**University of Gondar**

**Institute of Biotechnology**

**Department of Agriculture Biotechnology**

**Course Outline for Aquatic Biotechnology**

1. **Course Identification**

**Course Title : Aquatic Biotechnology**

**Credit Hours : Biot. 616**

**Program :** 3 Credit Hours/Week (2 Credit Hours-

Lectures + 1 Credit Hour Lab)

1. **Academic Year :** 2020, Semester II
2. **Instructor’s Contact Information**

**Instructor Name :** Dr. Meera Indracanti

**Designation :** Associate Professor

**Office Location :** New Postgraduate Building

**E-mail Address :** [meerauog@gmail.com](mailto:meerauog@gmail.com)

**IV. Course Description**

The course deals with Introduction to Aquatic biotechnology; Molecular Genetics of Aquatic organisms: Discovery & cloning of novel genes, Genetic manipulations of finfish & shellfish; Medical Applications of aquatic biotechnology: Drugs & medicines from the sea, Monitoring health & human disease; Environmental applications of Aquatic biotechnology: Antifouling Agents, Biosensors, Environmental remediation; Marine biotechnology: Fish & marine invertebrate, transgenic fish technology & its application in fish production; The uses of macro & micro algae.

**Course Objectives**

At the end of this course students will be able to:

* Identify the basic forms of life that live in aquatic environment
* Apply aquatic biotechnology and in agricultural, environmental protection, medicine
* Apply aquaculture technology in food production
* Acquire and use the skills developed in the presentation of data and scientific ideas, both verbally and in writing, using scientific language or plain English as appropriate

**V. Assessment Arrangements**

Continuous assessment (50%) - Tests at the end of the chapters, assignments, presentations

Mid exam will be 15%,

Presentation: 10%

Report writing: 10%

Laboratory: 15%

Summative assessment (50%) - final examination

**VI. Course Policies**

**a) Ground Rules**

The course is delivered based on the rules and regulations of the university and the following rules must be kept for classroom purpose:

Attending all class is a must

Punctuality in class and assignment is mandatory

Active participation is required at most

Misbehaving at class is highly forbidden

Disabling a cellular phone is a must

**b) Academic Honesty Policy**

Students are responsible for their work only. Students who cheat on examinations, by whatever method, or guilty of plagiarism will, or may be given an “F” for course and dismissed permanently from class.

**c) Late Work**

Students may make any missed exam by the consent of the department members. And students are expected to provide their evidence for missing exam since 5 days after the onset of the examination.

**d) Disclaimer**

This syllabus represent a best plan for the course, but with most plans, it is subject to changes made necessary by time, space and personal constraints as the course progresses.

**VII. Course Content: Should refer latest available editions and review/research articles**

1. Allan, J.D. (1995). Stream Ecology. Chapman & Hall. London
2. Batram, J. and Balance, R. (1996). Water Quality Monitoring: A Practical Guide to the Design and Implementation of Freshwater Quality Studies and Monitoring Progrmmes.1st Edition; Published on Behalf of United Nations Environment Program (UNEP)/ WHO.
3. Chapman, D. (1996). Water Quality Assessments: A Guide to Use of Biota, Sediments and Water in Environmental Monitoring. (2nd ed.) Published on Behalf of United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations Environment Program (UNEP)/World health organization (WHO).
4. Cole, G.A. (1983). Textbook of Limnology. (3rd ed.) The C.V.Mosby Company,St. Louis
5. Goldman, C.R. & Horne, A.J. (1983). Limnology. McGraw-Hill Book Company, New York.
6. Kalff, J. (2002). Limnology. Printice Hall, Inc., USA.
7. Wetzel, R. (2001). Limnology: Lake and River Ecosystems. (3rd ed.). Elsevier Science, USA.
8. **Suggested reading at the end of each topic**

## Course Content

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| **day** | **Contents** | **References** |
| 1 | **Introduction to Aquatic biotechnology** | Allan, J.D. Stream Ecology. Chapman & Hall. London |
| 2 | **Molecular Genetics of Aquatic organisms:** Discovery & cloning of novel genes, Genetic manipulations of finfish & shellfish | Batram, J. and Balance, R. Water Quality Monitoring: A Practical Guide to the Design and Implementation of Freshwater Quality Studies and Monitoring Progrmmes. |
| 3 | **Medical Applications of aquatic biotechnology:** Drugs & medicines from the sea, Monitoring health & human disease | Published on Behalf of United Nations Environment Program  (UNEP)/ WHO. |
| 4 | **Environmental applications of Aquatic biotechnology:** Antifouling Agents, Biosensors | Goldman, C.R. & Horne, A.J.  Limnology. McGraw-Hill Book Company, New York |
| 5 | Environmental remediation; Marine biotechnology: | Goldman, C.R. & Horne, A.J. Limnology. McGraw-Hill Book Company, New York. |
| 6 | Fish & marine invertebrate, transgenic fish technology & its application in fish production | Kalff, J. Limnology. Printice Hall, Inc., USA.  Wetzel, R. Limno logy |
| 7 | The uses of macro & micro algae | Chapman, D. Water Quality  Assessments: A Guide to Use of Biota, Sediments and Water in Environmental |
| 8 | Fish aqua culture techniques and its application in food production | Kalff, J. Limnology. Printice Hall, Inc., USA. |
| 9 | Lab Manual | **Developed by the Department of Agriculture, IoB, UoG.** |

**Approval Section**

**Course Instructor**

Name: Dr. Indracanti Meera Date Signature

**Department Head**

Name: Mr. Alemu Tebeje Date Signature