



Asignatura: BIOLOGICAL MONITORING  
Código: 32764  
Centro: Facultad de Ciencias - UAM  
Titulación: Master in Inland Water Quality Assessment  
Nivel: Máster  
Tipo: Obligatoria-Mandatory  
Nº de créditos: 4

## ASIGNATURA / **COURSE TITLE**

MONITORIZACIÓN BIOLÓGICA / **BIOLOGICAL MONITORING**

### 1.1. Código / **Course number**

32764

### 1.2. Materia / **Content area**

This course is mandatory and is not included in any higher rank area within the master

### 1.3. Tipo / **Course type**

Compulsory subject

### 1.4. Nivel / **Course level**

Master

### 1.5. Curso / **Year**

1<sup>st</sup>

### 1.6. Semestre / **Semester**

1<sup>st</sup> semester

### 1.7. Número de créditos / **Credit allotment**

4 ECTS

### 1.8. Requisitos previos / **Prerequisites**

None.

### 1.9. Requisitos mínimos de asistencia a las sesiones presenciales / **Minimum attendance requirement**

Attendance is mandatory



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## 1.10. Datos del equipo docente / Faculty data

Docente(s) / Lecturer(s): Dr. Paloma Alcorlo and Dr. Eugenio Rico  
Departamento de Ecología/ Department of: Ecology  
Facultad Ciencias / Faculty: Sciences  
Despacho - Módulo: C-118 (Alcorlo) and C-106 (Rico) Edificio de Biología  
Office - Module: C-118 (Alcorlo) and C-106 (Rico) Biology building  
Teléfono / Phone: +34 914972808 (Alcorlo), +34 914978278 (Rico)  
Correo electrónico/Email: [paloma.alcorlo@uam.es](mailto:paloma.alcorlo@uam.es), [eugenio.rico@uam.es](mailto:eugenio.rico@uam.es)  
Página web/Website:  
Horario de atención al alumnado/Office hours: previous appointment.

## 1.11. Objetivos del curso / Course objectives

Two main objectives can be outlined:

1. Students will learn sampling strategies, sampling techniques and sample treatment concerning biological material from lakes and streams.
2. Students will learn how to assess environmental status in lakes and streams based on results from sampling exercises.

After finished studies, students shall be prepared for water management tasks in governmental, regional and/or community administrations (*think of the EU Water Framework Directive and all steps included here*).

## 1.12. Contenidos del programa / Course contents

Module 1. Definitions and principles of biological monitoring. Evolution of the concept of quality in aquatic ecosystems. Water Framework Directive in relation to biomonitoring. Organisms used as elements of quality in aquatic ecosystems. Eco-regionalization and reference conditions.

Module 2. Sampling strategies in and lentic aquatic ecosystems. Sampling methodologies for different biological quality elements. Instrumentation and analytical methods for samples in laboratory.

Module 3. Biological Indices. Genesis, typology and evolution. Assessment of the ecological status of aquatic ecosystems through biological monitoring. Implementation of biomonitoring programs in developed countries. Comparison of biological indices.

Module 4. Emerging trends in integrated programs of biomonitoring and management.



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### 1.13. Referencias de consulta / Course bibliography

Chapman, D. (ed.) 1992. Water quality assessments. A guide to the use of biota, sediments and water in environmental monitoring. Chapman & Hall, London.

Heinonen, P.; Ziglio, G & A. Van der Beken. 2000. Hydrological and limnological aspects of lake monitoring. John Wiley & sons ltd. England.

Loeb, S.L. & A. Spacie (eds.), 1994. Biological monitoring of aquatic systems. Lewis Publishers, Boca Raton (Florida).

Rosenberg, D.M. & V.H. Resh, (eds), 1993. Freshwater biomonitoring and benthic macroinvertebrates. Chapman & Hall, London

Salanki, J., Jeffrey, D., Hughes, G. M. (Eds.). 1994. Biological Monitoring of the environment. A Manual of Methods. CAB International, IUBS.

Water Framework Directive 2000. Directive of the European Parliament and of the Council 2000/60/EC Establishing a Framework of Community Action in the Field of Water Policy.

Wright, J.F.; Sutcliffe, D.W.; & M.T. Furse (eds.) 2000. Assesing the biological quality of fresh waters: RIVPACS and other techniques. Freshwater Biological Association, UK

Ziglio, G., Siligardi, M. & G. Flaim. 2006. Biological monitoring of rivers. Aplications and perspectives. John Wiley & sons ltd. England.

## 2. Métodos docentes / Teaching methodology

1. Lectures
2. Seminars and practical classes
3. Papers prepared individually or in groups:
4. Online teaching
5. Office hours, including online

## 3. Tiempo de trabajo del estudiante / Student workload

Lectures:	25
Individual assignments:	15
Critical reading:	15
Exercices	15
Student seminars:	10
Personal student work:	20



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<i>Total amount of work measured in hours</i>	<b>100</b>
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#### 4. Métodos de evaluación y porcentaje en la calificación final / **Evaluation procedures and weight of components in the final grade**

Written exam and/or Final Seminar	50-60%
Task and Assignments	20-30%
Class participation and Punctuality	10-20%

Any student that participated less than 10% of evaluable activities will be qualified as “unevaluated”.

In the case that the student does not obtain the minimum requirements for passing the course (see evaluation section) will have another opportunity “convocatoria extraordinaria” at the end of the academic year.

#### 5. Cronograma\* / **Course calendar**

To be defined.