Learning Outcomes
Formulating, Writing, Revising
Yaşar Üniversitesi, 15.09.2010
AB Merkezi
abmerkezi@yasar.edu.tr
Bologna Process–Milestones

- Bologna Declaration, 1999 (29 countries)
- Prague Declaration, 2001 (32 countries, Turkey’s Participation)
- Berlin Declaration, 2003
- Bergen Declaration, 2005
- London Declaration, 2007 (47 countries)
- Leuven, 2009
Bologna Process aims...

- Adoption of a system of easily readable and comparable degrees
- Establishment of a system of credits
- Promotion of mobility
- Promotion of European co–operation in quality assurance
- Promotion of European dimension in higher education
- Lifelong learning
- Higher education institutions and students
- Promoting attractiveness of the European Higher Education Area
- Doctoral studies and the synergy between the EHEA and ERA
**European Union** – all 27 countries

Austria
Belgium
Bulgaria
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
United Kingdom

**Non-European Union countries**

Albania
Andorra
Armenia
Azerbaijan
Bosnia and Herzegovina
Croatia
Georgia
Holy See
Iceland
Liechtenstein
Montenegro
Moldova
Norway
Macedonia
Russia
Serbia
Switzerland
Turkey
Ukraine
Three main pillars

- Qualifications Framework (NQF, competences)
- Recognition (ECTS/DS, learning outcomes)
- Quality Assurance (National QA Agency, QA Agencies at sectoral level)
Implementation of the Bologna Process in Turkey

- Coordinated by the Turkish Higher Education Council (YÖK)
- Since March 1, 2007
- National Team of Bologna Promoters/Experts
  Members – teaching staff from different universities(16)
  One Student Representative
Bologna Team of Turkey (2010)

- Prof. Dr. Gönül Akçamete – Ankara Üniversitesi
- Prof. Dr. Miraç Akçay – Karadeniz Teknik Üniversitesi
- Prof. Dr. Süheyda Atalay – Ege Üniversitesi
- Prof. Dr. İsmail Naci Cangül – Uludağ Üniversitesi
- Prof. Dr. Zafer Gül – Marmara Üniversitesi
- Prof. Dr. M. Emin Köktaş – Ondokuz Mayıs Üniversitesi
- Prof. Dr. Hasan Mandal – Anadolu Üniversitesi
- Prof. Dr. Selda Önderoğlu – Hacettepe Üniversitesi
- Prof. Dr. Lerzan Özkale – İstanbul Teknik Üniversitesi
- Prof. Dr. Nebahat Sarı – Çukurova Üniversitesi
- Prof. Dr. Ahmet Selamoğlu – Kocaeli Üniversitesi
- Prof. Dr. Metin Toprak – Eskişehir Osmangazi Üniversitesi
- Prof. Dr. Fahri Yavuz – Atatürk Üniversitesi
- Yrd. Doç. Dr. Ömer Açıkgoz – Kırıkkale Üniversitesi
- Yrd. Doç. Dr. Burak Arikân – Sabancı Üniversitesi
- Öğrenci Sultan Gürol – Atılım Üniversitesi Öğrenci Konseyi Temsilcisi
Qualifications Framework (Yeterlilikler Çerçevesi)

- Qualification Framework for European Higher Education Area
- National Qualifications Framework
- Sectorel Qualifications Framework
- Programme Outcomes
- Learning Outcomes

The reason of feeling such a system necessary is the feature of being an important tool to enable transparency, recognition, mobility of learners and graduates of a country in the international arena of higher education system.
Qualifications

Qualifications: is determination of minimal knowledge, skill, and competences or at least what a graduate student may do, may know, and may be skilled at, for every level of higher education. (Associate degree, bachelor's level, post graduate, and doctorate)

Qualifications Framework is the system organizing and describing them. National Qualification Framework is a system in which degrees accepted and associated by national and international partners can be given.
Qualifications Framework

- Cycles
- Diploma
- Profile

- Level Descriptives
- Learning Outcomes

- Student Workload
- ECTS

Aims: Transparency, Recognition, Mobility, Employment

Quality Assurance
HIGHER EDUCATION QUALIFICATIONS FRAMEWORK

- They are the minimal
  - Knowledge (bilgi)
  - skill (beceri)
  - competences (yetkinlik)

that the students, who are supposed to have, have deserved to get these degrees in the Framework of Higher Education which consists of associate degree, license, master’s degree and doctor’s degree
Please read the National Qualifications Framework
(Türkiye Yükseköğretim Yeterlilikler Çerçevesi)

zi&c=0&i=91
Associate Degree (Some Ex.)

- To be able to do the defining, gathering and using the data efficiently that is necessary to solve the problem in his field; show that he can use the theoretical knowledges that are necessary for practical applications, manual and/or intellectual skills.
- To have foreign language knowledge in an efficient level in their fields of applications.
- To have the competence of using the hardware and software that their occupation requires with the knowledge of basic computer use.
License (Some Ex.)

- To be able to have an advanced knowledge and understanding which has been set up on the knowledge, skill and competences which are got in general high school education in a specific field and supported by the lesson materials consisting of the newest knowledge of his field and other scientific sources.
- To evaluate the knowledge, understanding and skills which he has, the concepts in a specific field, ideas and the data by scientific methods, to determine the complicated problems and subjects, and to be able to use them to analyze; to be able to make offers and discussions based on the proofs and research except for the usual problems in his field.
Master’s Degree (Some Ex.)

- To have the efficiencies of reaching the knowledge by making a scientific research with extension and deepening of the knowledge in a field based on the qualifications of license degree; and of evaluating, commenting and applying the knowledge
- To be able to transfer the processes and results of the studies to the groups out of or in that field systematically and clearly in oral or written
Doctor’s Level (Some Ex.)

- Mostly in a field based on the efficiencies of doctor’s degree, to have the efficiencies of perceiving, designing, applying and finalizing independently the research process on an authentic subject with the extension and deepening of the knowledge.
- To publish a method which introduces the innovation to the science, develops a scientific method, or at least one part of an original study applying a field in the international refereed prestigious journals, and to make contribution to the science by widening the borders of knowledge in his field.
Programme Outcomes

Course A

Learning Outcome

Learning Outcome

Learning Outcome

Course B

Learning Outcome

Learning Outcome

Course C

Learning Outcome
ULUSAL YETERLİKLER

SEKTÖREL YETERLİKLER

UYUŞUYOR MU ?

Evet

Sürdürülebilirlik

Hayır

PROGRAM ÇIKTISI

MEZUN YETERLİKLERİ

DERS 1 ÖĞRENME ÇIKTISI

DERS 2 ÖĞRENME ÇIKTISI

DERS 3 ÖĞRENME ÇIKTISI

DERS N ÖĞRENME ÇIKTISI
Learning Outcomes
Two Different Approaches

- Teaching oriented (Teacher and content)
- Learning oriented (Student and learning)
Teacher Centered Approach

- Determining the course content that the teacher intends to teach
- Planning how to teach this to the students
- Assessing how much of the content is learned by the student
- Teacher's input and on assessment in terms of how well the students absorbed
- The material taught

Course descriptions referred mainly to the content of the course that would be covered in lectures.
Student Based Approach
(Outcome based approach)

- what the students are expected to be able to do at the end of the module or programme

- Learning outcomes: what it is expected that students should be able to do at the end of the learning period.

- Focus to gain these learning outcomes

- Assessment: How much of these outcomes are successfully gained?

What students can do at the end of a learning opportunity defines the learning outcome
Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning. (ECTS Users’ Guide, 2005)

1. Knowledge/understanding
2. Skills
3. Competences
Learning Outcomes

- Statements of what **a learner is expected** to know, understand and/or be able to demonstrate at the end of a period of learning
- A shift from intentions of teacher (aims of a module/course) to achievement of learner,
- From teacher based to student based learning
- The learning outcomes are student-focused and conveys the learning success of the student, not the aim of education
This is a change from the more traditional approach where academics tend to define courses in terms of what is taught, rather than what the student can do at the end of the module or programme.
Components of Learning Outcomes

- **Knowledge/Understanding**: They are the knowledges learned and understood as a subject and a content in a specific field at the end of a cycle, and repeated in case of necessity.

- **Cognitive Skills / Intellectual Skills (Temel Beceriler)**: They are the efficiencies of the student of understanding new and more complicated subjects, making comparisons, evaluating by means of analysis and synthesis, applying and commenting.

- **Subject Specific Skills (Mesleki Beceriler)**: These skills are the skills applied to the fields that need special ability and the learning outcomes here express the efficiencies of doing a job easily and skillfully by making an effort in art, sport and likewise.

- **Competences**: They are the efficiencies of using the acquired knowledge and skills efficiently and masterly by combining them with environmental data in different and complicated situations and subjects encountered.
Key / Transferable Skills

- Using the foreign languages
- Computer literacy
- Learning the learning
- Working independently
- Communicating
- Management of the data
Aims

- The aim of a module or programme is a broad general statement of teaching intention, i.e. it indicates what the teacher intends to cover in a block of learning. Aims are usually written from the teacher’s point of view to indicate the general content and direction of the module.

- For example, the aim of a module could be “to introduce students to the basic principles of economics” or “to provide a general introduction to the history of Germany in the twentieth century”.
Examples of verbs used in writing aims and learning outcomes. (Fry et al., 2000 p. 51)

<table>
<thead>
<tr>
<th>Aims</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know</td>
<td>Distinguish between</td>
</tr>
<tr>
<td>Understand</td>
<td>Choose</td>
</tr>
<tr>
<td>Determine</td>
<td>Assemble</td>
</tr>
<tr>
<td>Appreciate</td>
<td>Adjust</td>
</tr>
<tr>
<td>Grasp</td>
<td>Identify</td>
</tr>
<tr>
<td>Become familiar with</td>
<td>Solve, apply, list</td>
</tr>
</tbody>
</table>
While writing LO…

- Avoid verbs like “know”, “understand”, “be familiar with”, “be exposed to” (Osters and Tiu)
- “Try to avoid ambiguous verbs such as “understand”, “know”, “be aware” and “appreciate”. (Sheffield Hallam Guide).
- “Care should be taken in using words such as ‘understand’ and ‘know’ if you cannot be sure that students will understand what it means to know or understand in a given context” (Univ NSW).
- Certain verbs are unclear and subject to different interpretations in terms of what action they are specifying...... These types of verbs should be avoided: know, become aware of, appreciate, learn, understand, become familiar with. (American Association of Law Libraries).
Writing Learning Outcomes

Learning outcomes should:

- be written in the future tense
- identify important learning requirements
- be achievable and assessable
- use clear language easily understandable to students
- Avoid vague terms like know, understand, learn, be familiar with, be exposed to, be acquainted with, and be aware of. These terms are associated with teaching objectives rather than learning outcomes.
- Ensure that the learning outcomes of the module relate to the overall outcomes of the programme.
- The learning outcomes must be observable and measurable.
- Ensure that the learning outcomes are capable of being assessed.
At the end of this module/course the student will be able to ......

Then follow with a verb. Useful ones include:

analyse, appraise apply, calculate, choose, compare, contrast, create, criticise, demonstrate, derive, describe, design, develop, differentiate, discuss, explain, evaluate, extrapolate, formulate, identify, list, measure, name, plan, plot, postulate, predict, present, propose, recall, recognise, use, utilise
Assessing the Learning Outcome

- If a learning outcome is defined, be prepared to say how it is developed and assessed.
- Some techniques of assessment:
  - **Written**: tests, examinations, assignments
  - **Practical**: skills testing; lab/workshop practice
  - **Oral**: interviews, various formats
  - **Aural**: listening tests
  - **Project work**: individual/group; research/design
  - **Field work**: data collection and reporting
  - **Competence testing**: threshold standards
  - **Portfolio**: combination of techniques
## Example of Matching the Assessment to the Learning Outcome

<table>
<thead>
<tr>
<th>Learning outcomes</th>
<th>Assessment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrate good presentation skills.</td>
<td>a) Multiple choice questions</td>
</tr>
<tr>
<td>2. Formulate food product</td>
<td>b) Prepare a 1000-word research proposal</td>
</tr>
<tr>
<td>3. Identify an area for research</td>
<td>c) Lab-based project</td>
</tr>
<tr>
<td>4. Identify signs and symptoms of MS in a patient</td>
<td>d) Make a presentation to peers</td>
</tr>
<tr>
<td>Assessment Task 1 e.g. Written Exam</td>
<td>Assessment Task 2 e.g. Project</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Learning Outcome 1 Describe...</td>
<td></td>
</tr>
<tr>
<td>Learning Outcome 2 Investigate...</td>
<td></td>
</tr>
<tr>
<td>Learning Outcome 3 Demonstrate...</td>
<td></td>
</tr>
<tr>
<td>Qualifications</td>
<td>Sub Category</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Knowledge (Bilgi)</td>
<td>Theoretical Practice</td>
</tr>
<tr>
<td>Skills (Beceri)</td>
<td>Theoretical Practice</td>
</tr>
<tr>
<td>Competences</td>
<td>Theoretical Practice</td>
</tr>
</tbody>
</table>
Learning outcomes for an introductory course on atomic structure

The aims of the course may be to give students an appreciation of how models of the atom have developed and help them to recognise the importance of quantum mechanics in describing the modern view of the atom.

At the end of this course the student will be able to:

- define the terms *wavelength, frequency, amplitude* and *node*.
- recall the relative frequencies or wavelengths of the various regions in the electromagnetic spectrum.
- describe the Bohr model of the atom and use it to account for the emission line spectra of the H atom.
- discuss the limitation of the Bohr model.
- use the Rydberg equation to predict the wavelengths of electronic transitions.
- describe the concept of particle wave duality.
- state the Heisenberg Uncertainly Principle and discuss the ramifications of it.
- describe what you understand by the term *orbital*.
- name and state the relationships between the quantum numbers n, l and ml.
Course Description

1. Determine the general aim of the course
2. Write down the learning outcomes in line with the aims
3. Determine the proper content to achieve the learning outcomes
4. Determining the teaching strategy and the methodology
5. Assessing whether the learning outcomes are gained
6. Revising the content, teaching and assessment strategies by feedback if necessary
Programe Outcomes
The rules for writing learning outcomes for programmes are the same as those for writing learning outcomes for modules.

The general guidance in the literature is that there should be 5–10 learning outcomes for a programme and that only the minimum number of outcomes considered to be essential be included.

Programme learning outcomes describe the essential knowledge, skills and attitudes that it is intended that graduates of the programme will be able to demonstrate.
The ability of applying mathematics, science and engineering knowledge to the problems of X engineering.

The ability of defining, modeling and solving the engineering problems in X engineering and related fields.

The ability of solving and designing a process in the direction of a defined goal.

The ability of solving the data, making and designing experiment, commenting the results.

The ability of behaving independent, using the initiative and creativity.
Example of Programme Learning Outcomes [BSc(Ed)]

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

- Recognise and apply the basic principles of classroom management and discipline.
- Identify the key characteristics of excellent teaching in science.
- Develop comprehensive portfolios of lesson plans that are relevant to the science curricula in schools.
- Evaluate the various theories of Teaching and Learning and apply these theories to assist in the creation of effective and inspiring science lessons.
- Critically evaluate the effectiveness of their teaching of science in the second-level school system.
- Display a willingness to cooperate with members of the teaching staff in their assigned school.
- Foster an interest in science and a sense of enthusiasm for science subjects in their pupils.
- Synthesise the key components of laboratory organisation and management and perform laboratory work in a safe and efficient manner.
- Communicate effectively with the school community and with society at large in the area of science education.
PO—Undergraduate, engineering degree

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

- Derive and apply solutions from knowledge of sciences, engineering sciences, technology and mathematics.
- Identify, formulate, analyse and solve engineering problems.
- Design a system, component or process to meet specified needs and to design and conduct experiments to analyse and interpret data.
- Work effectively as an individual, in teams and in multi-disciplinary settings together with the capacity to undertake lifelong learning.
- Communicate effectively with the engineering community and with society at large.  
  
[Undergraduate engineering degree]
On successful completion of this programme, students should be able to:

- Perform problem solving in academic and industrial environments.
- Use, manipulate and create large computational systems.
- Work effectively as a team member.
- Organise and pursue a scientific or industrial research project.
- Write theses and reports to a professional standard, equivalent in presentational qualities to that of publishable papers.
- Prepare and present seminars to a professional standard.
- Perform independent and efficient time management.
- Use a full range of IT skills and display a mature computer literacy.

LO–Post–graduate, Computer Science
We should clearly include “UFND Courses” to our Program Outcomes

- Human Sciences, Ethics, Esthetics, Project Management, Design Culture, Research Methods
- Social Responsibility
While determining our programme outcomes, we should take into account...

- **External Stakeholders**: Ministry of National Education, Council of Higher Education (YÖK), Turkish Union of Chambers and Exchange Commodities, Small and Medium Sized Enterprises, Graduates, Employers, Trade Association Representatives, Advisory Committee

- **Internal Stakeholders**: Instructors /lecturers, Department Staff and Students.
Bologna sürecinde eğitim–öğretim; öğrenme girdilerine dayalı ve daha çok “öğretici merkezli” yapıdan, öğrenme çıktılarına dayalı, “öğrenci merkezli” bir yapıya dönüşmüştür.

- Ders amaçlarının standart biçimde ifade edilmesi
- Öğrenme çıktıları; Dersin içeriği ya da öğretim elemanının ne yapmak istediğinden ziyade öğrencinin neleri bileceğinin ve neleri yapabileceği açık ifadeleridir. Bir başka deyişle öğrenme sürecinin sonunda öğrencilerin sergilediği gereken özellikleri ifade eder. Çıktılar; planlı, düzenli öğrenme–öğretim yaşantıları yoluyla bireylere kazandırılması düşünülen bilgiler, yetenekler, beceriler, tutumlar, ilgiler ve alışkanlıkların ifadesidir.
Öğrenme çıktıları ile öğrenme ortamının öğrenci merkezli olması hedeflenmekte ve öğretim elamanının ne öğreteceğinden çok öğrencilerin neler (bilgi, beceri, tutum, değer vb.) kazanacakları vurgulanmaktadır.
ADIM 1: Dersin amaçlarının belirlenmesi

- Program çıktılarıyla uyumlu şekilde dersin amaçlarının belirlenmesi. Bu aşamada genel bir amaç belirlemesi yapılmalıdır. Örneğin; Bu dersin sonunda öğrenciler bilimsel bir araştırmayı nitel araştırma yöntemlerine uygun biçimde tasarlamayı, yürütümeyi, sonuçlandırmayı ve raporlamayı gerçekleştirebileceklerdir.
ADIM 2: Dersin amaçıyla tutarlı öğrenme çıktılarının yazılması

- Bu noktada «öğrenci, dersin sonunda hangi bilgi, beceri ya da tutumlara sahip olmalıdır?» sorusu sorulmalıdır. Öğrenme çıktılarının sonuna «bilgisi, becerisi, gücü yeteneği, farkındalık» gibi sözcükler getirilip, “–e bilme” ifadesi ile sonlandırılmalıdır. Örneğin; Nitel araştırmada veri analizi süreçlerini açıklayabilme.

Öğrenme çıktılarının dersin süresine, kaynaklara ve öğrenci kitlesinin özelliklerine göre çok fazla detaya girilmeden açık bir dille ifade edilmesi önerilmektedir.
Adım 3: Program Çıktıları ile Öğrenme Çıktılarının Karşılaştırılması

- Program çıktıları ile öğrenme çıktılarını karşılaştırılması ile öğrenme çıktıları hazırlanan dersin programına katkıda görünebilir kılınabilecektir.
Adım 4: İçeriğin Hazırlanması

- Her öğrenme çıktısi için hangi konuların aktarılacağı, hangi kaynaklardan hangi bölümlerin referans alınacağı belirlenmelidir.
Adım 5: Öğretme–Öğrenme süreçlerinin belirlenmesi

- Her öğrenme çıktısi için öğrencilerin kazanabilirliği için öğretim elemanının kullanabileceği en uygun stratejiye bir başka deyişle yöntem ve tekniklere karar vermesi gerekmektedir. Böylece her öğrenme çıktısi için uygun yöntem belirlenmesi ile öğrenme–öğretme süreçleri tamamlanacaktır.
Adım 6: Ölçme ve Değerlendirme süreçlerinin belirlenmesi

- Bu adımda, öğretim elemanı «bu öğrenme çıktısını öğrencilerimin kazanıp kazanmadıklarını nasıl değerlendirebilirim?» sorusunu sormalıdır. (Test, proje, ödev, ara sınav, final sınavı, derse devam vs.)
- Böylece öğrenme sürecinde konuların listesi, hatalara göre konuların hangi sıra ile ele alınacağı, ders süresince ve ders sonunda ne tür değerlendirme yöntemleri kullanılabileceği ortaya konulmuş olacaktır.
Yaşar University Action Plan

- ECTS – Determined by the teacher
- ECTS – Seminars with the Students and Questionnaires
- Feedbacks of Student Questionnaires

- YOK’s National Qualifications Framework
- Determination of Programme Outcomes for each Programme (8 October 2010)

- Course Outcomes – Linking with Programme Outcomes (8 November 2010)
  Course outcomes – Matching with student work load – ECTS
Faydalı Linkler

YÖK Bologna Süreci Resmi Sitesi

AB Bologna Süreci Resmi Sitesi
http://www.ehea.info


Tuning–Educational Structures in Europe
http://www.tuning.unideusto.org/tuningeu/index.php?option=content&task=view&id=173&Itemid=209
THANK YOU...

Ayselin YILDIZ
Yasar University, EU Center
ayselin.yildiz@yasar.edu.tr