

Module Title:

Please provide a module title which should have only 30 characters including punctuation and spaces .

Water. Analysis of Organic Components

Module Code:

Please code according to the code QM-xx-xx, AM-xx-xx or DA-xx-xx

AM0105

Maximum Number of Students:

Please include any limitation on the number of students able to take the module.

30 students

Total ECTS Credits

This should be the sum of the credits for each of the semesters in which the module is to run.

2

Notional Learning Hours

(a) Contact Time - 15 ___ h

(b) Private Study - _ 5 ___ h

Format of Teaching:

Lectures 12 ___ h

Laboratories or Practicals _ 3 ___ h

Other - ___ h

Teaching Strategy:

Please show how the contact hours are to be allocated in terms of the type of class involved.

Lectures will cover the scope of organic water pollution and its monitoring, problems related to determination of organic water pollutants, techniques of sample preparation and of final determination of organics in water

The students in 3-4 person groups will carry out analysis of a water sample for content of some organic constituent/s (either COD, or total organic carbon, or individual organic compounds), depending on instrumentation available

Convener:

The name of the member of permanent staff responsible for the module.

Prof. Bogdan Zygmunt

University / Department:

The name of the University and Department responsible for the module.

Gdansk University of Technology, The Chemical Faculty, Department of Analytical Chemistry

Language of Tuition:

Please state whether module is to be taught through the medium of English or another language. If bi-lingual please indicate % of each language

English

Module Description - The Purpose or Aims:

This should specify the purpose of the module where it fits into the programme specification and what it aims to provide. Please list the Aims in numerical order.

1. To show the extent of water pollution with organic compounds
2. To provide the students with the techniques of sample preparation for final analysis
3. To provide the principles of techniques (and modern instrumentation) used in final determination of organics in water (mainly gas and liquid chromatography)
4. To form skills in students to choose and apply a given sample preparation technique to isolate and enrich selected pollutant/s from water
5. To form skills to perform determination of selected pollutant/s in the concentrate obtained

Specific Learning Outcomes for this module: (contributing to general learning outcomes GLO 1 – GLO 10)

Learning Outcomes should provide statements which articulate what the student has achieved upon completion of the course. What will a student know, understand or be able to do?

After completion of this module the student will know the problems of trace organic pollutants determination in water, the respective techniques and principles of sample preparation and final determination (GLO3, 4, 6).

Summary of Course Content:

This should be a summary paragraph of list of the topics to be covered by the module.

1. common organic water pollutants
2. problems of determination of organic trace pollutants
3. overview of sample preparation,
4. principles of extraction of semi-volatile and non-volatile organic pollutants
5. extraction of volatile organic compounds (static headspace, dynamic headspace, azeotropic and vacuum distillation);
6. principle of separation techniques (gas and liquid chromatography, and capillary electrophoresis, hyphenated techniques)
7. analytical procedures for some organics in water
8. future trends in determination of trace organics in water

Transferable Skills Taught:

Please list in numerical order the key skills taught e.g. communication, information technology, interpersonal skills, teaching/study skills. Please relate these to benchmark statements.

This module will improve students communication and study skills.

Assessment Methods:

Details of assessment methods should include forms of assessment and the contribution of each to the summative assessment of the module. The relationship to the learning outcomes of the module should be explicit and the numbers of the various learning outcomes should be attached to the assessment methods listed. Please list in numerical order

The student will be assessed on the introductory test before the laboratory experiment, the report and a short written test

Assessment Criteria:

Details of assessment methods should include forms of assessment and the contribution of each to the summative assessment of the module. The relationship to the learning outcomes of the module should be explicit and the numbers of the various learning outcomes should be attached to the assessment methods listed. Please list in numerical order.

Threshold: Achieving 50% score at the closed written exam and introductory test and presenting the report

Good: Minor errors in the closed written exam and introductory test and presenting the report accepted at the first presentation

Excellent: Almost perfect closed written exam and introductory test and presenting the report accepted at the first presentation

Resource Implications of Proposal and Proposed Solutions:

Details on any resources required and should be included. Please also list e.g core texts; recommended reading material; equipment; films etc.

Nollet, L.M.L., Editor, Handbook of Water Analysis, Marcel Dekker, New York, 2000.

Poole C.F., Poole S.K., Chromatography today, Elsevier, Amsterdam 1991.

Crompton, T. R. Determination of Organic Compounds in Natural and Treated Waters, Spon Press, Internet 1999

Zhang Chunlong, Fundamentals of environmental sampling and analysis, John Wiley and Sons, Hoboken, New Jersey, 2007

Methods and Guidance for the Analysis of Water (Official EPA Versions), *Environmental Protection Agency*

Copy of PP lectures

Pre-Requisites:

Any module(s) which must have been taken prior to the current module, or any specific background required to take this module.

Basics of Analytical Chemistry

AM101 Water Directive and CN standards