What is best practice regarding ECTS credits, Modularisation and Learning Outcomes in our University?

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Vytautas Magnus University
Lithuania

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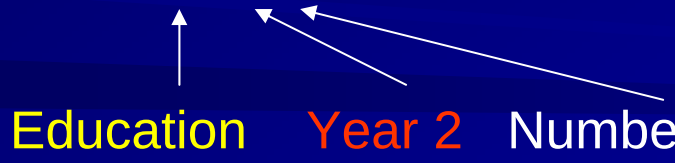
What is Modularisation?

- A module is a self-contained fraction of a student's workload for the year and carries a unique examination/assessment mark.
- The size of a module is indicated by its credit weighting.
- Under ECTS system, each year of degree programme = 60 credits.
- Modules are allocated 5, 10, 15 or 20 credits depending on the fraction of the programme workload covered in the module.
- Each module is given a unique code, e.g. ED2013



Advantages of modularisation

- Gives greater clarity of structure and helps to establish clear relationship between credits and student workload in ECTS system.
- Reflects more accurately the various elements of students' workload.
- Facilitates work abroad, work placement, off-campus study as modules for degree examinations.
- Gives greater clarity and consistency in assessment.
- Provides flexibility in the design of degree programmes by incorporating modules from different areas.
- Facilitates credit accumulation, i.e. increases number of pathways to final degree award. Hence, encourages greater diversity of students, e.g. mature and part time students.
- Allows third level institutions to participate in schemes like SOCRATES so that students obtain ECTS credits towards their degree.
- Facilitates greater ease of student transfer between institutions offering ECTS-based programmes.

Modules, Marks, Exams in UCC

Module	Student Workload	Marks	Exam Paper
5 credits*	125 – 150 hours	100	1.5 hours
10 credits	250 – 300 hours	200	3 hours
15 credits	375 – 450 hours	300	3 hours
20 credits	500 – 600 hours	400	2 x 3 hours

Note: Total per year = 60 credits = 1200 marks

- **Module Title**: Dental Surgery – 5th Year Dental Students
- **Module Code**: DS5001

On successful completion of this module, students should be able to:

- Summarise relevant information regarding the patient's current condition to generate a differential diagnosis
- Formulate an appropriate treatment plan and justify the proposal giving due consideration to patient expectations and limitations
- Arrange appropriate tests and demonstrate the ability to interpret tests and reports
- Administer local anaesthetics safely and perform basic dento-alveolar surgical procedures in a professional manner showing good clinical governance
- Recognise, evaluate and manage medical and dental emergencies appropriately
- Differentiate between patients that can/can not be safely treated by a GDP
- Manage competing demands on time, including self-directed learning & critical appraisal
- Master the therapeutic and pharmacological management of patients with facial pain and oro-facial disease

(Learning outcomes written by Dr. Eleanor O'Sullivan)

UCC
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Book of Modules 2009/2010

Mathematics

Choose by Subject Category or Module Code:

Mathematics

MA1003 Introductory Mathematics and Applied Mathematics
MA1008 Calculus and Linear Algebra for Engineers
MA1054 Calculus and Analysis
MA1055 Mathematics (Honours)
MA1057 Introduction to Abstract Algebra
MA1058 Introduction to Linear Algebra
MA1100 Introductory Mathematics for Business I
MA1905 Introduction to Mathematical Techniques
MA2006 Intermediate Calculus for Scientists
MA2007 Linear Algebra
MA2013 Mathematics for Engineering
MA2051 Mathematical Analysis I
MA2054 Ordinary Differential Equations
MA2055 Linear Algebra
MA2058 Graph Theory and Combinatorics
MA2071 Multivariable Calculus
MA2200 Introductory Mathematics for Business II
MA3051 Mathematical Analysis II
MA3052 Ring and Field Theory
MA3053 Differential Geometry of Curves and Surfaces
MA3054 Complex Analysis
MA3056 Metric Spaces and Topology
MA3059 Graph Theory and Combinatorics
MA3301 Multivariable Calculus and Optimisation
MA4051 Group Theory
MA4052 Functional Analysis
MA4053 Project
MA4054 Numerical Analysis
MA4056 Logic and Computation
MA4058 Measure Theory and Martingales
MA4402 Game Theory and Linear Algebra
MA4403 Financial Mathematics

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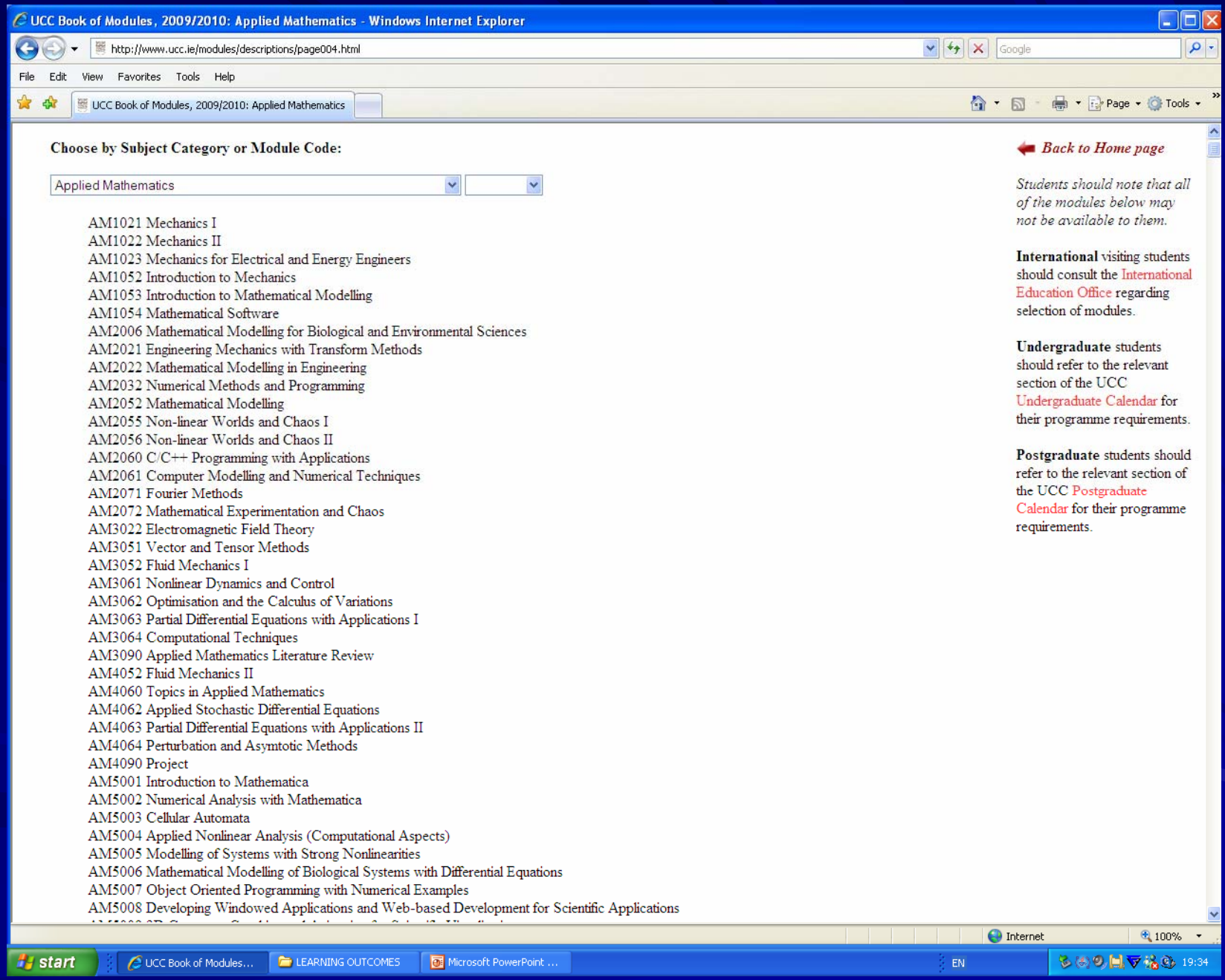
Students should note that all of the modules below may not be available to them.

International visiting students should consult the International Education Office regarding selection of modules.

Undergraduate students should refer to the relevant section of the UCC Undergraduate Calendar for their programme requirements.

Postgraduate students should refer to the relevant section of the UCC Postgraduate Calendar for their programme requirements.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http://www.ucc.ie/modules/descriptions/page004.html
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UCC Book of Modules, 2009/2010: Applied Mathematics
Page Tools
Choose by Subject Category or Module Code:
Applied Mathematics
AM1021 Mechanics I
AM1022 Mechanics II
AM1023 Mechanics for Electrical and Energy Engineers
AM1052 Introduction to Mechanics
AM1053 Introduction to Mathematical Modelling
AM1054 Mathematical Software
AM2006 Mathematical Modelling for Biological and Environmental Sciences
AM2021 Engineering Mechanics with Transform Methods
AM2022 Mathematical Modelling in Engineering
AM2032 Numerical Methods and Programming
AM2052 Mathematical Modelling
AM2055 Non-linear Worlds and Chaos I
AM2056 Non-linear Worlds and Chaos II
AM2060 C/C++ Programming with Applications
AM2061 Computer Modelling and Numerical Techniques
AM2071 Fourier Methods
AM2072 Mathematical Experimentation and Chaos
AM3022 Electromagnetic Field Theory
AM3051 Vector and Tensor Methods
AM3052 Fluid Mechanics I
AM3061 Nonlinear Dynamics and Control
AM3062 Optimisation and the Calculus of Variations
AM3063 Partial Differential Equations with Applications I
AM3064 Computational Techniques
AM3090 Applied Mathematics Literature Review
AM4052 Fluid Mechanics II
AM4060 Topics in Applied Mathematics
AM4062 Applied Stochastic Differential Equations
AM4063 Partial Differential Equations with Applications II
AM4064 Perturbation and Asymtotic Methods
AM4090 Project
AM5001 Introduction to Mathematica
AM5002 Numerical Analysis with Mathematica
AM5003 Cellular Automata
AM5004 Applied Nonlinear Analysis (Computational Aspects)
AM5005 Modelling of Systems with Strong Nonlinearities
AM5006 Mathematical Modelling of Biological Systems with Differential Equations
AM5007 Object Oriented Programming with Numerical Examples
AM5008 Developing Windowed Applications and Web-based Development for Scientific Applications
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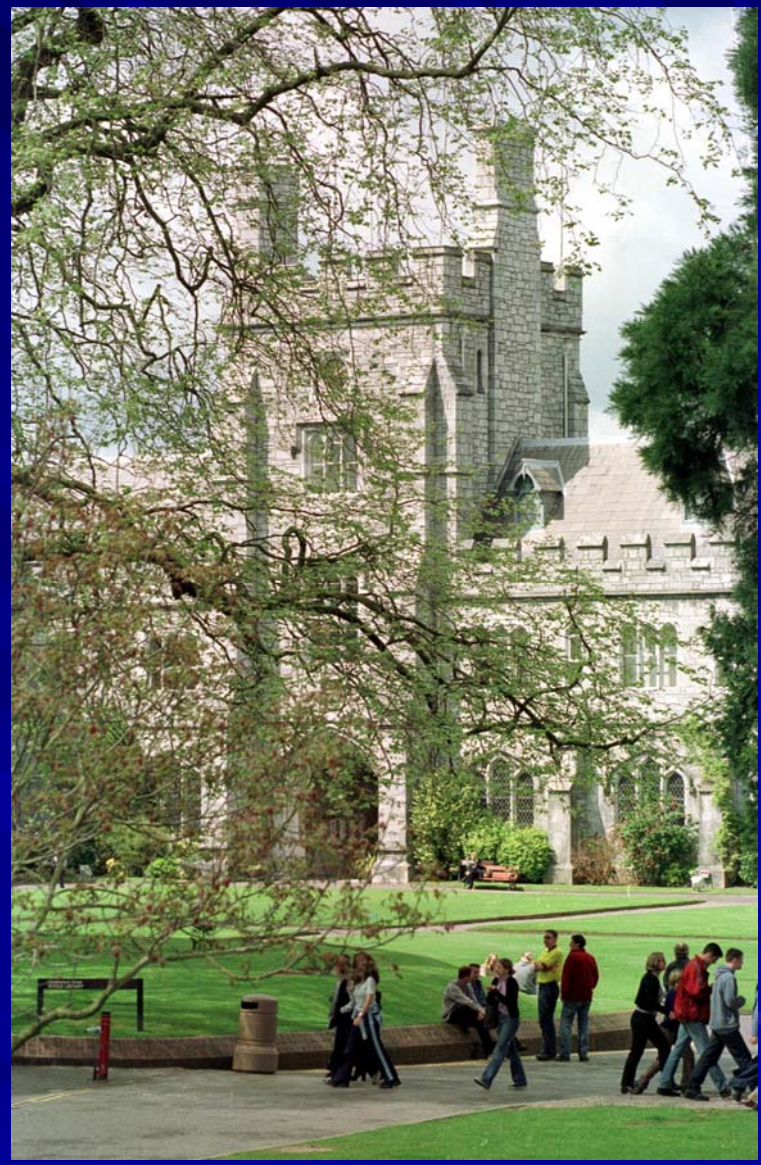
In University College Cork, a 5-credit module normally consists of 24 hours of lectures plus associated tutorials/essays / readings/practical/coursework

OR

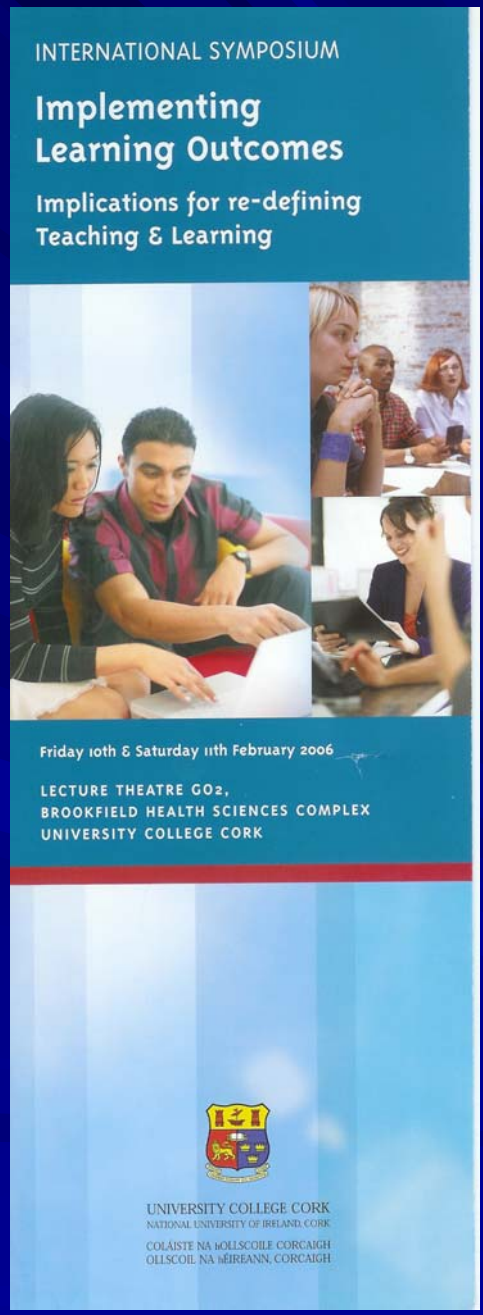
The equivalent in student workload such as literature projects, field courses, or indeed set reading assessed by written examination, work for problem sets, studying of legal material and cases outside of lecture hours, etc.



Learning Outcomes in UCC

- UCC participated in the European Universities Association Network on Quality in Teaching and Learning in 2003 – 2004. ”Implementing a Learning Outcomes Approach to Teaching” – Quality Culture Project IV (EUA).
- Network of six EU universities involved.
- Headed up by Prof. Aine Hyland, Education Dept. and Dr Norma Ryan Quality Promotion Unit UCC An 18 month project - the report was published in 2005. The project concentrated on Learning Outcomes rather than Competences

A number of international conferences on Bologna Process were held in University College Cork – how I became involved.



The Bologna Process 2020 -
The European Higher Education Area in the new decade

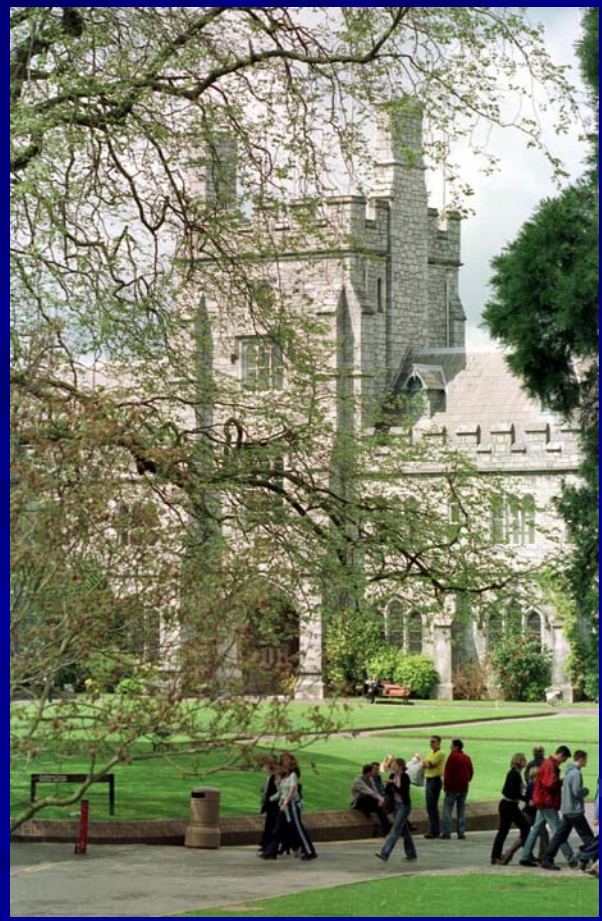
Communiqué of the Conference of
European Ministers Responsible for Higher Education,
Leuven and Louvain-la-Neuve, 28-29 April 2009

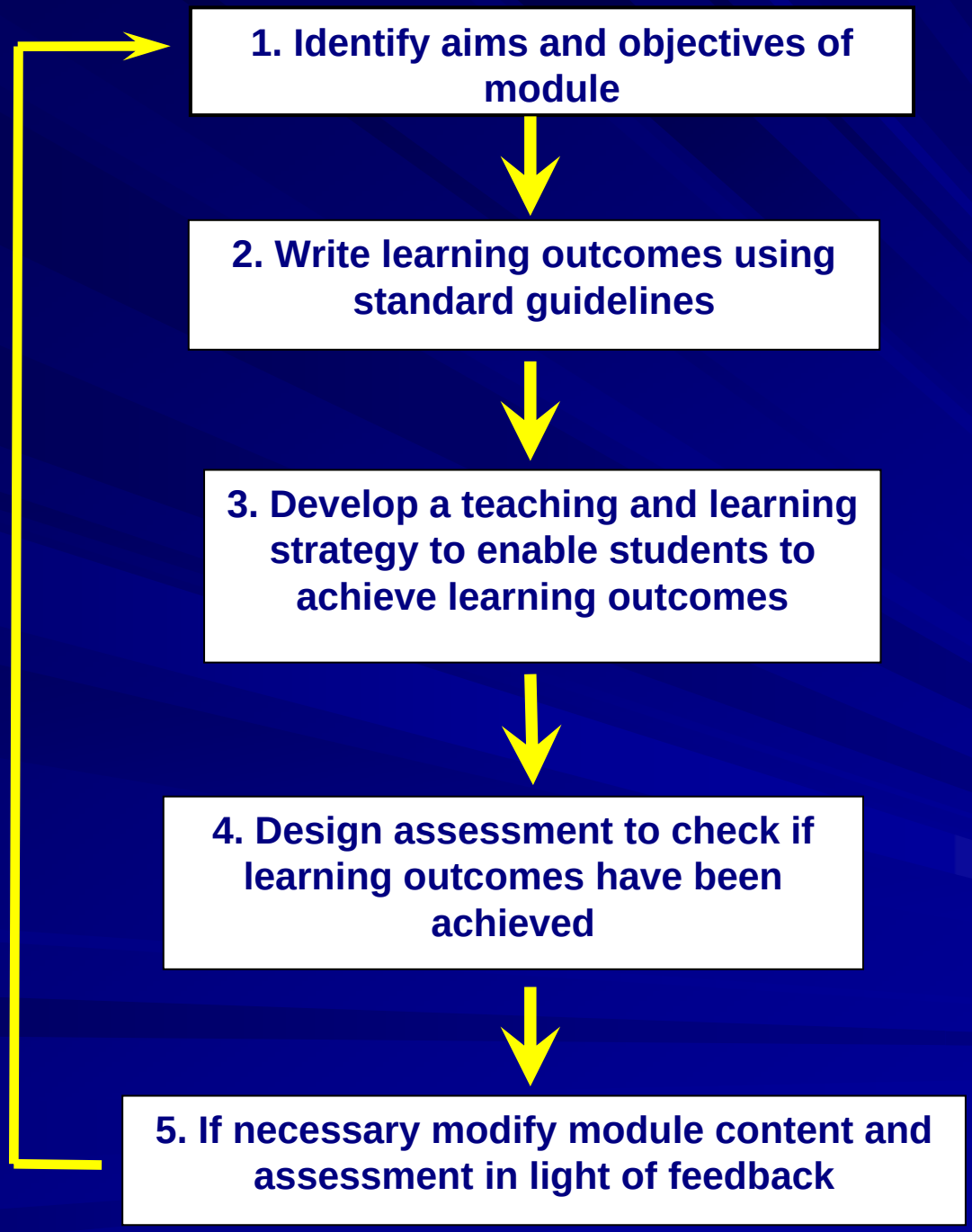
- ***Student-centred learning and the teaching mission of higher education***

14. We reassert the importance of the teaching mission of higher education institutions and the necessity for ongoing curricular reform geared toward the development of learning outcomes. Student-centred learning requires empowering individual learners, new approaches to teaching and learning, effective support and guidance structures and a curriculum focused more clearly on the learner in all three cycles. Curricular reform will thus be an ongoing process leading to high quality, flexible and more individually tailored education paths. Academics, in close cooperation with student and employer representatives, will continue to develop learning outcomes and international reference points for a growing number of subject areas. We ask the higher education institutions to pay particular attention to improving the teaching quality of their study programmes at all levels. This should be a priority in the further implementation of the European Standards and Guidelines for quality assurance.

The Teaching and Learning Centre Ionad Bairre

- Set up in October 2006 – Dr Bettie Higgs and Marian McCarthy.
- Has provided a continuous series of lunchtime seminars on Teaching and Learning throughout each academic year.
- “Taking a Learning Outcomes approach to Teaching and Learning”
- “Learning Outcomes-how can we be sure they have been achieved?”
- “Getting to Grips with Assessing Creative and Original Student work - Unpredictable Learning Outcomes”
- Drop-in workshops on Learning Outcomes.




1. Identify aims and objectives of module
2. Write learning outcomes using standard guidelines
3. Develop a teaching and learning strategy to enable students to achieve learning outcomes
4. Design assessment to check if learning outcomes have been achieved
5. If necessary modify module content and assessment in light of feedback

“Writing Learning Outcomes is a Process not an Event”

The Experience of using Learning Outcomes with student teachers

- The list of learning outcomes and details of assessment structure for each module are given to the students.
- Each student is required to incorporate the learning outcomes for each lesson into the planning of each lesson.
- In the past, students simply listed the aims and objectives.

Sample Extract from student's lesson plan

Aims: The aim of this lesson is to introduce the concept of sound waves to the pupils.

Objectives: The objective of this lesson is to give pupils an understanding of how sound waves are transmitted.

Learning Outcomes

At the end of this lesson students should be able to:

- Recognise that a wave carries energy from one place to another.
- Identify the different parts within a wave
- Associate the parts of a wave in a diagram to the compression and rarefraction of molecules in an actual physical wave.
- Explain why mechanical waves need a medium.
- Recognise that sound is a form of energy that causes the particles in a medium to vibrate.
- Explain how the amplitude of a sound wave determines the loudness of the sound.
- Distinguish between high frequency and low frequency sounds.

Some points emerging from introduction of Learning Outcomes into teacher-training programme at UCC

- Teaching practice supervisors find an improvement in the classroom performance of the student teachers with lessons more focused on the important outcomes as outlined by the student teachers in the lesson plans.
- In their written and oral reports the teaching practice supervisors comment on the fact there is enhanced preparation apparent in the students' lesson plans with students putting a lot of effort into selecting the appropriate teaching strategies matched to the intended learning outcomes.
- Student like the clarity of the learning outcomes given to them for each module of their programme. They feel that the transparency of the learning outcomes gives them direction and help them to understand what they are expected to achieve in the module.

- Students liked the highlighting of the linking of the learning outcomes to the teaching and learning activities and to the assessment planned for them – increased motivation?
- In their reflective portfolios and lesson plan folders, students have frequently commented on the fact that having to write down the learning outcomes for each lesson prepared by them, helps them to focus on what they want to achieve in the lesson. This, in turn, helps them in assessing the lesson when reflecting on the lesson after they have taught it.
- Over the past three years, the examination results for the teaching practice component of the teacher training programme have shown an average increase of 8.75% across all levels for the graduating students (N = 114). Whilst at this early stage it is not possible to attribute this increase solely to the effect of introducing learning outcomes in the programme, the enhanced examination performance is certainly a step in the right direction – it appears that if the learning outcomes are clear to the students, then there is a greater chance that they will achieve them

Issues with Introduction of Learning Outcomes

- Learning Outcomes are only part of a massive reform package, e.g. Qualification Frameworks, Lifelong Learning, ECTS, Mutual Recognition, Quality Assurance.
- How best to introduce Learning Outcomes ("top down" or "bottom up"? Best left to local and National autonomy.
- How best to deal with sceptical attitude of some staff members – "dumbing down", "restricting academic freedom"? Hence, important to introduce Learning Outcomes in a proper fashion using sources of good practice and advice.
- Lack of clarity and lack of shared understanding on key terminology, e.g. learning outcomes and competences.

The present situation in University College Cork

- All undergraduate modules written in Learning Outcomes in 2006 – 2007 academic year. Work in progress on postgraduate modules.
- Sub-committee set up (Quality Promotion Unit, Teaching and Learning Centre, Registrar's Office and Educationalist) to study Learning Outcomes submitted.
- Programme co-ordinators finishing up work on programme Learning Outcomes at present.
- Working towards deadline of 2010.

Group Discussion

- Examples of Programme Learning Outcomes and Module learning Outcomes to be studied and discussed.

Workshop

- In the workshop sessions, the lecturers will break into small groups.
- Each person in each group will write a set of learning outcomes for a module that he/she teaches. Each learning outcome will be written on a POST IT paper.
- Within each group the lecturers will discuss among themselves the learning outcomes that have been written.
- As part of the discussion, all of the POST ITs will be put on a flip chart or large poster paper and analysed for coverage of Bloom's Taxonomy. (The flip chart or poster paper will be divide into 6 rows sections labelled with each stage of Bloom's Taxonomy).
- A rapparteur will be appointed by each group to report back to the Plenary session.