# TEACHING MODULES INFORMATION
# EMJMD WACOMA (academic year 2018/19)

| | |
|---|---|
| **1.** | **Module Title:**<br>Tools for hazard assessment of chemical and complex environmental media |
| **2.** | **Module Code:**<br>N/A |
| **3.** | **Maximum Number of Students:**<br>10 |
| **4.** | **Total ECTS Credits:**<br>2 ECTS |
| **5.** | **Month:**<br>First year, second semester |
| **6.** | **Notional Learning Hours (Please fill a number in box)**:<br>**(a) Contact Time - e.g in the classroom, or fieldwork**<br>**(b) Private Study - reading time, preparing and taking assessments**<br><br>**Format of Teaching:**<br>Lectures 6 Hours (a)<br>Laboratories or Practicals 4 Hours (a)<br>Other (computer workshops) 4 Hours (a)<br>Other (private study) 36 Hours (b)<br><br>**Teaching Strategy:**<br><br>Theoretical lectures will be given to introduce to basic and advance concepts of contaminants in aquatic systems and the mechanisms involved in their environmental behavior and fate. This will include different aspects such as distribution among compartments, reactivity and/or persistence. After theoretical lectures, the student will be ask about how to implement these concepts in a practical site specific environment of their choices using computer models and laboratory practices. This work will be discussed in a workshop carried out with the students. They should present their projects in an open session in order to assess the possibility to be developed in a real context. |
| **7.** | **Convener:**<br>Julián Blasco<br>Pablo A. Lara Martín |
| **8.** | **Institution:**<br>CSIC / University of Cádiz |
| **9.** | **Level (Please tick Y):**<br>Master |
| **10.** | **Language(s) of Tuition**:<br>English |
| **11.** | **Pre-requisites:**<br>Basic knowledge on chemistry |

| | |
|---|---|
| **12.** | **Co-requisites:**<br>None |
| **13.** | **Programme(s) for which module is core:**<br>Erasmus Mundus Joint Master Degree in Water and Coastal Management (WACOMA) |
| **14.** | **Module Description - The Purpose or Aims:**<br>This course has as main objectives:<br>- Understanding the processes related to the distribution, reactivity and fate of contaminants in aquatic environments<br>- Identify key environmental properties and physicochemical features that affect these processes<br>- Develop a strategy for implementation of these approaches in simulated environments using specific computer software.<br>- Procedures for pollutant analysis in environmental matrices |
| **15.** | **Learning Outcomes:**<br>At the end of this course students should:<br>- Know the different classes of chemical contaminants in aquatic environments<br>- Know different processes involved in the distribution, reactivity and fate of these contaminants in the environment, as well as the different key factors controlling these processes<br>- Know-how to carry out an environmental assessment on the distribution and fate of these contaminants<br>- Know methodological aspects about contaminant quantification |
| **16.** | **Summary of Course Content:**<br>- Introduction to contamination in aquatic settings<br>- Organic legacy and emerging contaminants<br>- Metal and metalloids legacy substances<br>- Metal and metal oxide nanoparticles.<br>- Environmentally relevant physicochemical properties of contaminants<br>- Environmental processes involved in the partitioning and degradation of chemicals<br>- Equilibrium Criterion (EQC) models |
| **17.** | **Key Skills Taught:**<br>- Knowledge of environmental pollution<br>- Environmental assessment on the distribution and fate of chemicals<br>- Data synthesis for reporting |

| | |
|---|---|
| - | **Assessment Methods:**<br>- Practical work using the introduced concepts and approaches. Public presentation of results and final report. Discussion with student and teachers in open session. |
| - | **Assessment Criteria:**<br>- Each part of the report will be analyzed and evaluated with the final grade reflecting the sum of all evaluated parts. The grade can range from 0 (no work or completely wrong procedure and results) to 100 (absolutely complete and well performed work and report). Passing threshold will be 50 and for that is required a basic knowledge of the concepts and their use and implementation. |
| **20.** | **Resource Implications of Proposal and Proposed Solutions**:<br><br>***Core texts***<br>- Fundamentals of Environmental Chemistry, Stanley Manahan, CRC Press<br>- General fugacity-based model to predict the environmental fate of multiple chemical species. Cahill et al., 2003, Environ Toxicol Chem 22: 483-493.<br>- Marine Ecotoxicology, J. Blasco, P.M. Chapman, O. Campana, M. Hampel. Academic Press<br>- Trace Metal in Aquatic Systems, R. Mason, Wiley-Blackwell<br><br>**Specific Resource Implications for Students**:<br>Computers with internet access should be available at all classes. Students can use their own laptops. Programme to use include Excel, Power Point and Word, as well as specific freeware (EQC models) available online. |
| **21.** | **Does this module replace existing provision? If so, please indicate modules to be replaced:**<br>The module fits in the area of "Chemical analysis of water quality" |
| **22.** | **Start Date:**<br>First year, second semester |
| **23.** | **Is it intended that the module be available every year? Ç**<br>Yes |