

# MA IN TELECOMMUNICATIONS

(Taught in Bulgarian)

## Brief description of the program:

The program covers all aspects of modern electronic communications and includes courses from four areas of telecommunications - radio communications and electronic media, telecommunications systems and technology, regulation and management of telecommunications and implementation of projects in telecommunications.

The program has four specializations:

- Digital telecommunication networks
- Mobile communications and digital media
- Adjust and technology management in telecommunications
- Implementation of projects in telecommunications

The program offers an upgrading semester for the candidates holders of the "Professional bachelor" degree.

## Program

### Digital telecommunication networks

#### 1<sup>st</sup> year, semester 1

Basic courses (credit)

**TCMM101 Optical systems for signals transmission** - 30 h. 3 cr.

**TCMM102 Fixed telecommunication networks and systems** - 30 h. 3 cr.

**TCMM108 Electric network communications** - 30 h. 3 cr.

**TCMM112 LINUX based systems and networks** - 30 h. 3 cr.

**TCMM308 IP telecommunication networks** - 30 h. 3 cr.

**TCMM336 Wireless access in telecommunication networks** - 30 h. 3 cr.

**TCMM388 Fiber-optic communications** - 30 h. 3 cr.

Extracurricular educational forms (credit)

**TCMM119 Seminar: Digital networks** - 30 h. 3 cr.

**TCMM128 Individual work: Telecommunication systems and technologies** - 30 h. 3 cr.

**TCMM147 Individual work: Wireless networks for data** - 30 h. 3 cr.

**TCMM149 Individual work: Video computer programming systems** - 30 h. 3 cr.

**TCMM156 Individual work: Program concept of FM radio or small TV** - 30 h. 3 cr.

**TCMM158 Individual work: Radio communications and Electronic media** - 30 h. 3 cr.

**TCMM159 Seminar: Parallel processing of signals and images with CUDA** - 30 h. 3 cr.

Classroom lectures (credit) – Distance learning

**TCMM111 Communication technologies – physical layer** – 30 h. cr.

#### 1<sup>st</sup> year, semester 2

Basic courses (credit)

**TCMM106 Digital cable and radio transmitting systems** - 30 h. 3 cr.

**TCMM204 Global network - Technology and access** - 30 h. 3 cr.

**TCMM210 MPLS backbone networks** - 30 h. 3 cr.

**TCMM260 Perspective mobile communications - GSM, UMTS, WiMAX, LTE** - 30 h. 3 cr.

**TCMM307 Broadband networks** - 30 h. 3 cr.

**TCMM389 Atmospheric and cosmic optical communication systems** - 30 h. 3 cr.  
Extracurricular educational forms (credit)  
**TCMM199 Practice: Internship in Radio communications** - 60 h. 6 cr.  
**TCMM209 Practice: Internship in telecommunication systems and technologies** - 60 h.  
6 cr.  
**TCMM227 Project: Telecommunication systems and technologies** - 30 h. 3 cr.  
**TCMM228 Seminar: Telecommunication systems and technologies** - 30 h. 3 cr.

### **2<sup>nd</sup> year, semester 1**

Basic courses (credit)

**TCMM207 E-commerce and electronic payment systems** - 30 h. 3 cr.  
**TCMM208 Corporate networks** - 30 h. 3 cr.  
**TCMM216 Computer tools for telecommunications** - 30 h. 3 cr.  
**TCMM300 Routing between the ISP - BGP** - 30 h. 3 cr.  
**TCMM309 Alarms in modern electronic communication networks** - 30 h. 3 cr.  
**TCMM311 Management of electronic communication networks TMN** - 30 h. 3 cr.  
Extracurricular educational forms (credit)  
**TCMM387 Internship** - 150 h. 15 cr.

## **Program**

**Mobile communications and digital media**

### **1<sup>st</sup> year, semester 1**

Basic courses (credit)

**TCMM101 Optical systems for signals transmission** - 30 h. 3 cr.  
**TCMM108 Electric network communications**- 30 h. 3 cr.  
**TCMM112 LINUX based systems and networks** - 30 h. 3 cr.  
**TCMM142 Digital technologies in sound and video engineering** - 33 h. 3 cr.  
**TCMM143 Structure and characteristics of microwave systems** - 30 h. 3 cr.  
**TCMM308 IP telecommunication networks** - 30 h. 3 cr.  
**TCMM336 Wireless access in telecommunication networks** - 30 h. 3 cr.  
Extracurricular educational forms (credit)  
**TCMM119 Seminar: Digital networks** - 30 h. 3 cr.  
**TCMM128 Individual work: Telecommunication systems and technologies** - 30 h. 3 cr.  
**TCMM147 Individual work: Wireless networks for data** - 30 h. 3 cr.  
**TCMM149 Individual work: Video computer programming systems** - 30 h. 3 cr.  
**TCMM156 Individual work: Program concept of FM radio or small TV** - 30 h. 3 cr.  
**TCMM158 Individual work: Radio communications and Electronic media** - 30 h. 3 cr.  
**TCMM159 Seminar: Parallel processing of signals and images with CUDA** - 30 h. 3 cr.

### **1<sup>st</sup> year, semester 2**

Basic courses (credit)

**TCMM137 Television in Europe** - 30 h. 3 cr.  
**TCMM231 Satellite communications** - 30 h. 3 cr.  
**TCMM234 Digital broadcasting** - 30 h. 3 cr.  
**TCMM244 Terminals for next generation networks** - 30 h. 3 cr.  
**TCMM260 Perspective mobile Communications - GSM, UMTS, WiMAX, LTE** - 30 h. 3 cr.  
**TCMM271 WEB radio and IPTV** - 30 h. 3 cr.  
**TCMM272 Computer modeling of high-frequency electromagnetic devices and**

**systems with ANSYS HFSS - 30 h. 3 cr.**

Extracurricular educational forms (credit)

**TCMM199 Practice: Internship radio communication - 60 h. 6 cr.**

**TCMM209 Practice: Internship in telecommunication systems and technologies - 60 h. 6 cr.**

**TCMM230 Seminar: Telecommunication networks in terms of deregulation - 30 h. 3 cr.**

**TCMM257 Project: Radio communications and Electronic media - 30 h. 3 cr.**

## **2<sup>nd</sup> year, semester 1**

Basic courses (credit)

**TCMM214 Program management broadcasting - 30 h. 3 cr.**

**TCMM270 EMC in wireless networks - 30 h. 3 cr.**

**TCMM319 Technology of innovative thinking and behavior - 30 h. 3 cr.**

**TCMM329 Measurement in the fixed and mobile radio networks - 30 h. 3 cr.**

**TCMM330 Foundation, licensing, management and programming of television according to EU directives - 30 h. 3 cr.**

**TCMM335 Systems for global positioning GPS - 30 h. 3 cr.**

**TCMM341 Software applications for planning and spectrum management - 30 h. 3 cr.**

Extracurricular educational forms (credit)

**TCMM386 Internship: MT - 15 cr.**

## **Program**

**Adjust and technology management in telecommunications**

### **1<sup>st</sup> year, semester 1**

Basic courses (credit)

**TCMM163 Integration and guidelines for the development of telecommunications - 30 h. 3 cr.**

**TCMM165 Electronic planning management applications - 30 h. 3 cr.**

**TCMM170 Modern aspects of economy in telecommunications - 30 h. 3 cr.**

**TCMM206 Telecommunications standards - 30 h. 3 cr.**

**TCMM213 Systems for corporate business intelligence - network approach - 30 h. 3 cr.**

**TCMM312 Multimedia communications - 30 h. 3 cr.**

**TCMM370 Business administration in electronic communications - 30 h. 3 cr.**

Extracurricular educational forms (credit)

**TCMM129 Seminar: Sector policy in telecommunications - 30 h. 3 cr.**

**TCMM186 Seminar: Quantitative methods in management - 30 h. 3 cr.**

**TCMM189 Individual work: Telecommunications management (English) - 30 h. 3 cr.**

**TCMM190 Individual work: Telecommunication aspects of the information society - 30 h. 3 cr.**

**TCMM191 Practice: Legal protection of enterprises in the electronic communications market - 30 h. 3 cr.**

**TCMM192 Seminar: Electronic communications in the European Union - 30 h. 3 cr.**

**TCMM193 Individual work: Telecommunication services - 30 h. 3 cr.**

## **1<sup>st</sup> year, semester 2**

Basic courses (credit)

**TCMM219 Fundamentals of Project Management** - 30 h. 3 cr.

**TCMM238 Project financing innovation** - 30 h. 3 cr.

**TCMM246 Conceptual engineering** - 30 h. 3 cr.

**TCMM261 Management in Telecommunications** - 30 h. 3 cr.

**TCMM266 Pricing and economic regulation in telecommunications** - 30 h. 3 cr.

**TCMM267 Management of investment projects in telecommunications** - 30 h. 3 cr.

**TCMM366 European standards, ISO and management** - 30 h. 3 cr.

Extracurricular educational forms (credit)

**TCMM126 Project: Software for planning management activities** - 30 h. 3 cr.

**TCMM209 Practice: Internship in telecommunication systems and technologies** - 60 h.  
6 cr.

**TCMM286 Seminar: Security in e-commerce** - 30 h. 3 cr.

## **2<sup>nd</sup> year, semester 1**

Basic courses (credit)

**TCMM169 Financial analysis and management of telecommunications** - 30 h. 3 cr.

**TCMM317 Analysis and evaluation of projects** - 30 h. 3 cr.

**TCMM339 Telecommunication networks** - 30 h. 3 cr.

**TCMM362 Business planning in telecommunications** - 30 h. 3 cr.

**TCMM363 Public relations: Communications** - 30 h. 3 cr.

**TCMM367 Telecom market in Bulgaria** - 30 h. 3 cr.

**TCMM369 Regulation and control of the electronic communications market** - 30 h. 3 cr.

Extracurricular educational forms (credit)

**TCMM386 Internship: MT** - 15 cr.

## **Program**

**Implementation of projects in telecommunications**

### **1<sup>st</sup> year, semester 1**

Basic courses (credit)

**TCMM163 Integration and guidelines for the development of telecommunications** - 30  
h. 3 cr.

**TCMM165 Electronic planning management applications** - 30 h. 3 cr.

**TCMM170 Modern aspects of economy in telecommunications** - 30 h. 3 cr.

**TCMM206 Telecommunications standards** - 30 h. 3 cr.

**TCMM213 Systems for corporate business intelligence - network approach** - 30 h. 3 cr.

**TCMM312 Multimedia communications** - 30 h. 3 cr.

**TCMM370 Business administration in electronic communications** - 30 h. 3 cr.

Extracurricular educational forms (credit)

**TCMM129 Seminar: Sector policy in telecommunications** - 30 h. 3 cr.

**TCMM186 Seminar: Quantitative methods in management** - 30 h. 3 cr.

**TCMM189 Individual work: Telecommunications management (English)** - 30 h. 3 cr.

**TCMM190 Individual work: Telecommunication aspects of the information society** - 30  
h. 3 cr.

**TCMM191 Practice: Legal protection of enterprises in the electronic communications  
market** - 30 h. 3 cr.

**TCMM192 Seminar: Electronic communications in the European Union - 30 h. 3 cr.**  
**TCMM193 Individual work: Telecommunication services - 30 h. 3 cr.**

### **1<sup>st</sup> year, semester 2**

Basic courses (credit)

**TCMM219 Fundamentals of Project Management - 30 h. 3 cr.**

**TCMM238 Project financing innovation - 30 h. 3 cr.**

**TCMM246 Conceptual engineering - 30 h. 3 cr.**

**TCMM247 Design of telecommunication equipment - 30 h. 3 cr.**

**TCMM261 Management in telecommunications - 30 h. 3 cr.**

**TCMM266 Pricing and economic regulation in telecommunications - 30 h. 3 cr.**

**TCMM366 European standards, ISO and management - 30 h. 3 cr.**

Extracurricular educational forms (credit)

**TCMM209 Practice: Internship in telecommunication systems and technologies - 60 h. 6 cr.**

**TCMM240 Practice: Experience in implementing telecommunications projects - 60 h. 6 cr.**

**TCMM241 Seminar: Systems of corporate business intelligence - 30 h. 3 cr.**

**TCMM242 Practice: European standards, ISO and management - 30 h. 3 cr.**

### **2<sup>nd</sup> year, semester 1**

Basic courses (credit)

**TCMM169 Financial analysis and management of telecommunications - 30 h. 3 cr.**

**TCMM207 E-commerce and electronic payment systems - 30 h. 3 cr.**

**TCMM314 Construction and management of corporate image and corporate reputation - 30 h. 3 cr.**

**TCMM317 Analysis and evaluation of projects - 30 h. 3 cr.**

**TCMM338 Organization and logistics of special events in telecommunications - 30 h. 3 cr.**

**TCMM340 Management and financing of innovative enterprise, specificities of the market in the sector - 30 h. 3 cr.**

**TCMM371 Planning, integration and legal aspects of electronic communications - 30 h. 3 cr.**

Extracurricular educational forms (credit)

**TCMM386 Internship: MT - 15 cr.**

### **Upgrading semester:**

Basic courses (credit)

**TCMM006 Fundamentals of digital networks - 30 h. 3 cr.**

**TCMM008 Radio and television systems and networks - 30 h. 3 cr.**

**TCMM009 Introduction to optical communications - 30 h. 3 cr.**

**TCMM011 Fundamentals of Economy and Finance Telecommunications - 30 h. 3 cr.**

**TCMM024 Synthesis, design and modeling systems - 30 h. 3 cr.**

**TCMM110 Modern electronics for telecommunication systems - 30 h. 3 cr.**

**TCMM211 Introduction to ICT - 30 h. 3 cr.**

Extracurricular educational forms (credit)

**TCMM016 Seminar: Introduction to electronics - 30 h. 3 cr.**

**TCMM017 Seminar: Telecommunication networks - 30 h. 3 cr.**

**TCMM018 Individual work: Fundamentals of digital networks for electronic**

**communications** - 30 h. 3 cr.

**TCMM019 Practice: Digital Electronics Telecommunications** - 30 h. 3 cr.

**TCMM020 Seminar: Radio and television networks, systems and networks** - 30 h. 3 cr.

**TCMM021 Practice: Fundamentals of Radio and Television** - 30 h. 3 cr.

**TCMM022 Individual work: Spectrum and propagation of electromagnetic waves** - 30 h.  
3 cr.