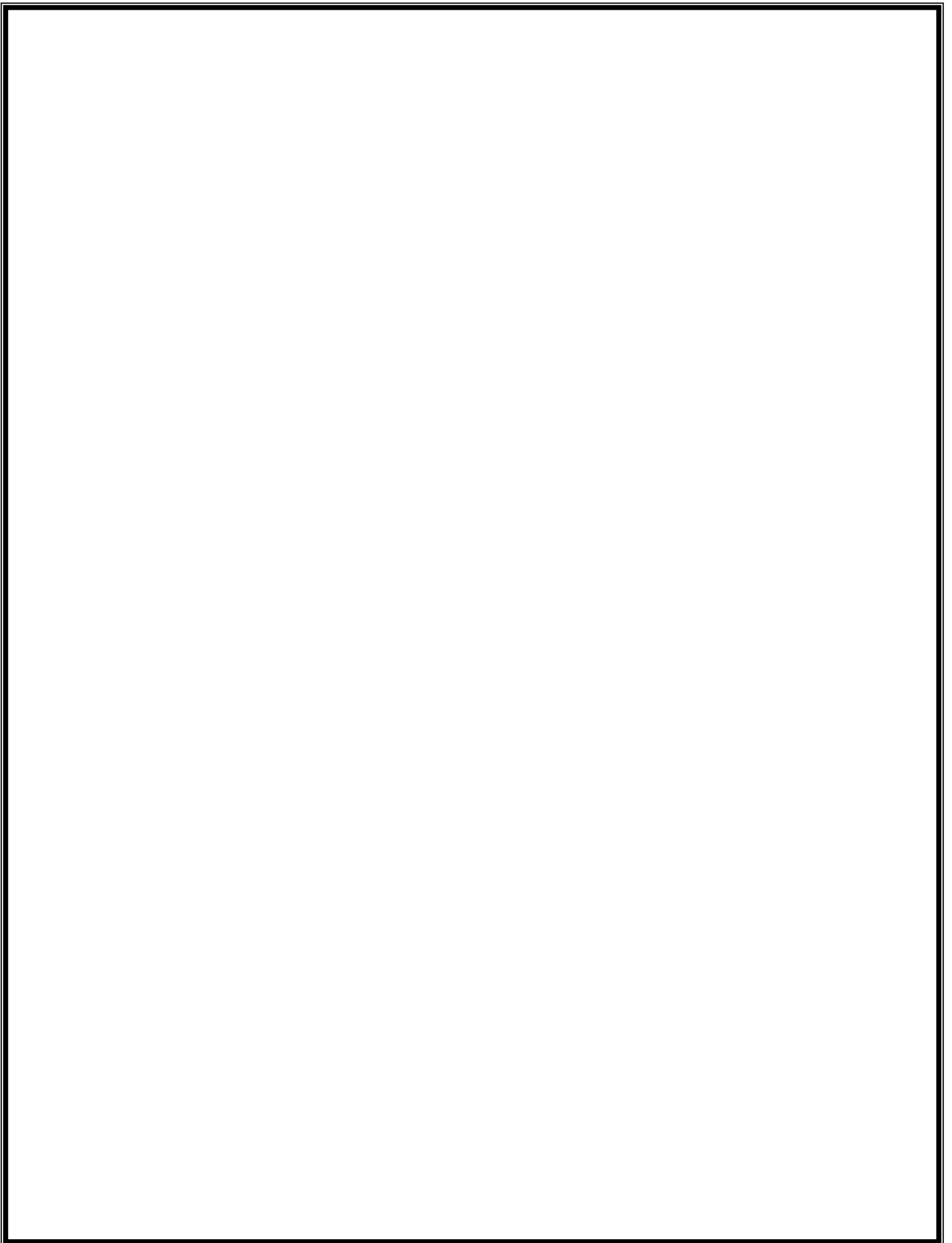
With effect from the academic year 2019-20

UNIVERSITY OF MUMBAI



Essentials Elements of the Syllabus

1	Title of the Course 0.6520	Certificate Course in Total Quality Management in Fisheries (TQM in Fisheries)
2	Course Code	USZOCERT
3	Preamble / Scope	<p>The quality assurance program consists of all those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality in a seafood processing Unit.</p> <p>The Hazard Analysis Critical Control Point (HACCP) system and Total Quality Management (TQM) are such strategy which offers a rational and logical approach to control in sea food hazards</p> <p>The quality assurance program will be directed towards the Critical Control Points (CCPs) to assure a higher degree of safety and at less cost. The aspects of sanitation and microbiological analysis will minimize the hazard level in matters of food safety.</p> <p>The compliance of the certification process will be undertaken for sea food exports & imports.</p>
4	Objective of Course	<ul style="list-style-type: none">• To gain a complete understanding of the design, implementation, and operation of Quality Assurance program in a sea food processing unit.• To enhance the job skills of the students
5	Eligibility 0.6521	HSC and equivalent
6	Fee Structure R. 9266	Rs 6000 + Rs 500 exam fees
7	No. of Lectures	Three lectures per week - Total 45
8	No. of Practical	Three practical per week - Total 15



9	Duration of the Course	R. 92-62 One Year
10	Notional hours	Efforts of the Students in hrs to assimilate the unit: 3hours per week
11	No. of Students per Batch	45
12	Selection	First come first served basis. Student with Biology background
13	Assessment	As per University rules
14	Syllabus Details	enclosed
15	Title of the Unit	enclosed
16	Title of the Sub-Unit	enclosed
17	Question Paper Pattern	enclosed
18	Pattern of Practical Exam	Enclosed
19	Scheme of Evaluation of Project / Internship	As per University rules
20	List of Suggested Reading	Study material will be circulated
21	List of Websites	NA
22	List of You-Tube Videos	NA
23	List of MOOCs	NA

UNIVERSITY OF MUMBAI



**Syllabus for
Certificate Course in Total Quality Management
in Fisheries
(TQM in Fisheries)**

Course: Zoology (USZO)

With effect from the academic year 2019-20

TQM in Fisheries

Objective: To gain a complete understanding of the design, implementation, and operation of Quality Assurance program in a sea food processing unit

Learning Outcomes: The quality assurance program consists of all those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality. It is a strategic management function which establishes policies, adapts programs to meet established goals and provides confidence that these measures are being effectively applied in a seafood processing Unit.

Preventive strategies based on thorough analysis of prevailing conditions are much more likely to provide an assurance of fish quality. The Hazard Analysis Critical Control Point (HACCP) system and Total Quality Management (TQM) are such strategy which offers a rational and logical approach to control in sea food hazards and avoid the many weaknesses inherent in the inspectional approach. Once established, the main effort of the quality assurance program will be directed towards the Critical Control Points (CCPs) and away from endless final product testing. This will assure a higher degree of safety and at less cost.

The aspects of sanitation and microbiological analysis will minimize the hazard level in matters of food safety. The compliance of the certification process can be undertaken for sea food exports & imports.

Unit	Topic Heading	Credit	Lectures per unit
USZO101 I	<p>HACCP System in Sea food Industry. Food safety Issues related to Domestic and international Market</p> <p>1.1 HACCP system in sea food industry (12L)</p> <p>(a) Introduction – Introduction to TQM in seafood</p> <p>(b) Principles of HACCP: Sanitation standard operating procedures for HACCP; Role of extension in the implementation of HACCP; verification of HACCP program in seafood Processing plants.</p> <p>(c) Microbiology of fisheries</p> <p>(d) Methods for monitoring the suitability of fresh fish for consumption</p> <p>(e) Application of HACCP in fisheries - Refrigerated and frozen fish,</p> <p>(f) Smoked and cured seafood, Canned Finfish shell fish, Fish sticks, seafood soup and salad, Fish oils.</p> <p>(g) Hazards in seafood; food borne diseases; physical hazards, wholesomeness and</p>	01	15

	<p>economic fraud; Chemical Hazards in seafood handling and processing;</p> <p>(h) Sanitation Control Procedures for Processing Fish and Fishery Products</p> <p>(i) Audit and Documentation</p> <p>1.2 Food safety (3L)</p> <p>(a) Issues related to domestic market</p> <p>(b) Issues related to international market</p>		
	<p>2) Sampling, analysis and enumeration methods for detection of microorganisms (15L)</p> <p>3.1 Basic principles of microbiology.</p> <p>3.2 Isolation and identification of bacteria.</p> <p>3.3 Nutrition of bacteria.</p> <p>3.4 Preparation of media.</p> <p>3.5 Sampling of fish for isolation of bacteria.</p> <p>3.5 Enumeration and isolation of bacteria.</p> <p>3.6 Identification and estimation of pathogenic organisms such as <i>Coliforms</i> Salmonella, <i>Listeria</i>, <i>Vibrio cholerae</i>, <i>Vibrio parahaemolyticus</i>, <i>Clostridia</i>, <i>Staphylococcus</i> etc.</p> <p>3.7 FSSAI guidelines</p>	01	15
	<p>3) Certification for Export & import of sea foods. (15L)</p> <p>a) Proximate composition of fish</p> <p>b) Quality problems in seafood industry</p> <p>c) Legislation on export inspection in India</p> <p>d) Quality requirements of importing countries with special reference to USA, Japan, EEC</p> <p>e) Minimum facilities in processing units for approval</p> <p>f) Indices of fish spoilage</p> <p>g) Pesticide residues</p> <p>h) Quality of water and ice</p> <p>i) Seafood toxins</p> <p>j) Determination of TVB and TMA</p> <p>k) Technology transfer in fish handling and processing</p> <p>l) Certification for Export and import</p>	01	15

	<p>Practicals</p> <p>Unit I</p> <p>1. Case Studies</p> <p>2. HACCP exercise of any sea food product.</p> <p>Unit II:</p> <p>1. Visit to canning industry- Hurdle technology</p> <p>2. Study of normal flora of any two sea water fishes</p> <p>3. Isolation, Identification and Characterization of the pathogen from sea food- <i>Salmonella spp.</i>, <i>S. aureus</i>, <i>Vibrio spp</i>, <i>Coliforms</i> and <i>Listeria</i>,</p> <p>Unit III</p> <p>1. Exercise of exporting a processed food.</p> <p>2. Awareness programs</p> <p>3. Assignments</p> <p>4. Poster Presentations</p>		
	<p>Exam pattern</p> <p>Theory : One paper -75 Marks</p> <p>: Internal - 25 Marks</p> <p>Practical : 50 Marks</p>		