



Development and Implementation of MDTV Curricula (DIMTV)

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External evaluation of study programmes by experts Bachelor in Multimedia and Digital Television

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1. Review Team

The team of reviewers responsible for the External Evaluation of the “Multimedia and Digital Television (MDTV)”, Bachelor study program in Aleksandër Moisiu University (AMU) comprised the following two (2) expert evaluators:

1. Prof. Marcin Niemiec, Ph.D., University of Krakow, Dept. of Telecommunication, niemiec@agh.edu.pl

Marcin NIEMIEC, received the M.S. and Ph.D. degrees in telecommunications from AGH University of Science and Technology, Krakow, Poland in 2005 and 2011, respectively. Also, he studied in Carlos III University of Madrid. He joined the Department of Telecommunications, AGH University of Science and Technology in 2009. Currently he is working as a university professor at the Department of Telecommunications. His research interests focus on security and data protection, especially: security services, symmetric ciphers, cryptanalysis, malware, intrusion detection, and quantum cryptography. He is co-organizer of many international meetings, workshops, and conferences. He has/had actively participated in H2020, 6th and 7th FP European programs (ECHO, SCISSOR, BONE, Smooth IT, INDECT, ePhoton/ONE+), Eureka-Celtic (DESYME) and several national projects (INRED, Real Time Billing, INSIGMA, Lider, SWOP). In period 2009- 2014, he participated in INDECT research project with budget 14.8 mil. €, dealing with solutions for intelligent surveillance and automatic detection of suspicious behaviour and violence in urban environments from multimedia network traffic. He is the recipient of the Best Paper Award from IEEE GLOBECOM 2012. He co-authored over 90 publications and reports (papers, deliverables, book reviews, IETF draft, and book).

2. Prof. Peter Pocta, Ph.D., University of Zilina, Dept. of Multimedia and Information-Communication Technology, peter.pocta@feit.uniza.sk

Peter POČTA was born in 1981. He received his M.S. and PhD degrees from the University of Zilina, Faculty of Electrical Engineering, Slovakia in 2004 and 2007, respectively. During his PhD study, he was awarded with several fellowships. Firstly, he spent 3 months as an Erasmus+ student in the Department of Electrical Engineering and Information

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Technology, Chair of Telecommunications of the Dresden University of Technology, Germany where he collaborated on testing principles over ADSL access lines. Secondly, he was with Alcatel-Lucent, R&D center, Network Integration department, Stuttgart, Germany where he investigated some impacts on speech quality in the WiMAX system. He is currently an Associate Professor at the Department of Multimedia and Information-Communication Technology of the University of Zilina and is involved with International Standardization through the ETSI TC STQ as well as ITU-T SG12. His research interests include speech, audio, video and audiovisual quality assessment, speech intelligibility, multimedia communication and QoE management. He has published over 60 refereed papers in international journals and conferences including Acta Acustica united with Acustica, Advances in Multimedia (Hindawi), AEO - International Journal of Electronics and Communications (Elsevier), Speech Communication (Elsevier), IEEE Transactions on Broadcasting, MESAQIN and QoMEX conferences. He serves as an external reviewer for the Journal of Systems and Software (Elsevier), Computer Standards&Interfaces (Elsevier), Speech Communication (Elsevier), Telecommunication Systems (Springer), Quality and User Experience (Springer) and IEEE/ ACM Transactions on Audio, Speech and Language Processing and several conferences in the area of multimedia quality and communication networks, e.g. QoMEX, QCMan, etc.



2. Introduction

2.1 Study programme

This study program is offered by the Department of Information Technology, as an integral part of the Faculty of Information Technology at Aleksander Moisiu University (AMU). The Bachelor study program was opened for the first time as a result of a Tempus project, in 2012. "Multimedia and Digital Television is an innovative study program and aims to fulfil the growing needs of the labour market for specialists in the field of multimedia, especially after the start of the digitalization process.

The Bachelor study program has in total 180 ECTS credits, lasts 3 academic years and has 6 (six) semesters with 15 weeks each. Multimedia and Digital Television (MDTV) is one of the six programs of Bachelor degree studies offered by the Faculty of Information Technology at "Aleksandër Moisiu" University. The existing curriculum of the MDTV study program is a product of a previous Tempus project entitled "Innovation and Implementation of the Curriculum Vocational Studies in the Field of Digital Television and Multimedia", which lasted for a period of 3 years October 2011 - October 2014.

This evaluation report is developed following the project requirements for an external and independent review of the Bachelor in "Multimedia and Digital Television".

2.2 Study program Curriculum

The curriculum was prepared in line with those used in the world's leading schools in the relevant fields of study and consistent with the Europe 2020 strategy, the Strategic Framework for European Cooperation in Education and Training and the Bologna process. The curriculum is unique in Albania and provides adequate knowledge in the field of Multimedia and Digital Television for engineers who are trained to apply modern technology solutions for production and post-production. In the first curriculum, there were 36 courses in total, compulsory and elective.

The structure of the study program includes:

- i. Fundamental courses (compulsory);
- ii. Characterizing courses;
- iii. Similar or/and integrating with characterizing courses;
- iv. Elective courses;
- v. Foreign language learning, practical training courses.
- vi. Final Exam/Project

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The existing Multimedia and Digital Television curriculum at AMU is as shown below:

Profile	Year	Sem.	Course	Pre-Required Course	USCr	ECTS
MULTIMEDIA AND DIGITAL TELEVISION	FIRST-YEAR	FIRST SEMESTER	English I		3	5
			Basics of Electrical Engineering		3	5
			Academic Writing		3	5
			Algebra		3	5
			Computer Applications		3	5
			Mass Media		3	4
			Basics of TV			
		SECOND SEMESTER	Maths 1	Algebra	3	5
			English II	English I	4	5
			Physics		3	4
			Digital Multimedia		3	5
			Electroacoustics		3	5
			Electronics		3	4
			European Integration			
	SECOND-YEAR	FIRST SEMESTER	TV Systems and Video Technologies		3	5
			Computer Graphics		4	5
			Introduction to Sound Engineering	Electroacoustics	3	5
			Audio and Video Digital Processing		3	5
			Image Recording		3	5
			English III	English II	3	4
			Musical Instruments			
		SECOND SEMESTER	Basics of Sound Synthesis	Audio and Video Digital Processing	3	5
			Equipment of Recording Studio	Introduction to Sound Engineering	3	5
			Animation Basics		4	5
			Acoustics in the Environment		3	5
			Voice Recording	Electroacoustics	3	5
			Digital TV		3	4
			TV production	Basics of TV		
	Communication					
	THIRD-YEAR	FIRST SEMESTER	Computer Animation	Animation Basics	3	5
			Multimedia Information Systems		3	5
			Electricity and Lighting	Basics of Electro	3	5
Voice Design			Voice Recording	4	5	
TV and Video Production			TV Systems and Video Technologies	4	5	
Basics of Management				4	5	
Multimedia Programs				3	4	
Media and Marketing						
SECOND SEMESTER		Computer Animation II	Computer Animation I	4	5	
		Production and Multimedia Promotion		3	5	
		Production and Musical Postproduction		3	5	
		Multimedia signal distribution	Digital Multimedia	3	5	
		Practice / Graduation Diploma		6	7	
		Interactive Animation (Flash)	Computer Animation I	3	4	
	Sound Systems Engineering	Introduction to Sound Engineering				
Security in Multimedia						

* Compulsory Course

* Elective course

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The education sector in Albania is constantly changing, because of government reforms like qualifying for success and measures adopted by each university to improve the curriculum or to raise retention and achievement levels. The changes for the existing curriculum of the “Multimedia and Digital Television” study program has been prepared based on the guidelines of the Albanian National Laws. The main reason for the curriculum change is to make this study program more effective and better practice-oriented. The innovative capacity of technology is very much conditioned by the level of skills of technical specialists. Yet, despite the huge potential of digitalization for enhancing learning, the impact of digital technologies on education itself has been superficial. Massive implementation of ICT (Information and Communication Technology) tools in universities has resulted in the transformation of educational practices, probably because of the powerful strategies for increasing teachers’ ICT skills, improving teachers’ professional development, reforming pedagogies and producing appropriate software and courses. The academic staff of the Department of Information Technology/UAMD with great dedication gave their opinion based on their long academic experience.

In the Bachelor study program, students should acquire the basic knowledge, which during the realization of Professional Master (PM) will be materialized in more practical work. All changes made will serve the opening of a PM in three profiles namely:

- i. 3D Animation
- ii. Image Processing
- iii. Production and Post-Production

Courses are grouped in three categories according to the three profiles of Professional Master and help to make a more accurate distribution of courses. It was decided that, unlike the existing curriculum, there is a need for programming courses so that the MTVD program can be comparable to other similar study programs in European countries. In the new proposed curriculum, all the courses have 6 ECTS credits and each semester has 4 compulsory courses and one elective course. Therefore, the number of courses is reduced from 36 to 30, where each course will now equal credits. Based on all the above-mentioned changes, the new restructured Multimedia and Digital Television study program curriculum is as given below:



Study Program	Year	Sem.	Type*	Courses	Prerequisites	USCr	ECTS
MULTIMEDIA AND DIGITAL TELEVISION	FIRST YEAR	FIRST SEMESTER	C	Algebra		4	6
			C	Physics		4	6
			C	Informatics		4	6
			C	Technical English		4	6
			E	Fundamentals of Economics		4	6
			History of Civilisation				
			Academic Writing				
		SECOND SEMESTER	C	Mathematics I	Algebra	4	6
			C	Basics of C++ Programming		4	6
			C	Basics of Electrical Engineering		4	6
	C		Electroacoustics		4	6	
	E		Fundamentals of Management		4	6	
		Sociology					
		Public Communication					
	SECOND YEAR	FIRST SEMESTER	C	Mathematics II		4	6
			C	Broadcast Television Systems		4	6
			C	Graphic Design		4	6
			C	ICT and Innovation		4	6
			E	Lightning Techniques		4	6
			Introduction to Cloud Computing				
			Introduction to Information Systems				
		SECOND SEMESTER	C	Basics of Animation		4	6
			C	Audio Technologies		4	6
			C	Computer Graphics		4	6
	C		Electronic Systems	Basics of Electrical Engineering	4	6	
	E		Sound Synthesis and Effects		4	6	
		Multimedia Technologies					
		Fundamentals of Telecommunication					
	THIRD YEAR	FIRST SEMESTER	C	Computer Architecture	Electronic Systems	4	6
			C	Studio and Recording Technologies	Audio Technologies	4	6
C			Room Acoustics		4	6	
C			Image Processing		4	6	
E			Television and Video Production		4	6	
		Interactive Animation (Flash)					
		Web Programming					
SECOND SEMESTER		C	Computer Animation	Basics of Animation	4	6	
		C	Multimedia Production and Postproduction		4	6	
		C	Computer Networks		4	6	
	C	Final Exam / Project		4	6		
	E	IPTV and Mobile TV		4	6		
	Information and Network Security						
	Java Programming	Basics of C++ Programming					

C - Compulsory Course

E - Elective Course

The program ends with a graduation Exam based on the knowledge gained in both the characteristic B and the interdisciplinary C courses, which are quite suitable with the needed knowledge. The syllabi offered in this study program for all 3 years are structured in cooperation with European partners.

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2.2.1 Learning outcomes and objectives

The Bachelor study program in Multimedia and Digital Television aims to educate students about recognized and defined professions related to multimedia productions, providing competencies to work on production and post-production tasks in the field of digital multimedia and television that are required. to meet the needs of the public and private sector by improving the knowledge and professions that are needed in the dynamic development of technologies and technologies in the field of multimedia. This program offers specialities of multimedia technologies and digital television combining contemporary knowledge with theoretical and practical studies based on many years of experience in this field.

In the context of the growth and modernization of television stations and broadcast services, an increase in the professional aspect of the staff that will work in this industry is required. Based on these needs, students who complete this branch will not only be able to get employed but will help the market in filling this vacuum. Students will be professionally educated in the use, design and development of solutions in the field of applied technologies of "Multimedia and Digital Television". Experimenting with audio and video clips can be a powerful learning experience for students. Students will be involved in the implementation of projects of different levels.

The objectives of the Bachelor study program in "Multimedia and Digital Television" are:

- a) to equip students with basic knowledge on general scientific methods and principles, and the formation of special skills in the field of Multimedia and Digital Television.
- b) to prepare professionals with the appropriate qualification and sufficient knowledge in the field of multimedia and digital television. Developments in the multimedia and digital television sectors are moving at a rapid pace and are complex. Graduate students in this field should be able to understand, analyze and anticipate these developments.
- c) Enables students in recognizing, handling and interpreting multimedia systems and digital television systems, specifically in audio and video technologies, in production and post-production, in 2D and 3D animations, image processing.
- d) to develop the capacity to modernize television stations and improve Broadcast services.
- e) to recognize national and international standards in the field of multimedia and digital television.



Gaining such knowledge enables students to be original in developing ideas and implementing them in the context of research and production products. Students gain competencies in applying the acquired knowledge and their capacity to solve problems in new environments. Students should be able to integrate the knowledge gained in the face of the complexity of information formation and judgment including the social and ethical responsibilities associated with applying their knowledge.

2.3 Teaching Infrastructure

The Bachelor study program curriculum is restructured after the Erasmus+ project No: 586318-EPP-1-2017-1-AL-EPPKA2-CBHE-JP entitled Development and Implementation Of Multimedia and Digital Tv Curricula (DIMTV). This project has helped to create a well-equipped Multimedia laboratory that will serve both undergraduate students in Bachelor and PM students in MDTV.

This consortium and the experience of these universities are a very good premise for the quality of the study program. The technical capacities are best complemented by two studios dedicated to this program, a computer studio and a television studio. The academic experience gained in other study programs is also utilized in the program. This applies to professors of basic courses A, characteristic courses B and interdisciplinary courses C. In the evaluation reports, the pedagogues have experience in the technical parts from the first cycle of study. The training developed by the staff within the project "Development and Implementation of Multimedia and Digital TV Curricula (DIMTV)" have provided the necessary information to create the continuity of the project.

The basic forms of teaching are lectures, seminars, and a combination of both lectures and seminars offered in modules, as well as professional training when students need specific practical knowledge that can not be accomplished within the university environment. Often are organized open lectures, with invited experts in the field of multimedia, who have come to the multimedia or computer laboratory for the presentation of professional skills, use of applications, and theoretical treatment of related topics with the dynamics of the development of multimedia and digital television.

Full-time lecturers in the "Multimedia and Digital Television" have a high qualification especially in the subjects of information technology. This helps lecturers to give the necessary theoretical knowledge, especially during the first semester. From the cv of pedagogues is understood the continuous qualification for the subjects of information technology. The academic staff follows the graphs planned by the basic unit for the research

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and scientific contribution, in the participation in the conferences or the realization of the scientific works. This also applies to support staff engaged in the program that is in focus. The effect of these investments goes in favour of raising the standard of teaching by the teaching staff, encouraging them to update and enrich the knowledge they provide to students.

The specific topics related to multimedia technologies are new in the Albanian market and consequently, there are no specific lecturers for these topics, graduated and specialized in this field. These shortages have been replaced with foreign lecturers coming within the project as well as with lecturers invited by the new and traditional media in the country. These foreign lecturers have also helped train the current academic staff under the ERASMUS+ DIMTV project, with funding from EU funds. AMU has signed cooperation agreements with other educational institutions in the country and maintains contacts with businesses in the respective fields according to the study programs.

The completion of the multimedia laboratory, as well as the computer laboratory, have facilitated the continuation of the program development for the ongoing academic years, significantly increasing the effectiveness of the development of theoretical and practical parts of subjects, enlivening the interactivity in the lesson, as well as in discussion and analysis of concrete tasks performed by students. Students have the opportunity to gain applied knowledge and skills from teachers, and they can work individually or in groups to concretize them. Due to the nature of the program, the presentations used in the auditorium is realized in various forms, such as video demonstration, animation, etc. Functionality in these environments makes it easy to use for work and realization of quality products. The computer network, as well as the programs installed in computers, create an interactive atmosphere and real-time follow-up of all stages of the development of assignments and works by students.

The facilities where the lectures and seminars take place, as well as the application part, are available to the students not only in the schedule set for the program, but they have access to study and practice in other time-spaces, as needed. This allows them to have the infrastructure available for the obligations they have in different subjects and for the engagement with the diploma work. The students also identified the access and effectiveness of the laboratory infrastructure during the conversation that the external evaluation team had with them.

The Bachelor study program "Multimedia and Digital Television" does not include a professional internship in the curriculum, but those students do in other institutions, based on bilateral agreements that AMU has with them, such as a public broadcaster RTSH, and

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UBT and UP. The responsible Department informed us about a follow-up process of other agreements with media units and institutions. But this is a very important element, so it requires quick solutions. The two modernized spaces available to the study program, the multimedia and the computer laboratory cannot replace the realization of professional internships inside or outside the territory of AMU. Interactivity through online communication allows students to have access and distance, reviewing and extracting the info they need to follow the dynamics of program development that are registered, as well as the obligations that remain to be realized.

2.4 Students

In the first week, at the beginning of the academic year, the faculty organizes an orienting and informative session, where lecturers and students discuss the Bachelor study program "Multimedia and Digital Television". The academic staff of the department provide clarifications and orientations on the structure, organization of the study process, concrete teaching methodology, evaluation of the courses for each semester, etc. On the other side, students have the opportunity to get the necessary information before they register on the official website of the institution.

Students appreciate having a television studio equipped with the latest technology devices. The development of practical subjects in the studio helped them a lot in their professional preparation. The characterising courses are a very important component of the curriculum for the practical aspect. The multimedia studio, provide the environment for the proper combination of the study program and its clear organization in the service of in-depth professional training of students are guaranteed. AMU has cooperation agreements for the realization of teaching internships depending on the study programs which have internships included in the curricula.



3. Conclusions and Recommendations

The external evaluators after carefully studying the materials provided by higher education institution may conclude that study program Bachelor in Multimedia and Digital Television, developed in the frame of the Erasmus+ DIMTV project, satisfies most of the quality requirements in terms of program objectives, learning outcomes, curricula development and delivery, student workload, international cooperation and other aspects of reviewing.

The expert team acknowledges the contribution given by project partners on developing the unique innovative study program for the region and encourages AMU to work further on implementing the recommendations derived from this report and other internal and external evaluations in future.

Most of the strong points of this study program are:

- Consistency and continuity concerning vision and strategy;
- Flexible and effective management;
- Standardized and formalized internal procedures;
- Intensification of the use of the opportunities for EU funding to allow better support the different operations of the institution;
- Excellent communication between students and faculty;
- The students are involved in the decision-making process as members of the various Quality Assurance through responses to the questionnaires committees and individually by filling up the questionnaires.
- Good infrastructure with modern laboratories dedicated to the Multimedia and Digital Television study program.



Some of the suggestions are:

1. Ongoing and intensification of internationalization – emphasis on networking, mobility and establishment of collaboration with international institutions;
2. More Memorandum of Understandings with private and public companies in the field of multimedia;
3. Integration of students in more practical projects
4. The department is encouraged to continue nurturing the positive work and study environment it has developed, with emphasis on the needs of its students.

