General Information

Module Code

CHE-5501Y

Academic Year

2021/2

Module Title

INSTRUMENTAL ANALYTICAL CHEMISTRY

Module type

WW

Semester / Term

YEAR

Level

5

Credit Value

20

Scheme

UG

Related Modules:

Pre-requisite

CHE-4001Y

Co-requisite

Forbidden

Timetable slot

G2/*C2*H3, C1/-B3, G1/¦D3\

Is this module suitable for inbound study abroad students?

Y

Additional costs

Maximum number of students

999

Module Organiser

Dr Maria J. Marin

Module Description

What is this module about?

The module covers the theory and practical application of some key instrumental techniques for chemical analysis. Molecular spectroscopy, chromatography and electroanalytical techniques are the important instrumental methods included. Laboratory practicals using these techniques will reinforce material covered in the lecture programme.

Learning objectives and Outcomes

What are the Learning objectives?

Gain a deeper understanding of instrumental methods of analysis based on UV/vis spectroscopy, fluorescence spectroscopy, electrochemistry and chromatography.
Further develop skills in laboratory data analysis and interpretation, report writing, teamwork and organisation.

What are the Learning Outcomes?

	Name	Details
1	technical understanding	Thorough understanding of the underlying principles of the most common types of instrumental chemical analysis based on spectroscopy, electrochemistry and chromatography.
2	appreciation of design	of the key design elements of the instruments used and an understanding of how this design allows the measurements to be made.
3	development of laboratory skills	Skills in sample preparation, calibration and quantitative analysis will be emphasised, with appropriate attention to issues of precision, accuracy and error.
4	data analysis	Ability to analyse quantitative data appropriately, with statistical treatment of measurement errors.

5

data interpretation
Ability to draw appropriate conclusions from the data analysis and report it in accurate and meaningful ways.

Learning activities and Effort hours

Learning activity	Total effort hours	Indicative effort hours per week
1. Class sessions (Lectures, workshops, lab sessions, seminars etc.)	64	
2. Pre-class preparation and follow up study	4	
3. Work-based or Placement Hours	0	
4. Formative assessments/ activities	10	
5. Feedback/ Feed forward sessions	2	
6. Summative assessments (essays, dissertations, oral presentations, worksheets, lab reports etc.)	15	
7. Background reading	103	
8. Exams/ OSCEs	2	
9. Course Tests	0	
10. Tutorials (Individual or small groups)	0	
Total Hours =	200.00	0.00

Learning Support Materials

Should this module be exempt from requiring an online reading list?

N

Link to Talis (https://uea.rl.talis.com/index.html)

Formative Assessments

Sequence	Assessment Type	Title	Deadline
FM1	Formative Assessment	formative - analytical theory and strategy	29/Nov/2021
FM2	Formative Assessment	formative - laboratory practice and data analysis	10/Mar/2022

Summative Assessments

Sequence	Assessment Type	Title	Deadline	Weighting	Method of submission	Method of return	Return da
001	Written Assignment	Analytical Theory and Strategy	24/Jan/2022	50 / 100	Coursework: Bb file submission point	VIA BLACKBOARD	21/Feb/202
Further Details	A written exercise involving application of theory and appreciation of experimental design. There will be the connection of the theory to experimental practice.						
002	Written Assignment	laboratory practice and data analysis	12/May/2022	50 / 100	Coursework: Bb file submission point	VIA BLACKBOARD	09/Jun/202
Further Details	A written exercise based on laboratory practice and the analysis and interpretation/reporting of analytic						

Attribute Development

On this module students will develop knowledge, insights and attributes that are readily transferable into future or current work settings. The attributes are articulated below to help understand how the module will help students to thrive on their course and prepare them for the world of work. These attributes are also articulated within the UEA Award.

Academic excellence

- [x] In-depth and extensive knowledge, understanding and skills in chosen discipline(s)
- [ ] The ability to collect, collate, analyse and critically engage with a wide range of information sources, and evidence
- [ ] The ability to analyse and critically engage with a wide range of concepts and ideas

Critical thinking & problem solving

- [x] A capacity for independent, conceptual and creative thinking
- [x] A capacity for informed argument and logical reasoning
- [x] A capacity for problem identification and problem-solving

Learning & personal development

- [ ] A commitment to developing professional values, self-insight and capabilities
- [x] The ability to respond positively to constructive criticism and feedback from peers, tutors and colleagues
- [ ] Self-confidence and an ability to exercise own 'voice'

Digital literacy and IT

- [x] Confidently employ a range of digital technologies for academic and professional/ career development purposes
- [ ] Use appropriate digital technologies and resources to locate diverse types of information for both academic and non-academic purposes
- [ ] The ability to critically evaluate and engage with the information obtained

Self-management & professionalism

- [x] A capacity for taking responsibilities and ownership of actions
- [x] An ability to manage time effectively, including setting priorities, juggling competing demands and meeting deadlines
- [ ] An understanding of work cultures and practices, including work place professionalism

Team working and leadership

- [x] An ability to co-operate and collaborate with others, including working to shared aims
- [ ] An ability to take other viewpoints, have empathy for other people's position and give constructive feedback
- [ ] An ability to motivate and lead others, including taking the initiative and delegating when required

Communication

- [x] An ability to communicate in written form for different purposes, audiences and contexts
- [ ] An ability to communicate in person for different purposes, audiences and contexts

- [ ] An ability to network effectively with others for specific purposes

Applied numeracy and Technical proficiency

- [x] An ability to perform routine calculations in daily tasks and in applied contexts
- [x] An ability to analyse and interpret data and evidence
- [x] Proficiency in skilled techniques used for academic and professional purposes

Career management

- [ ] A capacity to reflect on and articulate qualities, strengths and attributes
- [ ] The ability to research specific job and career areas
- [ ] An ability to present your experience and attributes positively to graduate employers

Commercial awareness

- [x] A knowledge of the link between academic subjects and their commercial applications
- [ ] An understanding of business priorities and the needs of graduate employers
- [ ] The ability to understand and prioritise customer needs

Innovation and enterprise

- [ ] The confidence to introduce and establish something new
- [ ] The potential to take an idea through to its practical application
- [ ] The potential to apply an enterprising mind-set to situations

Citizenship and stewardship

- [ ] An understanding of your place within local and global communities
- [ ] An awareness of the need to manage shared and finite resources, including an appreciation of moral and ethical dimensions
- [ ] An ability to improve the lives of others and lobby for positive change through community and/or political engagement