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Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability (PBLMD)

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BSc in Information Technology: Benchmarking Institutional and Study Programme Fit-For-Purpose

Technical University of Moldova

Work Package 2. Benchmarking Report

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Chisinau, 2016

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1. INTRODUCTION

The purpose of this programme is to bring the Moldavian higher education system up to date, in accordance with the European Higher Education framework, thus enhancing staff and student mobility and, certainly, raising young professionals that would meet the needs of the labour market.

Having these in mind, the Moldavian task force team visited several partner universities across Europe to have a better understanding of the Problem-based learning paradigm. As an output of these visits, the team has the goal to fill the present benchmark report, as a step forward into implementing PBL pedagogies in the universities of Moldova that chose to be part of PBLMD programme.

Table 1: Task Force Team

PBL training	Pedagogical training
National coordinator: Larisa Bugaian TUM rector: Viorel Bostan, Prof. Task-force team leader: Ciorbă Dumitru, associate Prof. Task-force team members: Victor Beşliu, associate Prof. Rostislav Călin, lecturer Mihaela Balan, lecturer	National coordinator: Larisa Bugaian TUM rector: Viorel Bostan, Prof. Task-force team leader: Task-force team members: Maria Vasiliev, associate prof. Mariana Catruc, lecturer Mihaela Balan, lecturer

2. METHODOLOGY

2.1 METHODOLOGY FRAMEWORK

2.2 DATA COLLECTION

Data was collected from two partner universities (Aalborg University and University of Gloucestershire) by Viorel Bostan and Dumitru Ciorbă (AAU), Beşliu Victor and Balan Mihaela (UoG).

Table 2: Study visits to EU partners

Country	University	Period
DK	Aalborg University	8-12 Feb 2016
UK	University of Gloucestershire	29 Feb - 05 Mar 2016

Table 3-a: Data reporting template (AAU)

Question/ Problem	Data/Sources consulted	Findings	Memos/Reflections
L1: system level	• http://ufm.dk/en/the-minister-and-the-ministry/organisation/danish-agency-for-higher-education • http://en.akkr.dk/ • http://ufm.dk/lovstof/gaeldende-love-og-regler/uddannelsesinstitutioner/filer/job-structure-for-academic-staff-at-universities-2013.pdf • http://www.en.aau.dk/education/studentlife/current-students/services-at-aau/student-grants-and-loans/ • http://www.en.aau.dk/education/studentlife/current-students/services-at-aau/insurance/ • http://studyindenmark.dk/study-options/the-danish-way-of-teaching-1/the-danish-grading-system	• Danish Agency for Higher Education • The Danish Accreditation Institution • Danish Qualifications Framework for Higher Education • Job Structure for Academic Staff at Universities • The Danish state grants and loans scheme (SU) • Free health Insurance • The Danish grading system	• The Danish Agency for Higher Education handles tasks within the overall sector for higher education including the Danish students' Grants and Loan Scheme. • The Danish Accreditation Institution accredits degrees and institutions within the higher education area. • The principal university's positions will include assistant professor/researcher, associate professor/senior researchers, professor with special responsibilities, and professor; • No tuition for students from the EU/EEA and AAU partner universities • As an international student at AAU with a residence permit for Denmark, everyone is eligible to free health care - just like any Danish citizen.

Question/ Problem	Data/Sources consulted	Findings	Memos/Reflections
L2: university management level	• http://www.aauhaandbog.aau.dk/faces/viewDocument/3072 • http://www.en.aau.dk/about-aau/strategy-vision-mission/ • http://www.en.aau.dk/about-aau/organisation-management • http://www.en.aau.dk/about-aau/organisation-management/executive-directors/	• Statutes of the self-governing institution Aalborg University • AAU's strategy for 2016-2021 • University Board • Executive Management	• The statutes describe the general purpose of Aalborg University and stipulates the constitution of the management and of the remaining organisation. • AAU's strategy for 2016-2021 defines the overall mission and vision of the university as well as the visions and actions within the following areas: Research; Problem based learning; Education; Knowledge collaboration • The Aalborg University Board is the highest authority of Aalborg University (AAU), and the University's Rector is responsible for the day-to-day management of AAU. • The Rector/Pro-rector and the AAU University Director, the deans, the Library Director and SBI's (Danish Building Research Institute) Managing Director constitute the AAU Executive Management
L3: Faculty/ Department level	• http://www.en.aau.dk/about-aau/organisation-management/faculties/ • http://www.phd.teknat.aau.dk/ • http://www.en.teknat.aau.dk/digitalAssets/150/150034_teknat-13english.pdf • http://www.cs.aau.dk/about/organisation/	• Academic Councils • Doctoral School • PhD Board • Cross-faculty departments • Department Councils • Departament's research groups	• The Academic Council is entitled to express its opinion on all academic issues of importance to the activities of the faculty/SBi and is obliged to discuss academic issues submitted to the Council by the Rector. • Aalborg University's doctoral schools are affiliated to the four AAU faculties. • The academic environments at the faculties are organised in departments, schools and centres • The division in groups reflects the department's research profile and the decentralized responsibility for research, planning and teaching.
L4: Study board level	• http://www.en.aau.dk/about-aau/organisation-	• School and Study boards	• A school at Aalborg University (AAU) is a professional

Question/ Problem	Data/Sources consulted	Findings	Memos/Reflections
	management/schools-study-boards/		community, which consists of one or more study boards with academically related programs • The tasks of the study board include study curricula, study guidance, quality assurance as well as treatment of applications for credit and exemption.
L5: Integrating disadvantaged students level	• http://www.en.aau.dk/education/studentlife/current-students/services-at-aau/advice-and-counselling/	• The Student Counselling Service • The University Chaplaincy	• The Student Counselling Service is an independent institution that offers study-related, social and psychological counselling.
L6: Physical environment level	• http://www.en.aau.dk/about-aau/organisation-management/campus-areas/ • http://www.iso.aau.dk/working-at-aalborg-university/staff-facilities/	• Three campus areas • Group rooms • Group areas • Computer facilities • University library - AUB • University cantines • Chaplains • Fitness centers	• Aalborg University (AAU) has campus areas in Aalborg, Esbjerg and Copenhagen. • Researchers, teachers and Ph.D. students have access to the university's computer facilities. • UniFitness Aalborg is equipped with professional equipment on par with the equipment in commercial fitness centers.
L7: Study program level	• http://www.en.aau.dk/education/study-in-scandinavia •	• The Aalborg Model for Problem Based Learning (PBL) • Group Work • Team-based approach • The 3+1 curricula model • Semester theme • Semester coordonator	• The study method is also known as problem based project work and, in brief, this means that in each semester everyone works closely together with a group of fellow students on a large written assignment.
L8: Pedagogical training level	• http://www.learninglab.aau.dk/about/ •	• Learning Lab • LACS - Centre for Language and Communication Services • Adjunktpædagogikum: Certification in higher education pedagogy	• Learning Lab empowers staff to fulfill Aalborg University's commitment to excellence in higher education teaching and learning. • Academic English at a High Level; Obligatory certification in English (assistant professors)

Table 3-b: Data reporting template (UoG)

Question/ Problem	Data/Sources consulted	Findings	Memos/Reflections
L1: system level	"The framework for higher education qualifications in England, Wales and Northern Ireland", August 2008	• Awarding qualifications; • Frameworks for school and vocation education; • Frameworks for higher education across the UK; • Quality audit; • Definition of "level" in the education system; • Number of levels in higher education; • Definition of "cycle" in the British education system;	UoG conforms to the Framework for higher education qualifications in England, Wales and Northern Ireland, also to the european framework for higher education, which makes it possible to have student mobilities during the study years at the university. This is important, as it contributes to a broader international experience. It is also important to mention that UoG conforms to QAA (Quality Assurance Agency) for Higher Education, that accredits this university. There was mentioned the fact that the opinion of several informal quality assurance agencies is important, as their voice is taken into account on the labor market. Therefore, UoG tries to bring its courses into accordance with those recommendations as well.
L2: university management level	Official site of UoG, glos.ac.uk, Governance and Structure section: http://www.glos.ac.uk/governance/pages/governance-and-structure.aspx	• The university executive committee; • Academically the university is divided into faculties. • 4) All students belong to one of the university's faculties.	The structure of UoG is somewhat similar to the structure of our home universities, but each school inside the university is more autonomous than our faculties are.
L3: Faculty/Department level	Official site of UoG, glos.ac.uk, Faculties and Schools section: http://www.glos.ac.uk/faculties-and-schools/Pages/faculties.aspx	Each faculty is responsible for particular subject areas, offering undergraduate and postgraduate courses and undertakes research in related areas. As well as devising and delivering taught programmes, faculties are responsible for leading the university's research and commercial activities in their fields. Students benefit from this concentration of activity, research and partnerships with external	There is no tight coupling of the schools, so each of them taken separately is a fully integrated body, able to provide higher education according to national and international standards. Each school has enough freedom to bring the study programmes up to date whenever they feel it's necessary.

Question/ Problem	Data/Sources consulted	Findings	Memos/Reflections
		organizations ensuring taught programmes are relevant and up-to-date.	
L4: Study board level		Courses can be slightly revised each academic year. The study board gathers together and decide on improving (bringing up-to-date) some or other subjects. This procedures don't require some higher-level approval. Of course, there's a thin line that separates subjects' slight revision from subjects' thorough revision. The latter requires higher-level approval.	Teachers behave as a team, collaborate, frequently share their experience, thus bringing the best pedagogical practices into the study rooms.
L5: Integrating disadvantaged students level	Notes taken at the "Student Help Zone"	• UoG has a modern environment, tailored to meet each student's needs. Thus, for disadvantaged students, otherwise called persons with special needs, UoG provides absolute accessibility to any of its study, ancillary or recreational facilities: • All the doors on the hallway are automated, with a push button situated at the reach level of a person in a wheelchair. • There are facilities (toilets) specially designed for persons with disabilities. • The ancillary facilities are as well crafted with doors that can be easily opened by	It is amazing how any person with potential, regardless of their physical state can access higher education, a facilitator being assigned to them even if there's necessary to take notes for the student.

Question/ Problem	Data/Sources consulted	Findings	Memos/Reflections
		disadvantaged persons. • The very specific to UoG "Student help zone" offer its services for disadvantaged students as well. They even can provide a person attached to a student with special needs that would take notes for them, record the lectures or help them to physically put their work on the paper.	
L6: Physical environment level	Photographs taken on the site	UoG has two campuses: one in Gloucestershire (Oxstalls) and the other in Cheltenham (The Park). The Cheltenham campus is situated in a former park, thus it is very green and aesthetic. There are several buildings on the Cheltenham campus. We visited the Elwes building (main building, the biggest one) and Fullwoods building (a historic building). Also, there are living facilities on the campus, a dining facility and some ancillary facilities, such as medical first aid, prayer room, ablution rooms, lavatory.	It's both healthy and pleasant to be on the site of UoG. All the buildings are concentrated on the campus, even the dorms. Everything looks natural, organic, but also well integrated to save as much time as possible. A student can study, have some rest and do the chores without leaving the campus.
L7: Study program level		Each course has a three-year study programme, with the four-year study programme option. The latter means that students have a one full academic year internship in the industry after the second year of study. After that,	The study program comprises both theoretical and practical contact hours, as well as individual student work. It's quite similar to the study program at our university, in terms of subjects taught and types of contact hours. It still differs by the amount of project works assigned to the students and also by the fact that a project is assigned to a group,

Question/ Problem	Data/Sources consulted	Findings	Memos/Reflections
		they return to the university to complete the last year of study. This is optional, but recommended, as it provides the students with the opportunity to have one year of experience in their CV upon graduation.	not to an individual student. Also, at UoG they tend to bring research into the study process much more than we do. Each teaching staff member uses his own research experience at hours and also brings new ideas and findings to his students, which is great, as the students have constant access to the newest scientific material and so may have a broader view of the area.
L8: Pedagogical training level		Teaching fellows of UoG should be HEA (Higher Education Academy) certified.	It is a good practice to have certified academic staff, as this ensures the high qualification of each teaching fellow, thus offering the students the best ones to learn from.

2.3 DATA ANALYSIS

Table 4: Template and guidelines for developing benchmark criteria, properties and indicators

AAU	UoG	Criteria, properties, indicators
Basic findings by levels System level: - AAU is self-governing institution; - AAU is accredited by the Danish Accreditation Institution; - Adjunktpædagogikum: Certification in higher education pedagogy - Obligatory certification in English as Medium of Instruction University level: - Aalborg University's academic environments are organised in departments. Each department is led by a head of department and has a department council, which define autonomously the strategy and budget of the department, quality	Basic findings by levels System level: - UoG and other universities across the UK are autonomous enough; - UoG is accredited and has a good position in Top10 universities of UK; - UoG staff must be HEA certified; - UoG conforms to EHEA, thus assuring quality of higher education. University level: - Each school has its own management and is autonomous in matters of course elaboration and revision.	System level: - university autonomy; - accreditation of the higher education institutions; - staff certification; - quality assurance in higher education. University level: - School/department autonomy; - Quality assurance; - Course development; - Financial autonomy; Study program level: - Teacher autonomy; - Teacher authority; - Involving research in teaching.

AAU	UoG	Criteria, properties, indicators
assurance and quality development of study environment, etc. - It is the responsibility of the departments to contribute to the assurance of the quality of the teaching delivered. For example, course lecturers conducting self-evaluations of their courses are one way of achieving this. The result of these can be sent to the study board; - The Danish higher education system is generally characterised by high levels of institutional freedom: organisational and staffing autonomy are rated as "high", financial autonomy as "medium high". Academic autonomy is somewhat more restricted, with Denmark belonging to the "medium low" group. Study programme level: - Each semester's content and processes are planned and controlled by a semester group; - The teachers determine the structure of the modules (the number of lectures, tutorials, workshops, etc.).	- Each school assures quality of higher education at study board level; - The study board of each school reviews courses frequently, accepting slight changes of the study programmes that do not require system level approval; - UoG is financially autonomous. Study programme level: - Each teacher is empowered to review and slightly improve his/her subjects; - A teacher is not regarded as an authority, except for the theoretical lectures, where the subject material is brought to the audience. A teacher is rather a friend, a tutor, a superviser; - The teacher cannot review/change the contents of his/her subjects without discussing it with the colleagues (study board) first; - Each teacher should use his research experience in teaching.	

3. BSc in Information Technology at Aalborg University

3.1 Introduction

Aalborg University was established in 1974 in the North Jutland in Denmark and it represents an educational innovative experiment having teaching concepts based on problem solving. The University started with 900 students. Twenty years later in 1995, Aalborg University registers already about 10.000 students [1- Lux96] and in 2015 the number of enrolled students overcomes 20.000 [2- Aau2015].

In recent years, Aalborg University has risen up the international lists of university rankings. Aalborg University appears on the great majority of ranking lists, and is among the top two percent of the world's 17,000 universities. [3- Aau2015]

The educational model implemented by the university recognized today as PBL determines the graduates' success proved by the high rate of employment that is the highest in the country. The PBL methodology main objectives are a) acquiring knowledge and skills independently and at a high academic level; b) working analytically and according to interdisciplinary and problem and result oriented methods; c) cooperating with the business community on the solution of authentic professional problems; developing their abilities within teamwork; becoming well prepared for the labor market.

3.2 System level

According to the Danish University Act, AAU is a public self- governing institution [4-Aau2012] but also abides to the Danish Agency of Higher Education regulations. The Agency is a part of Ministry of Education and Science and is also responsible for the whole higher education including the students' financing schemes [5-Mhe2016].

It's remarkable that even if the higher education institutions have a large autonomy, the government supports them considerably: AAU is allocated from the government budget around 260 billion euro (out of the 337,78 billion euro budget in total).

3.3 University management level

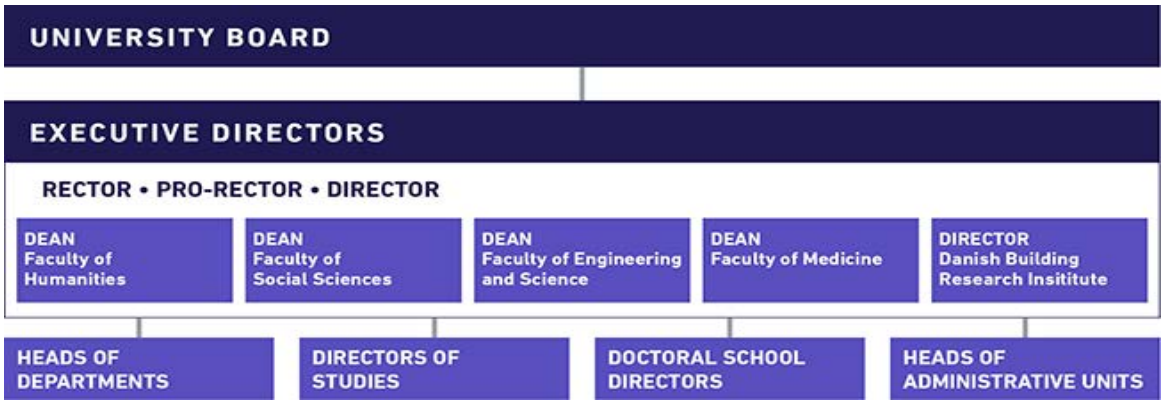
AAU is among the largest employers in North Denmark with over 3500 salaried employees. These ones together with the 20.000 students are providing a performant and strict management.

The AAU Board is the highest authority of Aalborg University and has the following tasks: approval of the University budget as recommended by the Rector, including the general allocation of university resources and the principles governing the spending of resources. Signing of the accounts; preparation of University regulations and any amendments of these for subsequent approval by the Minister; appointment and dismissal of the University Rector; appointment and dismissal of other senior managers (Pro-rector and University Director) as recommended by the Rector; signing of development contract with the Minister; the chairperson of the University Board

is authorized to enter into commitments regarding real property together with a member of the University Board.

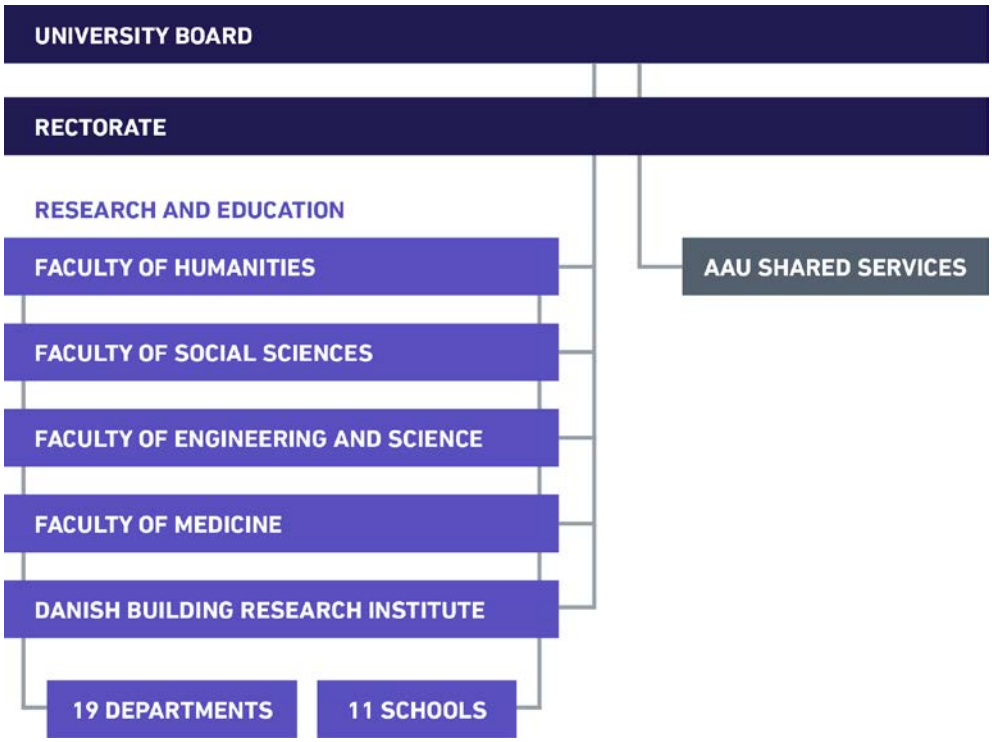
The University Board consists of 11 members, six of which are from outside of the University. The Rector, the Pro-Rector and the University Director (responsible for administration and development) participate as non-voting members (observer status). Rector undertakes the day-to-day management of Aalborg University within the framework laid down by the AAU Board. Rector determines guidelines for the day-to-day management of the University and stipulates management competence in delegation declarations.

Figure: The structure of university administration at AAU



AAU has four faculties: the Faculty of Humanities, Faculty of Engineering Science, Faculty of Medicine and the Faculty of Social Science. The academic environments at the faculties are organized in departments, schools and centers. As a result of the University's focus on interdisciplinarity, a number of these units belong under two or more faculties. Therefore AAU consists of 19 departments and 11 schools.

Figure: AAU organization



Each faculty has consultative group called Academic Council. Each Academic Council at faculty level is comprised of 15 or 8 members. The Council is entitled to express its opinion on all academic issues of importance to the activities of the faculty and is obliged to discuss academic issues submitted to the Council by the Rector. Furthermore, the Academic Council is among other tasks responsible for awarding PhD and higher doctoral degrees.

3.4 FACULTY/DEPARTMENT LEVEL

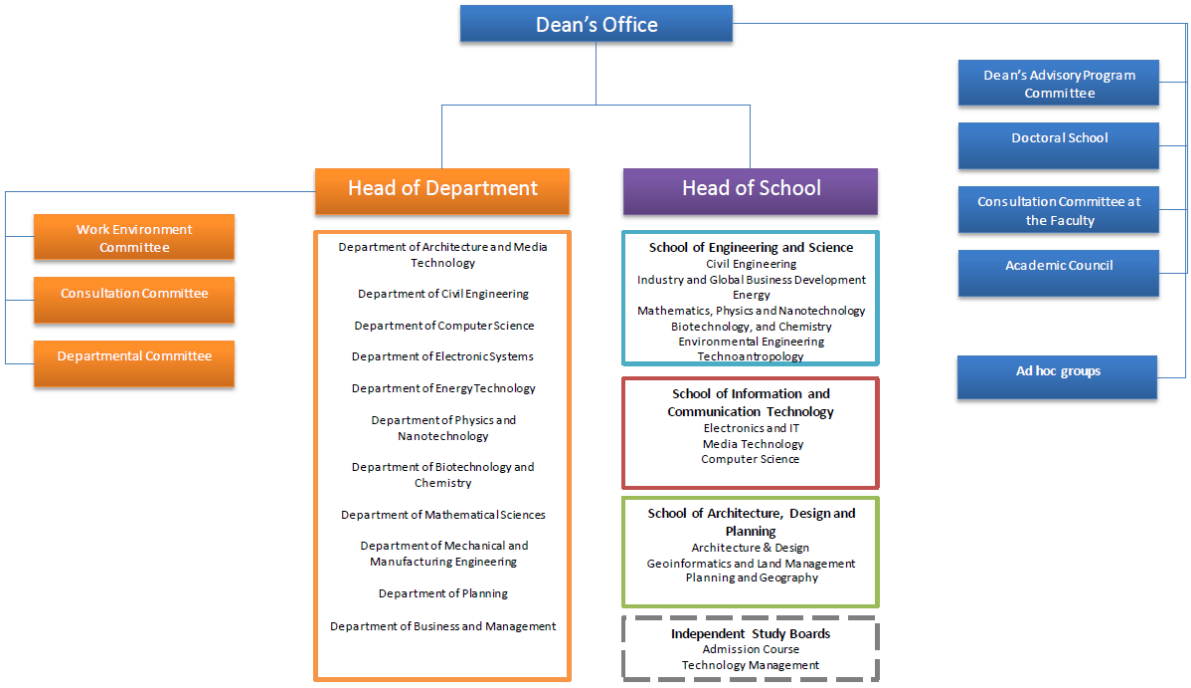
The University is organized upon a very clear distribution of tasks and responsibilities amongst each university participant. Therefore, each, University, Department and School, have its own roles. The University defines the general view of all the activities and is the lawful owner of the campuses buildings that can be used by any department. The Department is the entity that defines the activity frames for research groups, more or less formal entities, and promotes the content of academic programs. The beneficiary of those programs is the School, a part entity from a Faculty that manages the student relationships.

An important element is the easy access for outside people (businessmen, local public administration, and other universities) to participate in the internal processes: the definition of school programs, the supervision of quarterly and license projects.

Another important element that popped out was the financial self-management of the departments in research and education. Such an approach proves to be rational towards the rental expenses (rented from University) and also allows a salaried distribution (per teaching task) independent from other more or less successful departments.

The Faculty of Engineering and Science consists of 11 departments, which are headed by a Department Head and are responsible for the researches and research-based teaching.

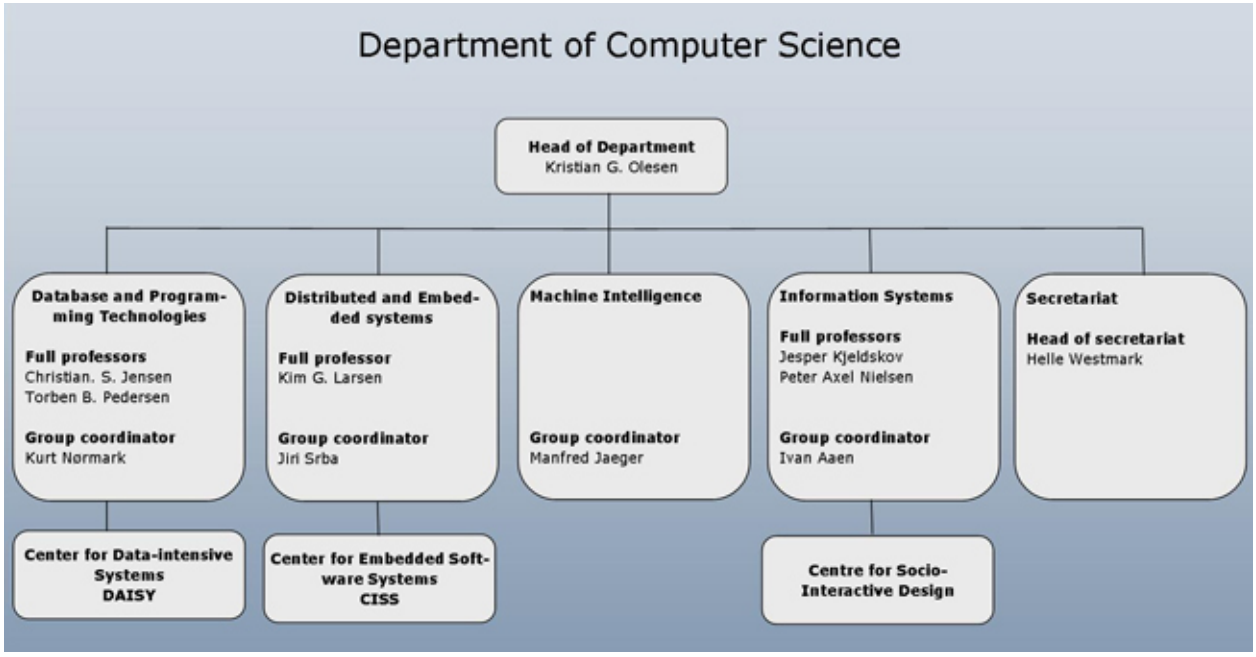
Figure: The structure of Engineering and Science Faculty



Each department has its own Council. The Department Councils at AAU are the advisory boards at department level. The Councils advise among others in matters pertaining to the strategy and budget of the department, quality assurance and quality development of study environment and other general affairs pertaining to the Department. The Council is formed of up to 13 members which are elected out of staff (academic, technical, administrative) and students.

Research is the essential activity at the AAU. The teachers are part of at least one research group. Therefore, the group is the base element of each teacher's activity and determines the main research directions of the departments. The Department of Computer Science is formed out of four distinctive research groups: Database and Programming Technologies, Distributed and Embedded Systems, Machine Intelligence and Information Systems. [6-Aau2016].

Figure: Research Groups (Computer Science department)



3.5 STUDY BOARD LEVEL

A school at Aalborg University (AAU) is a professional community, which consists of one or more study boards with academically related programs. AAU schools are managed by a program director, which is assisted by a study council. The program director is chairman of the student council, which consists of the chairmen and vice-chairmen of the boards of studies that belong to that school. Putting PBL method in practice a study board is formed of semester coordinators and responsible secretaries.

The Faculty of Science and Engineering includes 3 basic schools: School of Engineering and Science, School of Information and Communication Technology and School of Architecture Design and Planning.

The School of Information and Communication Technology is headed by Computer Science study board, which manages study programs in Computer Science, Electronics and IT, Media Technology.

3.6 INTEGRATING DISADVANTAGED STUDENTS LEVEL

Aalborg University is well known for its major efforts of integrating all students, which is also mentioned in OECD Report [7-OEC2014]. The integration is also made through an approved educational model, mentor and guidance services (centralized or departmental – in this context the Student Counseling Service and the University Chaplaincy stands out) [8-Aau2016] but also through a well-organized religiously and political neutral physical environment.

Mostly the integratability is also determined by the Danish law, which implies the legal and universal access for all its residents to the national medical system, loans system, etc.

3.7 PHYSICAL ENVIRONMENT LEVEL

The classes in the departments are oriented towards teamwork. This can be easily observed in different locations around university: cantinas, lobbies, library, etc. A remarkable fact is that the classes can be reserved for team work thus the supervisor can always be aware where to find his team.

The university library creates an astonishing environment for learning, where students can form "separate" workspaces in the middle of the big library hall. And the easy access to the bookshelves facilitates the desire to learning and studying.

Another important thing to mention is that the library has a building in the center of the city in order to offer an easy access to its informational resources as well as some buildings closer to the homes of those who live in the city.

The main atmosphere of AAU is very impressive, determined by traditions, well-established processes and high quality people – all of which define a successful educational model.

3.8 STUDY PROGRAM LEVEL

The educational programs at AAU are a result of a continuous collaboration between the university staff and students, on one hand, and public institutions, private companies, on the other hand. The collaboration is shown through the presence of multiple work commissions (more or less formal) of different level (university, department, school) that cover the research and educational parts.

AAU currently consolidates and further develops its profile as a dynamic and innovative research and educational institution oriented towards the surrounding world. It is characterized by combining a keen engagement in local, regional, and national issues with an active commitment to international collaboration. With a persistent dedication to the pursuit of excellence, Aalborg University offers supreme educational experiences across a broad spectrum of academic fields. The PBL-based pedagogical model of the University has become both nationally and internationally recognized by universities, researchers and students as an advanced and efficient learning model.

The problem definition and solving is the main line of AAU programs and it mostly consists out six license semesters. A special attention is offered to the continuous methodical preparation of

teachers and students in terms of PBL, which creates the impression of an equal responsibilities partnership. The activities of this partnership are guided by the fundamental principals of PBL: interdisciplinarity, teamwork and research based education.

An interesting fact is a study program based on a linear progress determined by the semester level relationships more then discipline level, separated and distributed through study years. Each semester has a well-determined theme and a supervisor who coordinates the activities of the teachers and students enrolled.

The presence of a unique theme keeps the semesters' modules (courses/classes, seminars, other activities) together, offering a common goal and a study motivation. To this a semester project adds up as being mandatory in PBL terms. The project is offered 15 ECTS credits (out of 30 per semester) and all the other disciplines are given a maximum of 3 credits per discipline, which forms the other 15. This approach is very welcomed and offers i) decongestion of the study program from the department offered modules (mandatory or chosen) and ii) a larger academic freedom to the students participating in projects, in terms of PBL.

Also a totally normal procedure, supported by the international processes as well, is the external examination of the students. This is considered to be the best method in order to ensure the quality and verify that the principles established by the modules are in accordance with the research or business environment.

Along with the strictly mentioned externally examined disciplines, they also assume an active-learning. Meaning that the number of hours under each module is not necessary in form of lectures taken in an auditory when the student is considered to be passive learning. Or, in AAU terms an active learning student is considered only while in teamwork or group collaboration. Therefore a group is the unity of work supervised by the teacher and which can work in a formal (university) frame or on its outside.

3.9 PEDAGOGICAL TRAINING LEVEL

The majority of AAU education programs are centralized around PBL. Therefore this methodology is offered a special attention: courses are held, instructions are published, teachers are certified.

The university owns a center of excellence in education called AAU Learning Lab. The main directions of the activity of this center are determined by different key groups: Courses for professor assistants; Certification in higher education pedagogy; new in AAU – basic PBL courses; Extras for Experts – activities for teachers and teacher associates; Learning Lab on demand – specialized activities for groups of a different knowledge and experience level [9].

The Aalborg University is one the few Danish universities which requires a mandatory level of English language (C1 level) for all the teachers that have courses in english. This is fulfilled through a specialized center called LACS – Center for Language and Communication Services.

4. BSC IN COMPUTING AT UNIVERSITY OF GLOUCESTERSHIRE

4.1 INTRODUCTION

Computing is one of the courses taught at UoG. The information provided on this course was quite brief, so the benchmarking is done mostly by gathering information from the environment. Thus, the names of the laboratory rooms and the wallpapers were informative enough to have a better understanding of what is taught at UoG in Computing course.

4.2 SYSTEM LEVEL

1) Qualifications must be awarded in accordance with the FHEQ;
2) Within the United Kingdom (UK) and Ireland there are also frameworks of school and vocational qualifications managed by the Qualifications and Curriculum Authority (QCA)
3) The frameworks for higher education qualifications throughout the UK are designed to meet the expectations of the Bologna Declaration and thus align with The Framework for Qualifications of the European Higher Education Area (FQ-EHEA). As such, the labels used to distinguish the different levels of the FQ-EHEA (short cycle, first cycle, second cycle and third cycle) have also been incorporated into the FHEQ.
4) QAA auditors and reviewers use the FHEQ as a reference point when auditing or reviewing the establishment and management of academic standards by higher education providers. In particular, auditors and reviewers look at how institutions align the academic standards of their awards with the levels referred to in the FHEQ.
5) In the UK and Ireland, each stage within any framework of qualifications, be it school, vocational, further or higher education, is commonly referred to as a 'level'.
6) The FHEQ has five levels, three of which are undergraduate and two are postgraduate.
7) The FHEQ is a qualifications framework. Each level is illustrated by, and each award determined by reference to, a qualification descriptor.
8) The qualification descriptors of the FHEQ reflect five distinct levels of intellectual achievements associated with the typical higher education qualifications awarded by higher education providers in England, Wales and Northern Ireland in accordance with their degree awarding powers.
9) Typically, programmes leading to higher education qualifications, particularly those taken over a number of years, include learning that is progressively more challenging.
10) To convey the relative position of levels of achievement and/or qualifications, it is convenient to number them.
11) Within the FQ-EHEA, the term 'cycle' is used to describe the three sequential levels identified by the Bologna Process (first cycle which can include short cycle qualifications, second cycle and third cycle) within which all European higher education qualifications are located. In broad terms, the first cycle corresponds to undergraduate awards (typically bachelor's degrees), the second cycle and third cycles to postgraduate awards (typically master's degrees and doctoral degrees, respectively).

12) Similar to the FHEQ, the FQ-EHEA has generic qualification descriptors for each cycle, known as the 'Dublin descriptors'. These illustrate the typical abilities and achievements associated with qualifications that signify the completion of each cycle.
13) In many other European countries, as in England, Wales and Northern Ireland, a range of higher education qualifications are available to students who have undertaken a programme of study within the FQ-EHEA first cycle, but which do not represent the full extent of achievement for this cycle. These qualifications are referred to as higher education short cycle (within the first cycle) awards. Such awards may prepare students for employment while also providing preparation for, and access to, studies to completion of the first cycle.

*The general scheme of the british educational system levels is given in Table 1 of the "The framework for higher education qualifications in England, Wales and Northern Ireland", page 10.

4.3 UNIVERSITY MANAGEMENT LEVEL

The governance of UoG is repsesented by the university executive commitee and the Council. The university executive committee is responsible for all matters associated with the development and management of the university. Council is the university's governing body.

The executive committee's responsibilities include:

- the university strategy
- academic provision
- financial matters
- HR matters
- matters related to marketing, the recruitment of students, external relations and communications
- matters related to student experience and welfare.

University executive committee currently comprises nine members including the vice-chancellor as chair.

4.4 FACULTY/DEPARTMENT LEVEL

The University of Gloucestershire has three faculties; the Faculty of Applied Sciences, the Faculty of Business, Education and Professional Studies and the Faculty of Media, Arts and Technology.

All students belong to one of the university's faculties. Each faculty is responsible for particular subject areas, offering undergraduate and postgraduate courses and undertakes research in related areas. As well as devising and delivering taught programmes, faculties are responsible for leading the university's research and commercial activities in their fields. Students benefit from this concentration of activity, research and partnerships with external organizations ensuring taught programmes are relevant and up-to-date.

4.5 STUDY BOARD LEVEL

The Study Board (Academic Board) manages courses provided and approve some changes of the subjects, parts of courses. Also, the Academic Board is above semester coordinators and may solve some student complaints, if those happen.

At UoG, computing teaching fellows bring a lot of research experience into their academic practice. So, as an example provided was the interest of the teacher in Agile programming. He reinforced the importance of bringing this technologies to his lectures, Agile being a new technology, of high interest on the labor market. Thus, it was stressed the importance of bringing teacher's own experience and knowledge to the lectures, which would help providing qualified and competitive Computing BSc's for the labor market.

4.6 INTEGRATING DISADVANTAGED STUDENTS LEVEL

UoG has a centralized way of managing student affairs that are not directly related to the study process. There is a special department, called "Student help zone", that can provide all kind of help, from psychological to integrating disadvantaged students.

At UoG, the physical environment itself is designed to help integrating disadvantaged students. Doors are automated, provided with push buttons for opening.

Disadvantaged students can request help and it will be provided, even if a person to take notes for a student is needed. Certainly, a person to help with a wheelchair can be attached and so on. UoG sets high tuition fees, so there's always the possibility (financial as well) to hire or attach some of the existing stuff to a disadvantaged student.

4.7 PHYSICAL ENVIRONMENT LEVEL

UoG has two campuses: one in Gloucester and the other in Cheltenham. Our team visited the one in Cheltenham, dubbed "the Park", because it is situated on the territory of a former park. The territory of the campus is breathtakingly beautiful, with century old trees, green grass, fresh air and lots of flowers. Both the study buildings and ancillary are situated on the same campus.

The Computing rooms are situated in the main, Elwes Building, with the corresponding numbers and names on the doors. There are study rooms, laboratory rooms, group work rooms and a very nice and special game testing room, for the students interested in game development.

4.8 STUDY PROGRAM LEVEL

The study programme on each course consists of:

- lectures, where the teacher/lecturer exposes the study material;
- seminars, where the lecturer with their assistant state a problem, which must be solved by the student audience, organized as groups;

- case studies, where students work in groups as well, being provided with tasks that help studying the material for the semester project. They have the chance to meet face to face and work jointly on the task.

Also, students have to perform a lot of individual work on their group projects. For these purposes, they meet in special rooms, provided with furniture and all the necessary conditions for working in groups.

For a broader view, we'll set a series of questions regarding the design and approval of courses:

1) *Who creates/proposes a study programme for a specific course? (In the very beginning, from scratch)*

The proposal usually comes from the Academic Group Leader (the is the line manager of a group of academic staff and they are usually in charge of a group of cognate programmes such as Business and HR; Marketing and Retail; Accounting and Finance etc.) and must be agreed with the Dean of the Faculty. Occasionally, the original idea is suggested by academic staff such as Course Leaders (i.e. the person in charge of leading the individual programmes), but it will only progress as above. A person is designated to lead the consultation and documentation (validation document) and put together a team to help them with this. This person may or may not eventually become the Course Leader for the new programme.

2) *Who approves the course? (It was mentioned that slight changes do not need approval from outside the university, but what about a new course?)*

For a new programme approval to progress, the proposal must be supported by the Dean, the Faculty Academic Standards Committee (FASC) and the University's Academic Board. Once Academic Board give their approval to proceed, FASC set a date for the validation panel event, which is chaired by a senior academic outside the Faculty and consists of members of the programme validation team (mentioned above), students, academics from other departments, external experts (usually academics from outside the University) and practitioners (e.g. employers).

When slight changes are made to programmes such as learning outcomes, delivery and assessment models etc. these only need the approval of FASC.

3) *The structure of the semester: how many subjects are there and what is the overall number of semestrial projects?*

Semesters are approximately 15 weeks each and there are generally four modules per semester per student (30 ECT). (NB the UK uses a Credit Transfer System which is double the standard ECT equivalent. So a three year degree is usually 360 credits or 180 ECTs). Some modules are non-standard e.g. year long modules which might be 15 ECT. The BM module which Clive Kerridge leads (Strategic Management) is year-long and 15 ECTs), so a quarter of the student's final year. Dissertation modules are also usually year-long double modules.

4) *The structure of a subject: how much lecture hours, seminars, case study hours, projects?*

This varies enormously, but we will use as example the information for Computing - one of the IT Courses.

This course comprises several study modules:

- Programming and Software Development;
- Introduction to Forensic Computing;
- Systems analysis and Database Design;
- Project Management and Professional Issues;
- Object-Oriented Sotware Development;
- Software Quality Assurance;
- Adanced Concepts in Programming Languages;
- Individual Research Project;
- Advanced Group Project.

This course, as any other at UoG is a three-years course, meaning level 4, level 5 and level 6, according to the british educational system.

So, the first year of study (level 4) comprises 30% scheduled learning and teaching activities, 70% of guided independent learning and 100% of placement and study abroad (option between level 5 and level 6).

The third year of study (level 6) has the same ratio of academic activities as the first year.

The second year of study (level 5) comprises 30% scheduled learning and teaching activities, 70% of guided independent learning and 0% of placement and study abroad.

For each of these levels (4, 5 and 6) there are the following assessment methods:

a) L1:

written exams - 25%
practical exams - 0%
course work - 75%

b) L2:

written exams - 25%
practical exams - 0%
course work - 75%

c) L3:

written exams - 0%
practical exams - 0%
course work - 100%

5) How is the Management of Quality and Standards performed?

Guidance on the University's approach to the management of quality and standards is contained in the Academic Quality & Partnerships Handbook (AQPH), Academic Regulations for Taught Provision, Assessment Principles and Procedures, and associated sources of advice. All regulations, policies and procedures are aligned with QAA reference points and, where relevant, those of Professional, Statutory and Regulatory Bodies.

Quality assurance is undertaken as close as possible to the point of delivery. There is a route from the module level to courses and through to faculty and University levels so that issues can be

addressed and delivery enhanced in the appropriate arena. Externality is guaranteed via external examiner reports which allow the University to make judgements on the quality and standards of its provision. The University also benefits from the input of externals in its approval and review procedures.

Students are able to comment on their modules and courses in various ways including module evaluations, course boards and the NSS.

6) Is there a coordinator for each semester (PBL model)?

Each module has a Module Tutor, who coordinates the delivery of the module (if it is a large module with several tutors on the team) and is responsible for the assessment of the module.

4.9 PEDAGOGICAL TRAINING LEVEL

Teaching fellows of UoG should be HEA (Higher Education Academy) certified. As an alternative the certification can be autonomous, internal. This applies if there are enough young professionals willing to pursue the academic career.

5. CONCLUDING REMARKS

Universities have provided enough support for understanding the study system which considers the problem-based learning. The benchmarking shows that academic freedom is a sufficient precondition, but not necessary. The necessary preconditions is well trained staff and students that are always ready for new challenges.

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