Contents

1. General information

This booklet presents an overview of the activities taking place at the Electronics and Telecommunications Faculty of the "Politehnica" University of Timişoara.

It emphasizes the activities of 2004. Information about the structure of the faculty, its position in the "Politehnica" University, and data concerning educational and research activities are presented.

This booklet contains only a short description. More detailed information can be obtained through the faculty and department secretariats.

You can also find more information visiting our site on the INTERNET:

http://www.etc.upt.ro

The "Politehnica" University of Timişoara was founded in 1920, with the purpose of serving the technical education and research needs in western Romania. The University is public, and consists of 9 faculties.

The study of Electronics at the "Politehnica" University of Timişoara was introduced in 1931, by the late Prof. Remus Răduleţ, member of the Romanian Academy.

In 1970 the specialization of "Electronics and Telecommunications" was set up at the Faculty of Electrical Engineering. In 1974 the department of "Electronics-Automation-Measurements" was founded. In 1976 the Faculty of Electric Engineering moved its headquarters to the present building. In this way, the number of laboratories and the endowment increased substantially.

In 1990 the specialization of "Electronics and Telecommunications" became the "Faculty of Electronics and Telecommunications". Starting 1991 there is also a short-cycle higher education program (College level).

In 1994 the "Master" program was introduced.

Our Faculty provides specialized training of engineers in Electronics and Telecommunications. It provides two areas of specialization: Applied Electronics and Telecommunications. The College provides specialized training in the field of Electronics, Communications and Postal Services, and also Audio-Video and Multimedia Technologies.

The teaching activities are organized in three levels of study:

- short duration programs (college);
- long duration programs (license);
- postgraduate programs (M.Sc. and Ph.D.).

The "short duration" education level is organized over a 3-year period, and is equivalent with a College of Higher Education.

The "long duration" education level is organized over a 5-year period. Students graduating from this educational form obtain an "engineer" degree.

The "postgraduate" educational level consists of a 1-year program of study resulting in a "Master" degree.

A Ph.D. degree must be completed in four to six years.

The faculty has three departments:

- **Applied Electronics;**
- **Communications;**
- **Measurements and Optical Electronics,**

and cooperates with other faculties and departments like Mathematics, Physics, Electrical Engineering, Computer Science, Mechanical Engineering, Management, etc.

Education is based on modern methods, especially with respect to practical activities. Special attention is paid to applied informatics. The teaching staff devotes a considerable amount of time to research.

The activities tacking place in the faculty are organized in several research teams, lead by professors who are also Ph.D. advisors. A presentation of these teams is done in the next chapters.

The governing authorities of the Faculty of Electronics and Telecommunications are:

- the Faculty council;
- the Executive Board of the Faculty Council;

The Administrative Officers and the Executive Board of the Faculty Council are in charge of the ordinary activities in the faculty.

2. Structure of the Faculty of Electronics and Telecommunications

The Executive Board of the faculty is composed of:

- Dean: Prof. dr. eng. Marius OTEŞTEANU ;
- Vice Dean: Prof. dr. eng. Alimpie IGNEA;
- Vice Dean: Prof. dr. eng. Aurel GONTEAN;
- Scientific Secretary: Prof. dr. eng. Aldo DE SABATA.

Faculty address:

Bd. Vasile Pârvan No. 2,
Postal code: 300223, City: Timişoara, Country: Romania.

Phone (Dean's office, secretariat):

- direct: (+40)-(0)256-403291
- fax: (+40)-(0)256-403295
- e-mail: dean@etc.utt.ro

Secretariat: Chief Secretary Eng. Cecilia MOISE, secretariat@etc.utt.ro
Simona SOMOSAN, Oana TRANCOTA

Secretariat of the Applied Electronics (AE) Department:

- office no. B101,
- phone: (+40)-(0)256-403331;

Secretariat of Communications (COM) Department:

- office no. B201,
- phone: (+40)-(0)256-403301;

Secretariat of the Measurements and Optical Electronics (MOE) Department:

- office no. B301,
- phone: (+40)-(0)256-403362.

Faculty Council:

1. Prof. dr. eng. Ivan BOGDANOV, Head of Departament AE
2. Prof. dr. eng. Aldo DE SABATA, Scientific Secretary
3. Prof. dr. eng. Aurel GONTEAN, Vice Dean
4. Prof. dr. eng. Alimpie IGNEA, Vice Dean
5. Prof. dr. eng. Alexandru ISAR
6. Prof. dr. eng. Traian JURCA, Head of Departament MOE
7. Prof. dr. eng. Ioan NAFORNIȚĂ, Head of Departament COM
8. Prof. dr. eng. Marius OTEŞTEANU, Dean
9. Prof. dr. eng. Viorel POPESCU
10. Prof. dr. eng. Mihail TĂNASE
11. Prof. dr. eng. Corneliu TOMA
12. Prof. dr. eng. Liviu TOMA
13. Prof. dr. eng. Radu VASIU
14. Assoc. Prof. dr. eng. Dorina ISAR
15. Assoc. Prof. dr. eng. Dan LASCU
16. Assoc. Prof. dr. eng. Eugen MÂRZA
17. Lect. Dr. eng. Georgeta BUDURA
18. Adrian BERINDE, student IV AE
19. Diana BUDEA, student III TC
20. Endora KARMAN, student V TC
21. Adrian Vasile GABOR, student V TC
22. Radu MÎRŞU, student V EA
23. Emilia CARAGEA, student II ETc

2.1. Applied Electronics Department

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Department board:

- Prof. dr. eng. Ivan BOGDANOV - head of department
- Prof. dr. eng. Mircea CIUGUDEAN
- Prof. dr. eng. Virgil TIPONUȚ
- Assoc. Prof. dr. eng. Dan LASCU
- Lect. Eng. Mircea BĂBĂIȚĂ

Staff

- Prof. dr. eng. Ivan BOGDANOV: Industrial Robots, Computer control of electrical drives;
- Prof. dr. eng. Horia CÂRSTEA: Electronic Technology. Electric Equipment Testing;
- Prof. dr. eng. Mircea CIUGUDEAN: Conception of Analogic Integrated Circuits and their Applications;
- Prof. dr. eng. Sabin IONEL: DSP applications. Statistical signal processing. Failure diagnosis;
- Prof. dr. eng. Tiberiu MUREŞAN: Digital Circuits. Industrial Robot Driving. Switched Mode Power Supplies;
- Prof. dr. eng. Viorel POPESCU: Power Electronics, Switched-Mode Power Supplies;
- Prof. dr. eng. Mihail Eugen TĂNASE: Doppler Telemetry;
- Prof. dr. eng. Virgil TIPONUȚ: Analog Electronic Circuits. Logic Programmed Systems. Sensors and Transducers. Neural Networks;
- Assoc. Prof. dr. eng. Dan ANDREICIUC: Industrial Robots, Mobile Robots.
- Prof. dr. eng. Aurel GONTEAN: Programmed Logic Systems. Digital Circuits;
- Assoc. Prof. dr. eng. Dorina ISAR: Industrial Process Control Equipment. Signal Processing for Signal/Noise Ratio Enhancement;
- Assoc. Prof. dr. eng. Ioan JIVEȚ: Designing the ASIC (VLSI) Circuits. Design of Digital Systems with Micro-Controllers and Micro-Processors. Clinical applications of electrical bio-impedance. Tomography;
- Assoc. Prof. dr. eng. Dan LASCU: High Frequency Power Processors, Power Factor Correction Circuits; Modeling and CAD in Power Electronics
- Lect. Dr. eng. Cătălin CĂLEANU: Electronic Devices and Circuits
- Lect. Dr. eng. Lucian JURCA: Analog Electronic Circuits;

- Lect. Dr. eng. Adrian POPOVICI: Industrial Electronics; Materials for Electronics.
- Assist. Eng. Mircea BĂBĂIȚĂ: Digital Circuits; Electrical Drives
- Assist. Eng. Marlene DĂNEȚI: DSP applications. Statistical signal processing. Failure diagnosis. Multimedia.
- Assist. Beniamin DRĂGOI: Conception of Analog Integrated Circuits.
- Assist. Eng. Aurel FILIP: Analog Electronic Circuits;
- Assist. Eng. Ioan LIE: Electronics. Doppler Telemetry.
- Assist. Eng. Valentin MARANESCU: Conception of Analog Integrated Circuits.
- Assist. Eng. Dan NEGOIȚESCU: Industrial Electronics, Power Factor Correction Circuits;
- Assist. Eng. Petru PAPAZIAN: Digital Circuits.
- Assist. Eng. Sorin POPESCU: Analog Electronic Circuits. Logic Programmed Systems.
- Teaching Assist. Eng. Bogdan MARINCA: Doppler Telemetry.

Other employees: 2 principal technicians, 5 technicians and 2 secretaries.

2.2. Communications Department

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Department board:

- Prof. dr. eng. Ioan NAFORNIȚĂ - head of department;
- Prof. dr. eng. Alexandru ISAR;
- Assoc. Prof. dr. eng. Florin ALEXA;
- Assoc. Prof. dr. eng. Eugen MÂRZA;

Staff

- Prof. dr. eng. Andrei CÂMPEANU: Telecommunication Equipment Technology, Telecommunication Circuits;
- Prof. dr. eng. Vasile GUI: Image Processing. Electronic Circuits and Devices;
- Prof. dr. eng. Alexandru ISAR: Signals, Circuits and Systems. Wavelets theory's applications. Time-frequency representations. Compression. Coding;
- Prof. dr. eng. Ioan NAFORNIȚĂ: Signals, Circuits and Systems. Adaptive Signal Processing. Time-frequency representations. Wavelets theory's applications. Microwave Technique;

- Prof. dr. eng. Miranda NAFORNIȚĂ: Theory of Information and Coding. Data Transmission. Signals, Circuits and Systems. Modern Communication Networks;
- Prof. dr. eng. Marius OTEŞTEANU: Television, Telephone Transmission Systems, and Information Recording Techniques;
- Cons. Prof. dr. eng. Anton POLICEC: Medical Electronics; Radio communications;
- Prof. dr. eng. Corneliu TOMA: Television. Analogue Electronics; Image Compression, Motion Analysis, Pattern Recognition, Multimedia Technologies;
- Prof. dr. eng. Radu VASIU: Telecommunication Equipment Testing, Television and Digital Television; Multimedia Applications Development;
- Assoc. Prof. Dr. eng. Florin ALEXA: Television; Sound Technique; Multimedia;
- Assoc. Professor Dr. eng. Lorin FORTUNA: Switching Systems for Telecommunications. Mail Traffic;
- Assoc. Prof. dr. eng. Eugen MÂRZA: Radio communications, Mobile Radio, Radio Systems Engineering;
- Lect. Prof. Eng. Muguraş MOCOFAN: Machine Vision and Pattern Recognition; Multimedia; Studio Equipment; Video Production;
- Lect. Dr. eng. Corina BOTOCA: Microwave Technique. Signals, Circuits and Systems. Neural networks;
- Lect. Dr. eng. Georgeta BUDURA: Signals, Circuits and Systems. Nonlinear Signal Processing, Telecommunication Circuits;
- Assistant Prof. Eng. Cornel BALINT: Switching Systems for Telecommunications;
- Assist. Prof. Eng. Horia BALTĂ: Optical Transmission and Processing of Information. Statistical Theory of Information Transmission, Theory of Information and Coding;
- Assist. Prof. Eng. Mirela BIANU: Microwave Technique;
- Tech. Assist. Eng. Constantin M. BUCOS: Multimedia; Studio Equipment; Video Production;
- Assist. Prof. Eng. Janos GAL: Signals, Circuits and Systems. Telecommunication Circuits;
- Assist. Prof. Eng. Maria KOVACI: Statistical Theory of Information Transmission, Theory of Information and Coding, Signals Circuits and Systems;
- Assist. Prof. Eng. Eugen LONTIŞ: Telephone Transmission Systems; Medical Electronics;
- Assist. Prof. Eng. Radu LUCACIU: Optical Transmission and Processing of Information;
- Assist. Prof. Eng. Nicolae MICLĂU: Optical Transmission and Processing of Information, Theory of Information and Coding;
- Assist. Prof. Eng. Tiberiu MUNTEAN: Optical Transmission and Processing of Information, Theory of Information and Coding, Radiocommunications;

- Assist. Prof. Eng. Marius OLTEAN: Data Transmission on Radio Channels;
- Assist. Prof. Eng. Marius SALAGEAN: Signals, Circuits and Systems;
- Assist. Prof. Eng. Călin SIMU: Medical Electronics, Radio communications;
- Assist. Prof. Eng. Andy VESA: Signals, Circuits and Systems. Mobile Radiocommunications;
- Teach. Assist. Eng. Adina DABA: Television, Telephone Transmission Systems, and Information Recording Techniques;
- Teach. Assist. Eng. Corina NAFORNITA: Digital Signal Processing. Digital Watermarking;

2.3. Measurements and Optical Electronics Department

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Department board:

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- Prof. dr. eng. Liviu TOMA
- Prof. dr. eng. Dan STOICIU

Staff

- Prof. dr. eng. Mircea CHIVU: Electronic and Electric Measurements, Measuring of the Electrical and Not Electrical Quantities. Television Channels Broadcasted Via Satellite;
- Consultant Prof. dr. eng. Sever CRIŞAN: Optical Electronics. Electrical Measurement, Sensors and Transducers;
- Prof. dr. eng. Aldo De SABATA: Adaptive Methods in Measurements, Signal Processing, Microwaves;
- Prof. dr. eng. Alimpie IGNEA: Electronic and Electric Measurements, Measuring in Industrial Process. Measuring Systems in the Electromagnetic Compatibility; Electromagnetically Supervising of sites, Antennas calibration, Nonlinearities study of high frequency devices;
- Prof. dr. eng. Traian JURCA: Electronic Measuring Instruments. Structural Components of Precision Instrumentation. Programmable Measuring Systems;
- Consultant Prof. dr. eng. Eugen POP: General Theory of Measurement, Digital Processing of Signals in Measuring Instruments;

- Prof. dr. eng. Dan STOICIU: Electronic Measuring Instruments, Metrology, Quality and Maintenance. Measuring in Industrial Process;
- Prof. dr. eng. Liviu TOMA: Data Acquisition Systems. Microprocessor System Architecture. Digital Processing Structures;
- Assoc. Prof. dr. eng. Mihaela LASCU: Measuring of the Electrical and Not Electrical Quantities. Electrical Measuring of the Non Electrical Quantities. Measuring in Industrial Process; Virtual Instrumentation;
- Lect. dr. eng. Daniel BELEGA: Measuring Systems in the Electromagnetic Compatibility. Instruments for Measurements. Digital Processing Structures;
- Lect. dr. eng. Septimiu MISCHIE: Electronic and Electric Measuring. Programmable Measuring Systems. Structural Components of Precision Instrumentation.
- Lect. dr. eng. Adrian VÂRTOSU: Microwaves, Microwaves and Optoelectronics Measurement, Television Channels Broadcasted Via Satellite;
- Assist. Eng. Emil LUZAN: Measuring of Environmental Factors, Measuring of the Electrical and Non Electrical Quantities;
- Assist. dr. eng. Robert PASZITKA: Microprocessor System Architecture. AC calibrators.
- Assist. Eng. Ciprian DUGHIR: Electromagnetical Supervising of Sites, Antennas calibration.
- Assist. eng. Liliana STOICA: Electromagnetic Compatibility, Signal Processing, Electronic Devices
- Assist. eng. Cora IFTODE, Electromagnetic Compatibility, Signal Processing, Electronic Devices
- Assist. eng. Adrian MIHAIUTI, Antenna Theory and Calibration, Electromagnetic Compatibility, Signal Processing

Other employees: 2 technicians, 1 secretary and 1 computer operator.

3. Educational activity

- The Faculty of Electronics and Telecommunications provides education in electronic engineering in general and industrial electronics, telecommunications and measurement in particular. The Faculty offers three educational programs:
- A three year short-cycle higher education program (College of Higher Education level). Graduation is conditioned by the passing of two examinations (a theoretical one and a practical one) and by the oral defence of a graduating project. A B.S. equivalent degree in Engineering is awarded.
- A five - year - program. Graduation is conditioned by the passing of the Licence examination and the oral defence of the graduation project. If these requirements are met, the Licence Engineer degree is awarded.
- A one - year - program of Master Study. A successful oral defence of the dissertation leads to graduation and the award of the Master degree.
- A second stage of the postgraduate program leads to the Doctor Engineer degree.

Education is organized according to the transferable credits system (ECTS).
In 2005 a Licence-Master-Doctorate (LMD) system was introduced, in accordance with the Bologna Declaration. The durations of study is 4 years, 1.5 years and 3 years respectively. The present system will cease to exist.

3.1. The "College of Higher Education" level

For careers in: Production, design, development and testing in Industrial Electronics, Communications and Multimedia Engineering.

Program content

All students take core units in the first year in : mathematics, physics, general electronics and measurement. Students will cover three specializations related to the general field of Electronic Engineering:

- Electronics;
- Communications and Postal Services;
- Audio-video and Multimedia Technologies.

Specific units related with the specialization are covered in the second and the third year.

Electronics (E):

This specialization involves theoretical or practical and hands-on courses in: industrial electronics, robotics, control, testing of electronics equipment, numerical control of industrial processes. The E develops product test, design and development skills required to work in the industry.

Communications and Postal Services (CPS)

This specialization involves theoretical or practical and hands-on courses in: data communications, radio and optical communications, telecommunication circuitry, postal traffic. The CPS develops product test, design and development skills required to work in the communication industry.

Audio-video and Multimedia Technologies (AMT)

This specialization involves theoretical or practical and hands-on courses in: communications, multimedia production and applications, audio-video production, aesthetic and philosophical trends of communications. The AMT develops production and broadcasting skills required to work in the television, radio and communication industry.

Number of students 2004/2005

Year of study	Spec.	Total number of students	Number of graduated students	Number of ungraduated students	Number of drop-out students
First year	All	76	45	0	31
Second year	AE	0	0	0	0
Second year	CPS	30	20	0	10
Second year	AMT	32	16	1	15
Third year	AE	20	19	0	1
Third year	CPS	23	20	0	3
Third year	AMT	33	32	1	0

Curriculum for the Academic Year 2004 - 2005

Students' training in the fields of Electronics, Communications and Postal Services, and Audio-Video and Multimedia Technologies is done according to the following curricula:

First Year of Study for Bachelor-level

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	Computer Basics and Programming 1 **	2	0	2	0	5
	Electrotechnique	2	2	0	0	4
	Physics	2	1	1	0	4
	Matehamatical Analysis	3	2	0	0	5
	Linear Algebra, Analytical and Differrential Geometry	3	2	0	0	5
	Electronic Devices and Circuits 1 **	1	0	1	0	3
	Foreign Languages 1* **	0	2	0	0	2
	Sports 1	0	2	0	0	-
	Practical training 45 hours					2
II	Computer Basics and Programming 2	2	0	2	0	4
	Electronic Devices and Circuits 2	3	0	3	0	6
	Materials and Passive Electronic Components **	2	0	1	0	3
	Signal Processing	3	0	2	0	6
	Electric and Electronic Measurements	2	0	2	0	4
	Management and Marketing **	2	1	0	0	3
	Foreign Languages 2* **	0	2	0	0	2
	Sports 2	0	2	0	0	-
	Practical training 45 Hours					2

* A foreign language is chosen from: English, French or German.
** Coll.

Second Year of Study for Electronics

Sem.	Course Title	Structure [hours/week]				Credit Points
		C	S	L	P	
I	Electrical machines	2	0	2	0	4
	Analog Integrated Circuits	3	0	2	0	6
	Equipment Testing	2	0	1	0	3
	Electronic Technology **	2	0	1	0	3
	Digital Integrated Circuits	3	0	3	0	5
	Measurements in Industrial Processes	3	0	3	0	6
	Sports 3 **	0	2	0	0	1
	Practical Training 45 hours					2
II	Television	3	0	2	0	6
	Radiocommunications	3	0	3	0	6
	Microprocessors and Microcontrollers	3	0	2	0	6
	Industrial Electronics 1	3	1	2	0	6
	Medical Electronics **	2	0	2	0	4
	Practical Training 45 Hours					2

** Coll.

Second Year of Study for Communications and Postal Services

Sem.	Course Title	Structure [hours/week.]				Credit points
		C	S	L	P	
I	Analog Integrated Circuits	3	0	2	0	6
	Communications Basics **	3	0	2	0	5
	Telecommunications Circuits	2	0	3	0	5
	Communications Equipment Testing	2	0	1	0	3
	Electronic Technology **	2	0	1	0	3
	Digital Integrated Circuits	3	0	3	0	5
	Sports 3 **	0	2	0	0	1
	Practical Training 45 hours					2
II	Optical and Microwave Comm. **	3	0	2	0	5
	Television	3	0	2	0	6
	Radiocommunicatons	3	0	3	0	6
	Microprocessors and Microcontrollers	3	0	2	0	6
	Multiple Transmission Systems	3	0	2	0	5
	Practical training 45 Hours					2

** Coll.

Second Year of Study for Audio-Video and Multimedia Technologies

Sem.	Course Title	Structure [hours/week]				Credit Points
		C	S	L	P	
I	Integrated Circuits	3	0	2	0	6
	Multimedia Applications Development 1	3	0	3	0	6
	Operating Systems	2	0	2	0	4
	Virtual Reality and Graphics	2	0	2	0	5
	Internet-Intranet. Protocols and Applications	2	0	2	0	4
	Law **	2	1	0	0	3
	Practical Training 45 hours					2
II	Object Oriented Programming	2	0	4	0	6
	Television	3	0	2	0	6
	Multimedia Applications Development 2 **	0	0	2	0	2
	Studio Equipment **	3	0	2	0	5
	Technics of Sound	2	0	2	0	5
	Data Bases	2	0	2	0	4
	Practical Training 45 Hours					2

** Coll.

Third Year of Study for Electronics

Sem.	Course Title	Structure [hours/week]				No. of weeks	Credit Points
		C	S	L	P		
I	Electronic Systems for Automatic Control	3	0	2	0	7	3
	Industrial Electronics 2	4	0	4	0	7	4
	Control Equipment	3	0	4	0	7	4
	Robotics basics	3	0	3	0	7	4
	Graduation Thesis Preparation					7	15
II	Practical Training 420 hours					14	30

Third Year of Study for Communications and Postal Services

Sem.	Course Title	Structure [hours/week]				No. of weeks	Credit Points
		C	S	L	P		
I	Switching Systems	4	0	4	0	7	4
	Data Communications	5	0	4	0	7	4
	Postal Services	2	0	2	0	7	3
	Telecommunication networks	2	0	3	0	7	4
	Graduation Thesis Preparation					7	15
II	Practical Training 420 hours					14	30

Third Year of Study for Audio-Video and Multimedia Technologies

Sem.	Course Title	Structure [hours/week]				No. of weeks	Credit Points
		C	S	L	P		
I	Audio-Video Production	5	0	4	0	7	4
	Multimedia Applications Development 3	2	0	3	0	7	4
	Computer Networks	3	0	3	0	7	4
	Radio-TV Journalism	3	0	3	0	7	3
	Graduation Thesis Preparation					7	15
II	Practical Training 420 hours					14	30

3.2. The "Diploma Engineer" level

The educational goals of this level are:

- to give students comprehensive theoretical and practical knowledge in the field of electronic engineering;
- to provide students with practical skills for manufacturing electronic equipment and to be introduced to the most recently developed techniques and devices in the design of electronic equipment;
- to familiarize students with the permanent intellectual work;
- to accustom students to informatics and computer technology with the purpose of using Computer Aided Design;
- to give adequate knowledge in economics and business management, enabling graduates to take part directly in industrial activities or to work as managers;
- to teach students foreign languages, to integrate themselves in the mobility programs promoted by the European Community and to enable their participation to international cooperation and research programs;
- to give students knowledge in humanities for professional inter-communication.

Entry Standards and Student Performance

Entry requirements

Enrolment of students in the first year follows an admission examination, where general knowledge in mathematics and physics of the candidates are assessed.

Details of entry standards

The admission examinations are of the MCQ (Multiple-Choice Queries) type. There are two examinations, one in Mathematics I (Algebra, Analysis), and one in Mathematics II (Geometry, Trigonometry) or Physics (Mechanics, Thermodynamics, and Electricity), each allotted a maximum score of 100. A successful candidate would total a minimum score of 44 out of 100 at each of the two examinations. The final score is calculated taking in account the Baccalaureate score, which is weighting 20 %. The actual entrance minimum score may vary according to the number and level of the candidates. A statistics over the last years is presented below.

Years	Number of candidates	Number of admitted	Minimum entry score
2002/2003	378 for public funded places	217 public funded 100 self funded	170/200 131/200
2003/2004	375 for public funded places	218 public funded 100 self funded	7.31/10 5.57/10
2004/2005	605 for public funded places	216 public funded 81 self funded	7.90/10 5.00/10
2005/2006	377 for public funded places	280 public funded 39 self funded	7.29/10 5.04/10

Arrangements for direct entry

Graduates of other faculties that were awarded a licence diploma can be directly enrolled in an appropriate year of study, in accordance with ECTS.

College graduates that were awarded a license diploma can enrol in the third year of the 5-year cycle, after passing a number of difference examinations.

A certain number of candidates can follow the courses and obtain a diploma if they choose to finance their studies and obtain a minimum score of 88/200 at the admission exam.

Number of students

2001/2002

Year of study	Spec.	Total number of students	Number of graduated students	Number of ungraduated students	Number of drop-out students
First year	AE + TC	275	102	116	57
Second year	AE + TC	284	65	131	88
Third year	AE	114	14	62	38
Fourth year	AE	103	12	72	19
Fifth year	AE	105	87	18	-
Third year	TC	114	23	61	30
Fourth year	TC	93	51	39	3
Fifth year	TC	76	71	5	-

2002/2003

Year of study	Spec.	Total number of students	Number of graduated students	Number of ungraduated students	Number of drop-out students
First year	AE + TC	348	91	167	90
Second year	AE + TC	291	66	130	95
Third year	AE	81	21	32	28
Fourth year	AE	102	25	71	6
Fifth year	AE	86	57	28	1
Third year	TC	134	46	63	25
Fourth year	TC	83	56	23	4
Fifth year	TC	83	80	1	2

2003/2004

Year of study	Spec.	Total number of students	Number of graduated students	Number of ungraduated students	Number of drop-out students
First year	AE + TC	359	249	10	100
Second year	AE + TC	334	179	6	149
Third year	AE	133	97	2	34
Fourth year	AE	101	83	3	15
Fifth year	AE	102	96	0	6
Third year	TC	139	116	2	21
Fourth year	TC	117	112	0	5
Fifth year	TC	83	79	1	3

2004/2005

Year of study	Spec.	Total number of students	Number of graduated students	Number of ungraduated students	Number of drop-out students
First year	AE + TC	307	212	11	84
Second year	AE + TC	324	244	9	71
Third year	AE	141	109	5	27
Fourth year	AE	106	90	2	14
Fifth year	AE	168	145	2	21
Third year	TC	150	111	4	35
Fourth year	TC	116	103	2	11
Fifth year	TC	146	136	0	10

AE=Applied Electronics
TC=Telecommunications
Note: The third coloumn in the above tables includes reenrolled students who were dropped out in past years.

Average duration of study for the last years:

Year of study	Specialization	Average duration of study
2002/2003	AE	5.34 years
	TC	5.08 years
2003/2004	AE	5.23 years
	TC	5.61 years
2004/2005	AE	5.87 years
	TC	5.57 years

Note: AE = Applied Electronics, TC = Telecommunications.

Structure of the Academic Year

The academic year consists of two 14-week semesters and 3 examination sessions. The license and graduate examinations take place in June and February. The Entrance examinations take place in July and September.

The holidays are:

1. Christmas holiday (two weeks);
2. after the winter session of examinations (one week);
3. Easter holiday (one week);
4. Summer holiday (three months).

Participation to the teaching activities

The teaching activity is organized in: courses, seminars, laboratory and project classes. Each academic session has as a prerequisite 100 % attendance of the laboratory classes.

Examinations and continuous assessment

Each subject ends with an examination or another assessment form as stipulated in the curriculum. The form of the examination (either written or oral) is proposed by the department and approved by the Faculty Council.

Students can take their examinations and continuous assessments no more than three times, reexamination for grade improvement being included.

Dismissal and Reiteration

At the end of a year, a student must have obtained a minimum number of 40 credit points from a total of 60/year, from which a minimum number of 30 after the summer session. If these conditions are not accomplished, students are removed from the faculty registers. They can register again in the next year, on their own expenses, until the missing obligations are completed.

Curriculum for the Academic Year 2004 - 2005

The curriculum for the licensed engineer level is divided in two cycles:

- First - cycle (along the first and the second year of study),
- Second - cycle (along the third, forth and fifth year of study).

First Year of Study for Electronics (First - cycle)

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	Math Analysis 1	3	2	0	0	5
	Algebra and Geometry	3	2	0	0	5
	Programming Languages and Techniques 1	2	1	2	0	5
	Physics 1	2	1	1	0	4
	Mechanical Engineering **	2	0	1	0	4
	Philosophy **	0.5	0.5	0	0	2
	Foreign Languages * **	0	2	0	0	2
	Sport 1 **	0	2	0	0	1
	Practical Training 45 hours					2
II	Math Analysis 2	2	2	0	0	4
	Physics 2	2	0	1	0	3
	Special Mathematics 1	2	2	0	0	4
	Programming Languages and Techniques 2 **	1	0	2	0	3
	Internet-Intranet **	2	0	2	0	4
	Electrotechnics 1	4	1	1	0	5
	History of Culture and Civilization **	0.5	0.5	0	0	2
	Foreign Languages * **	0	2	0	0	2
	Sport 2 **	0	2	0	0	1
	Practical Training 45 hours					2

* A foreign language is chosen from: English, French or German.
** Coll.

Second Year of Study for Electronics (First - cycle)

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	Special Mathematics 2	2	2	0	0	4
	Electrotechnics 2 **	2	1	1	0	4
	Materials and Electronic Components	3	0	1	0	4
	Electronic Devices and Circuits 1	3	1	2	0	7
	Electric and Electronic Measurements 1	3	1	1	0	6
	Foreign Language* **	0	2	0	0	2
	Sport 3 **	0	1	0	0	1
	Practical Training 45 hours					2
II	Computer assisted design **	2	0	1	0	3
	Electronic Devices and Circuits 2	3	1	1	1	6
	Optical Electronics	2	0	2	0	4
	Signals, Circuits and Systems 1	3	0	3	0	6
	Digital Integrated Circuits 1	3	1	1	0	5
	Economy 1 **	2	1	0	0	3
	Sport 4 **	0	1	0	0	1
	Practical Training 45 hours					2

* A foreign language is chosen: English, French or German.
** Coll

Third Year of Study for Applied Electronics (Second - cycle)

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	Signals, Circuits and Systems 2	3	0	2	0	5
	Electronic Measuring Instruments	2	0	2	0	5
	Digital Integrated Circuits 2	2	0	1	1	5
	Analog Integrated Circuits 1	3	0	2	0	5
	Microprocessor Systems Architecture ***	2	0	2	1	6
	Opt 1** Economy 2 *** Financial Analysis for Companies	1	1	0	0	2
	Practical Training 45 hours					2
II	Theory of Information Transmission	2	0	2	0	5
	Data Acquisition Systems	2	0	2	0	4
	Electronic Systems for Automatic Control	2	0	1	0	3
	Electrical Machines and Drives ***	2	0	1	0	3
	Microwaves	2	0	2	0	4
	Robotics Basics 1 ***	2	0	1	0	3
	Opt. 2* Programmed Logic Structures *** Programmable Measuring Systems Analogic Integrated Circuits 2	2	0	2	0	4
	Opt. 3** Management *** Marketing ***	1	1	0	0	2
	Practical Training 45 hours					2

* It will be chosen a course from the recommended list or a course ("Obl."or "Opt.") from the same study year from another direction.

** It will be chosen a course from the recommended list.

*** Coll.

Third Year of Study for Communications (Second - cycle)

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	Signals, Circuits and Systems 2	3	0	2	0	6
	Theory of Information Transmission 1	3	0	2	0	6
	Digital Integrated Circuits 2	2	0	1	1	5
	Analog Integrated Circuits	3	0	2	0	5
	Microwaves	2	0	2	0	4
	Opt 1** Economy 2 *** Financial Analysis for Companies	1	1	0	0	2
	Practical Training 45 hours					2
II	Theory of Information Transmission 2	2	0	2	0	4
	Data Communications 1	2	0	2	0	4
	Telecommunications Circuits ***	2	0	2	0	4
	Electronic Measuring Instruments	2	0	2	0	4
	Microprocessor Systems Architecture	2	0	2	1	6
	Opt. 2* Microwave Circuits *** Electronic Supplies	2	0	2	0	4
	Opt. 3** Management *** Marketing	1	1	0	0	2
	Practical Training 45 hours					2

* It will be chosen a course from the recommended list or a course ("Obl", "Opt" or "Pack") from the same study year from another direction.
** It will be chosen a course from the recommended list.
*** Coll.

Fourth Year of Study for Applied Electronics (Second - cycle)

Sem.	Course Type	Course Title / Domain			Structure [hours/week]				Credit Points
		Power Electronics	Industrial Robots	Instruments For Measurement And Research	C	S	L	P	
I	Obl.	VLSI Circuits Design 1			3	0	2	0	5
	Obl.	Digital Structures For Processing 1			2	0	2	1	5
	Obl.	Industrial Electronics 1			3	0	2	0	5
	Obl.	Electromagnetic Compatibility			2	0	2	0	4
	Obl.	Audio-Radio-Video Systems ***			3	1	1	0	5
	Opt. 3*	Management; Marketing ***			1	1	0	0	4
	Obl.	Practical Training 45 Hours							2
II	Obl.	Industrial Electronics 2			2	0	2	1	6
	Obl.	Construction And Technology Of Electronic Equipment			3	0	1	1	6
	Pack. 1	Driving Electronic Equipment	Robots Driving	Precision Instrumentation	3	0	2	1	6
		DSP Applications In Power Electronics	Automatically Guided Vehicles	Graphical Programming	3	0	2	0	6
	Opt. 4*	Medical Electronics *** Neural Networks VLSI Circuits Design 2 Signal Processors Applications Fuzzy Systems			2	0	2	0	4
	Obl.	Practical Training 45 Hours							2

*** Coll.

Forth Year of Study for Communications (Second - cycle)

Sem.	Course Type	Course Title / Domain			Structure [hours/week]				Credit points
		Integrated Communications Systems	Communication Networks	Multimedia	C	S	L	P	
I	Obl.	Digital Processing Structures			2	0	2	1	6
	Obl.	Data Communications Networks			3	0	2	0	6
	Obl.	Thelephony Transmission 1			3	0	2	1	6
	Obl.	Radio-Communications 1			3	0	2	1	6
	Opt. 3*	Marketing *** Industrial Engineering			1	1	0	0	4
	Obl.	Practical Training							2
II	Obl.	Television			3	0	2	0	5
	Obl.	Digitally Switching Systems			3	0	2	0	5
	Obl.	Optical Communications 1			2	0	1	1	6
	Pack. 1	Integrated Digital Networks	Integrated Digital Networks	Multimedia Production	3	0	2	0	4
	Pack. 2	Radio-Communications 2	Communications Protocols	Graphics And Image Processing	3	0	2	0	4
	Opt. 4*	Power Electronics For Telecommunications *** Object Oriented Programming			2	0	2	0	4
	Obl.	Practical Training 45 Hours							2

* It will be choose a course from the recommended list or a course ("Obl", "Opt" or "Pack") from the same study year from another direction.
** It will be chosen a course from the recommended list.
*** Coll.

Fifth Year of Study for Applied Electronics (Second - cycle)

Sem.	Course Type	Course Title			Structure [hours/week]				Credit points
		Domain							
		Power Electronics	Industrial Robots	Instruments for Measurement and Research	C	S	L	P	
I	Pack. 3	Electronic Driving Equipment	Computer Controlled Electrical Driving	Metrology	3	0	2	1	7
	Pack. 4	Ultrasonic Electronic Systems	Electronic Equipment Testing	Microwaves and Optoelectronic Instrumentation	3	0	2	0	6
	Pack. 5	DSP Applications in Power Electronics	Artificial Vision And Pattern Recognition	Senzors and Transducers	3	0	2	1	7
	Pack. 6	CAD for Power Converters	Intelligent Sensors	Modelling and Simulation	3	0	2	1	6
	Opt. 5*	Environment Parameters Measurement *** Kinematics and Dynamics of Industrial Robots DSP in Process Control			2	0	2	0	4

* It will be chosen a course from the recommended list or a course ("Obl", "Opt" or "Pack") from the same study year from another direction.
** It will be chosen a course from the recommended list.
*** Coll.

Fifth Year of Study for Communications (Second - cycle)

Sem.	Course Type	Course Title			Structure [hours/week]				Credit points
		Domain							
		Telecommunications Integrated Systems	Communication Networks	Multimedia	C	S	L	P	
I	Pack. 3	Communications Software	Communications Software	Multimedia Databases	3	0	2	1	7
	Pack. 4	Communication Equipment Testing	Telecommunications Traffic	Audio-Video Compression	3	0	2	0	6
	Pack. 5	Mobile Communications	Networks Optimisation	Audio-Video Production	3	0	2	0	7
	Pack. 6	Digital Switching Systems 2	Adaptive Signal Processing	Recording Techniques	3	0	2	0	6
	Opt. 4*	Telecommunications Terminals Radiorelays And Satellite Communications Modern Telecommunications Techniques Internet Information Transmission Security			2	0	2	0	4

* It will be choosen a course from the recommended list or a course ("Obl", "Opt" or "Pack") from the same study year from another direction.

** It will be choosen a course from the recommended list.

Note: in the examination modes, (E) means examination and (C) means continuous assessment

As mentioned above, in 2005 a new curriculum has been introduced, for the License-Master-Doctorate system, according to the Bologna Declaration. The License level curriculum has been adopted and followed at this moment by students from the first year. This curriculum follows.

Field: Electronic Engineering and Telecommunications

No.	Teaching Line	C	S	L	P	Ex	Cr.
First Year First Semester							
1	Math Analysis	2	2			E	4
2	Algebra and Geometry	2	2			E	4
3	Mechanical Engineering Fundamentals	2		1		DE	3
4	Computer Practice	2		2		DE	4
5	Electrical Circuits	2	1	1		DE	5
6	Materials, Components and Electronic Technology	2	1	1		E	4
7	Foreign Languages*		2			DE	2
8	Sport		1			DE	1
9	Practical Training					C	2
	Total	12	9	5		26	29
First Year Second Semester							
1	Special Mathematics	2	2			E	4
2	Computer Assisted Mathematics	2	1	1		DE	4
3	Physics	2	1	1		E	4
4	Optoelectronic and Electronic Devices	3		2		E	6
5	Computer Programming	2		2		DE	4
6	Electric and Electronic Measurements	2	1	1		E	4
7	Foreign Languages*		2			DE	2
8	Sport		1			DE	1
9	Practical Training					C	2
	Total	13	8	7		28	31

***A foreign language is chosen from: English, French or German.**

Field: Electronic Engineering and Telecommunications

No.	Teaching Line	C	S	L	P	Tot	Cr.
Second Year Third Semester							
1	Digital Integrated Circuits	2		2			4
2	Computer Network Architecture	2		2			4
3	Fields and Electromagnetic Waves	2	1	1			4
4	Signals and Systems	2	1	1			4
5	Culture and Civilization	1	1				2
6	Fundamental Electronic Circuits	2		2			5
7	Computer Aided Design	2		2			4
8	Sport		1				1
9	Practical Training						2
	Total	13	4	10		27	30
Second Year Fourth Semester							
1	Microeconomics	2	1				4
2	Signal Processing	2		2			5
3	High Frequency Technique	2	1	1			4
4	Processor Based on Digital Processing Systems	2,5	0,5	2			5
5	Analogic Integrated Circuits	2		2			4
6	Object Oriented Programming	2		2			4
7	Electronic Circuits Project				2		2
8	Practical Training						2
	Total	13	2	9	2	26	30

Field: Electronic Engineering and Telecommunications - Specialization: Applied Electronics

No.	Teaching Line	C	S	L	P	T	Cr
Third Year Fith Semester							
1	Management and Marketing	2	2				4
2	Industrial Electronics	2	1	1			5
3	Data Acquisition Systems	2		2			5
4	Programmable Logic Structures	2		2			4
5	Radio-Audio-Video Communications	2		2			4
6	Electronic Measuring Instruments	2		2			4
7	Decide on a teaching line from another specialization	2		2			4
8	Practical Training						2
	Total	14	3	11	0	28	32
Third Year Sixth Semester							
1	Construction and Technology of Electronic Equipment	2		2			5
2	Switching Power Electronics	2		2			5
3	Electronic Equipment Testing	2		2			4
4	Robotics Basics	2		2			4
5	Electromagnetic Compatibility	2		2			4
6	Decide on a teaching line from another specialization	2		2			4
7	Practical Training						2
	Total	12	0	12	0	24	28

Field: Electronic Engineering and Telecommunications - Specialization: Applied Electronics

No.	Teaching Line			C	S	L	P	T	Cr
Fourth Year Seventh Semester									
1	Electronic Driving Systems	Electronic Driving Systems	Precision Instrumentation	3		2			6
2	Non-pollutant Converters	Mobile Robots	Medical Electronics	3		2			6
3	Algorithms and Methods for Numerical Control	Automatic Control Systems	Metrology and Quality	3		2			6
	External lectures			2		2			3
5	Decide on a teaching line from another option			3		2			5
6	Processors Project						2		4
	Total			14	0	10	2	26	30
Fourth Year Eigth Semester									
1	Interface Electronic Equipments	Sensors and Transducers	Sensors and Transducers	2		2			3
2	Energy Converters Modelling and Simulation	Artificial Vision	Microwaves and Optoelectronic Instrumentation	2		2			3
3	Ultrasonic Electronic Systems	Robots Driving	Virtual Instrumentation	2		2			3
4	Decide on a teaching line from another option			2		2			3
5	Software Project						2		3
6	DIPLOMA						8		15
	Total			8		8	2	26	30

Field: Electronic Engineering and Telecommunications - Specialization: Telecommunications

No.	Teaching Line	C	S	L	P	T	Cr
Third Year Fifth Semester							
1	Management and Marketing	2	2				4
2	Information Theory and Coding	2	1	1			5
3	Data Communications	2		2			5
4	Telecommunications Circuits	2		2			4
5	Power Electronics	2		2			4
6	Measurements in Telecommunications	2		2			4
7	Decide on a teaching line from another specialization	2		2			4
8	Practical Training						2
	Total	14	3	11	0	28	32
Third Year Sixth Semester							
1	Decision and Estimation in Information Theory	2		2			5
2	Radio-Communications Basics	2		2			5
3	Telephony Transmission	2		2			4
4	Digital Switching Systems	2		2			4
5	Television Systems	2		2			4
6	Decide on a teaching line from another specialization	2		2			4
7	Practical Training						2
	Total	12	0	12	0	24	28

Field: Electronic Engineering and Telecommunications - Specialization: Telecommunications

No.	Teaching Line		C	S	L	P	T	Cr
Fourth Year Seventh Semester								
1	Radio-Communications Systems	Communications Protocols	3		2			6
2	Telecommunication Equipment Testing	Telecommunications Traffic	3		2			6
3	Integrated Digital Networks	Integrated Digital Networks	3		2			6
	External lectures		2		2			3
5	Decide on a teaching line from another option		3		2			5
6	Processors Project					2		4
	Total		14	0	10	2	26	30
Fourth Year Eigth Semester								
1	Mobile Communications	Networks and Applications Security	2		2			3
2	Optical Communications	Networks Optimisation	2		2			3
3	Telecommunications Software	Telecommunications Software	2		2			3
4	Decide on a teaching line from another option		2		2			3
5	Software Project					2		3
6	DIPLOMA					8		15
	Total		8		8	2	26	30

Field: Electronic Engineering and Telecommunications - Specialization: Audio-Video and Multimedia Technologies

No.	Teaching Line	C	S	L	P	T	Cr
Third Year Fifth Semester							
1	Management and Marketing	2	2				4
2	Information and Coding Theory	2	1	1			5
3	Multimedia Technologies	2		2			5
4	Multimedia Basics	2		2			4
5	Radio-Audio-Video Communications	2		2			4
6	Measurements in Telecommunications	2		2			4
7	Teaching line from another specialization	2		2			4
8	Practical Training						2
	Total	14	3	11	0	28	32
Third Year Sixth Semester							
1	Computer Graphics	2		2			5
2	Audio-Digital Production	2		2			5
3	Multimedia Applications Development	2		2			4
4	Dabases Structures	2		2			4
5	Television Systems	2		2			4
6	Teaching line from another specialization	2		2			4
7	Practical Training						2
	Total	12	0	12	0	24	28
Fourth Year Seventh Semester							
1	Audio-Video Compression	3		2			6
2	Multimedia Databases	3		2			6
3	Digital Video Production	3		2			6
4	External lectures	2		2			3
5	Teaching line from another option	3		2			5
6	Multimedia Project				2		4
	Total	14	0	10	2	26	30
Fourth Year Eigth Semester							
1	Networks and Applications Security	2		2			3
2	Artificial Vision	2		2			3
3	E-content Applications	2		2			3
4	Teaching line from another option	2		2			3
5	Software Project				2		3
6	DIPLOMA				8		15
	Total	8		8	2	26	30

3.3. The "Master" level

This program is intended for the best graduates of the "Licensed engineer" level with the purpose of training young engineers for research activity. Only graduates of the "Diploma Engineer" level with a final grade of 8/10 can be admitted to this level.

Thus, the educational activity in this level is treated by the teaching staff with increased care. From the graduates of this level, young engineers are selected who will be the next generation of professors and researching staff of our faculty.

The goals of this program are:

- to familiarize the young engineers with the permanent intellectual activity;
- to stirr the scientific curiosity of the students, but also to get them used to the stresses and accuracy of scientific research;
- to give students the opportunity to work individually, as well as in a team;
- to get students accustomed to research activity.
- The structure of this program is similar to that of the "Licensed engineer" program. The main features are:
- profound individual study;
- 1 year period of study;
- the students (young engineers) graduate this level with a dissertation.

Each of the three faculty departments offers at least one "Master" program:

- **Applied Electronics:** ***"Electronics of Intelligent Industrial Systems",***
- **Communications:**
  - ***"Adaptive Digital Signal Processing of Telecommunication Signals"***
  - ***"Traitement du Signal"*** (Signal processing), in French
- **Measurement and Optical Electronics:** ***"Electronic Instrumentation"***

Number of students 2004/2005

	Total number	Graduated	Drop out
EIIS	22	7	15
ADPTS	13	3	10
EI	17	11	6
TS	11	7	4

Curriculum for the Academic Year 2004-2005

Electronics of Inteligent Industrial Systems

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	Fuzzy Systems. Applications in Automatic Control	2	0	1	1	7
	High Frequency Power Processors. Analysis and Modelling	2	0	2	1	7
	Computer Aided Design of Applications Oriented Integrated Circuits	1	0	2	1	6
II	Processing Techniques with Neural Networks in Robotics	2	0	2	1	7
	Statistical Signal Processing Algorithms / Flexible Manufacturing Systems	3	0	2	1	7
	Functional Parameters Optimization of Energy Conversion Electronic Systems	2	0	1	1	6
	Disertation Exam					20

Adaptive Digital Processing for Telecommunications Signals

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	Modern Communication Networks 1	2	0	2	0	7
	Engineering and Security of Radio Digital Communications	2	0	2	0	7
	Adaptive Signal Processing	2	0	2	0	6
II	Modern Communication Networks 2	2	0	2	0	7
	Digital Signals Detection and Estimation	2	0	2	0	7
	Multimedia Architectures and Processing	2	0	2	0	6
	Disertation Exam					20

Electronic Instrumentation

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	General Theory of Measurement	2	0	2	0	7
	Signal Processors in Measurement Instrumentation	2	0	2	0	7
	Measuring Systems in Electromagnetic Compatibility	2	0	2	0	6
II	Methods and Algorithms for Spectral Estimation	2	0	2	0	7
	High Frequency Instrumentation	2	0	2	0	7
	Fuzzy Logic and Neural Networks	2	0	2	0	6
	Disertation Exam					20

Signal Processing (***Traitement du Signal - in French***)

Sem.	Course Title	Structure [hours/week]				Credit points
		C	S	L	P	
I	Wavelet Functions Theory	2	0	2	0	7
	Adaptive Signal Processing	2	0	2	0	7
	Image Processing	2	0	2	0	6
II	Modern Telecommunications Techniques	2	0	2	0	7
	Mathematical Morphology	2	0	2	0	7
	Statistical Signal Processing	2	0	2	0	6
	Disertation Exam					20

Starting with the academic year 2005-2006, a new Master program has been introduced, following requests from our economic partners: Advanced Design and Testing Techniques in Electronics. The curriculum is oriented to PCBA design and production, process test and control applications development, and test and measuring systems up to radiofrequencies

3.4. The "Ph.D Engineer" level

The Ph.D. degree, in the field of Electronics and Telecommunications, is the highest that can be attained in a course of study at our faculty. The purpose is to certify the qualities as a "Scientific Researcher" of the participants in this program.

The first step of this training program is the admission examination. After passing this examination, there are further three or four examinations in specific subjects to be taken. Having successfully passed these examinations the doctoral candidates must present two or three essays about their research activity in faculty meetings, thus giving others the opportunity to familiarize with their research activity and to debate upon their scientific preoccupations. Candidates can complete the Ph.D. degree in three to six years. The last step of this program is the elaboration and oral defense of the Ph. D. thesis.

The goals of this educational program are:

- to familiarize the candidates with the latest results in their field of study. The thesis must provide original contributions in the research field;
- to develop the theoretical background and practical skills of the candidates with respect to the research field and their original thinking manner;
- to make known the preoccupations of our research staff on national and international scale.

Starting with 1998, some of our Ph.D. students are preparing their Ph.D. thesis in a co-tutelary system, having two Ph.D. advisor professors, one from our faculty and one from abroad (usually from a West European University).

PHD ADVISORS

1. Scientific supervisor: Prof.dr.eng. Virgil TIPONUȚ
PhD students:

- Sorin POPESCU: *Contributions to the Optimisation of Welding Robots with Sensors for Seam Tracking*
- Sorin IARCA: *Research Regarding the Developing of a Neural Network Designed for Voice Recognition*
- Marius BUGLEA: *Smart Transducers Array*
- Ioan GAVRILUȚ: *Contributions to the Autonomous Mobile Robot Navigation Using CNN*
- Alexandru DARIE: *Optimizing the Performance of a Mobile Robot Society*
- Ciprian GAVRINCEA: *Researches on a Neural Network Implementation for Processing the Signals Generated by Muscle System*
- Liviu LUCACIU: *Contributions to the Biometric Systems Development and Implementation*

• Marian BURSAŞIU: *Contributions to the Optimization of Neural Network Applications Development*
• Alin BRÎNDUŞESCU: O*ptimization of EKG Signals Processing*
• Ionut MIREL: *Methods for Digital Video Images Processing*
• Călin LAR: *Contributions to the Sensorial Data Fusion*
• Laviniu ŢEPELEA: *Human-Machine Interface*
• Philipp ROEBROCK: *Multi Sensor Controlled Assembly and Application with Manipulators*

2. Scientific supervisor: Prof.dr.eng. Tiberiu MUREŞAN
• *PhD students:*
• Ioan LIE: *Contributions to the Optimization of the Methods and Electronic Equipments for Ultrasonic Investigation*
• Solomon MIMIS: *Integrated Circuits for Transmission Bit Error Rate Measurement*
• Petru PAPAZIAN: *Intelligent Subsystems for Optimal Control of Technological Processes*
• Dan Mircea ANDREICIUC: *Analysis and Correction Methods for Positioning and Orientation of Mobile Industrial Robots*
• Sebastian TIPONUŢ: *Researches regarding the implementation of embedded systems using predefined templates*

3. Scientific supervisor: Prof.dr.eng. Mircea CIUGUDEAN
• *PhD students:*
• Aurel FILIP: *Researches on CMOS Frequency References*
• Marllene DANEŢI: *Propagation time estimation algorithms for noise sources location*
• Beniamin DRAGOI: *Researches on CMOS Integrated Digital Correlator Conception and Design*
• Marin DRAGNEA: *High Stability Sine Oscillators*
• Radu MIHAESCU, *Integrated Optimal Structures for Telecommunication Systems*
• Iosif MUDRA: *Researches on CMOS Integrated Fast Synchronous Comparators*
• Bogdan MARINCA: *Ultrasonic Investigation Optimization by Algorithms Implemented in Dedicated Integrated Circuits.*

4. Scientific supervisor: Prof.dr.eng. Viorel POPESCU
• *PhD students:*
• Mircea BĂBĂIŢĂ: *Reaserches on a.c.–d.c. converters*
• Cornel GLISICI: *Contributions regarding improved capabilities of uninterruptible power supplies*
• Corina IVAN: *Energy parameters optimization in dc-dc converters*

- Marin TOMŞE: *Contributions to theoretical and experimental study of inductive heating power supplies*
- Daniel ALBU: *Contributions regarding improved capabilities of switched mode converters with PFC applications*
- Dorin CIZMAŞIU: *Power factor control in ac-dc conversion systems*
- Dan SIMU: *Adaptive systems for unconventional technologies*
- Lucian PĂUN: *DC/DC converters with optimized energy parameters*
- Adrian ŞCHIOP: *Contributions to theoretical and experimental study of power converters with ac motor drive applications*
- Cristian VRÂNCILĂ: *Theoretical and experimental contributions regarding active power filters*

5. Scientific supervisor: Prof.dr.eng. Horia CÂRSTEA
- *PhD students:*
- Dumitru MĂRGELOIU: *Contributions to the improvement of electronic equipment for monittoring and controlling of low and medium voltage electrical network parameters*
- Ovidiu MIŢARIU: *Contributions to the improvement of autotesting equipment in digital data conditioning and transmission*
- Mirel BURLACU: *Research regarding CMOS analog integrated circuits based on unconventional principles*
- Corneliu TRIPA: *Contributions to the development of fault diagnose and identification tests in applied electronics equipment*
- Mircea RIF: *Automated system for data acquisition, processing and management in industry*
- Mircea MIHĂESCU: *Contributions to the development of dynamical diagnose and reconfiguration tests in digital fault redundant systems*
- Liviu ION: *Contributions to the development of digital regulation in electrical driven industrial processes*
- Narcis NAGY: *Contributions to the study of meteorological phenomena effects on electronic communication systems*
- Răzvan GUMA: *Contributions to the development of strategies for identification and detection of defections in autotesting electronic equipment*
- Andy BERCOVICI: *Contributions to the increase of fiability in digital electronics equipment*

6. Scientific Supervisor: Prof. dr. eng. Ioan NAFORNIŢĂ
PhD students
- Mirela BIANU, *Contributions on adaptive signal processing in telecommunications*
- Cristian IGNEA, *Contributions on finding and measurement antenna parameters*
- Adrian FILIPESCU, *Contributions on Digital Filters Optimal Design*

- Ciprian DAVID, *Contributions on faults detection using image processing techniques*
- Romulus REIS, *Non-Stationary Signal Description by Non-Parametrical Method*
- Janos GAL, *Contributions to Kalman Filters Use in Telecommunications*
- Marius SALAGEAN, *Non-Stationary Signal Description by Non-Parametrical Methods*
- Florin VANCEA, *Data Protection in Communication Networks*
- Andy VESA, *Improvement of Digital Radio Systems Detection*
- Mircea COSER, *Systems Optimization using TRIZ Technique*
- Teodora PELA, *Traffic Optimization on Metropolitan Area Networks*
- Adina DABA, *Non-Stationary Signal Description by Non-Parametrical Method*
- Tiberiu MUNTEAN, *Audio Watermarking*
- Florin Dumitru CHIS, first year student

7. Scientific Supervisor: Prof. dr. eng. Miranda NAFORNIȚĂ
PhD students:

- Horia BALTA, *Hierarchical coding for spread spectrum transmission systems*
- Radu LUCACIU*, Optical communication systems with OCDMA*
- Maria KOVACI, *N-PSK multiresolution modulations in the COFDM hierarchical systems*
- Caius ULITA, *Equalizers for radio channel modems*
- Mirela VIOR, *Quality transmission improvement using turbo codes*
- Sorin POPA, *Synchronization techniques improvement for radio channel transmission systems*
- Marius OLTEAN, *Radio channel equalization using cyclic prefix*
- Florin Lucian MORGOS, *Radio channels equalization techniques improvement*

8. Scientific Supervisor: Prof. dr. eng. Alexandru ISAR
PhD students:

- Ioana ADAM, first year student
- Mircea BORA, first year student

Scientific Supervisor: Prof. dr. eng. Corneliu I. TOMA

- *PhD students:*
- Valentin I. MARANESCU, *Contributions at the performance improvement of voltage regulator*
- Andreea GĂLEANU, *Contributions at the performance improvement of the GSM system*
- Mirela L. IOANEȘIU, *Contributions at the network security by the using of the virtual private networks (VPN)*

- Artur MULLER, *Contributions in implementing of the multimedia databases, with local and remote access*
- Codruț N. IANĂȘI, *Contributions at the video surveillance systems development*
- Daniel C. HAIDUC, *Contributions in the color digital reproduction field*
- Radu TĂNASE, *Ultrasound electronic systems for the movement evaluation in the fluid environment*
- Mihai I. ONIȚĂ, *Video communications in multimedia applications*
- Constantin M. BUCOS, *odeling and analysis of mobile virtual organizations*
- Mircea TOMOROGA, *Contributions at the conception and design of the analog integrated circuits in CMOS technology*
- Florin-Josef LĂTĂREȚU (from Germany), *Contributions to the intelligent telecommunication network achievement*

9. Scientific Supervisor: Prof. dr. eng. Marius OTEŞTEANU
PhD students:
- Georgiana SÂRBU DOAGĂ, first year student
- Sandra RUGINĂ, first year student
- Kay Erik BOHNKE (from Germany), first year student

10. Scientific Supervisor: Prof.dr.eng. Radu VASIU
PhD students:
- Iasmina ERMALAI, first year student
- Artur SRAUM, first year student
- Cristian TECU, first year student

11. Scientific Supervisor: Prof.dr.eng. Eugen POP
PhD students:
- Liliana STOICA: *Contributions to Digital Signal Processing*

12. Scientific Supervisor: Prof. dr. eng. Sever CRIŞAN
PhD students:
- Octavian LUCA: *Spectral analysis of bioelectrical signals*
- Ovidiu VETREŞ: *Perturbations study of low frequency electromagnetic fields*

13. Scientific Supervisor: Prof.dr.eng. Alimpie IGNEA
PhD students:
- Ciprian DUGHIR: *Contributions to anntenas calibration*
- Cristina VĂLIU: *Contributions to the nonlinearities study of high-frequency circuits*
- Cora IFTODE: *Electromagnetic field effects on living organism*

- Gabriel GĂŞPĂRESC: *Perturbation monitoring in electrical networks*
- Adrian MIHĂIUŢ: *Contributions in anntenas calibration*
- Doru Lucian COCOŞ, *Neural Networks and Fuzzy Logic applications to electronic meter calibration*
- Andrei Atila KUBIK, *Automatic testing for dedicated electronic systems*
- Mihai TELESCU, *Contributions to wave propagation modelling*
- Teodor PETRIŢA, *Contributions to radiofrequency disturbances monitoring.*

PHD THESIS DEFENDED

- Stefan ONIGA, *Sensorial System for Human Gesture Recognition Using ANN Implemented in a FPGA*, Scientific supervisor: Prof.dr.eng. Virgil TIPONUŢ

- Dan NEGOITESCU, C*ontributions Regarding Performant Power Factor Correction Techniques in Supply Systems,* Scientific supervisor: Prof.dr.eng. Viorel POPESCU

- Cornel BALINT, *Speech compression for telecommunication applications*, PhD Supervisor: Prof.dr.eng. Miranda NAFORNITA

- Abdul Rahman ABUCHAKER, *Contributions to acquisition, processing and interpretation of biomedical signals by electronic means*, PhD Supervisor: Prof.dr.eng. Anton POLICEC

- Liviu TOMA: *Optoelectronic methods for distance measurements,* Scientific supervisor: Prof.dr.eng. Alimpie IGNEA

- Petru Lucian SERAFIN, *Contributions to telecommunication lines and terminals testing*, Scientific supervisor: Prof.dr.eng. Alimpie IGNEA

DOCTORAL PREPARATION ESSAYS

1. Marllene DĂNEŢI*, Spectral estimation algorithms*
2. Marllene DĂNEŢI*, Locating of noise sources by signal pocessors*
3. Marllene DĂNEŢI*, Algorithms for time delay estimation*
4. Beniamin DRAGOI, *Digital Correlator Chip Conception and Design*
5. Ioan LIE, *Actual Conceptions Regarding Hardware Structure of Digital Beamformers*

6. Ioan LIE, *Possibilities to Optimize Hardware and Software Structures of the Electronic Equipment for Ultrasonic Investigation*
7. Bogdan MARINCA, *Actual stadium in the Ultrasonic Investigation Proceeding Domain*
8. Iosif MUDRA, *Simulation and design of CMOS Synchronous Comparators*
9. Petru PAPAZIAN, *Actual Design Stage of Intelligent Sensors and Actuators*
10. Maria KOVACI, *The simulation of the data transmission system and the performance analyze*
11. Maria KOVACI, *Communication channels: Gauss, Rice and Rayleigh*
12. Horia BALTA, *The performance analyze of the codes used in the spread spectrum transmission systems*
13. Horia BALTA, *Turbo codes*
14. Codruț Ninu IANĂȘI, *The present and outlook stage in detecting and tracking of the background in video surveillance*
15. Radu TĂNASE, *The present and outlook stage in the electronic systems for the movement evaluation*
16. Mircea TOMOROGA, *The present and outlook stage in the implementation of the D/A converters in CMOS technology*
17. Cora IFTODE, *Techniques used in measuring the influence of electromagnetic fields on living bodies*, November 2005
18. Liliana STOICA, *Actual limits for signal microprocessors*
19. Gabriel GASPARESC, *Data Acquisition System for Disturbances Monitoring from Electric Power Supply Network*
20. Gabriel VASIU, *Parametrical Methods for Line Spectrum Estimation*

4. Research

The research activity is performed within two Research Centers and various research teams, as follows.

4.1 Intelligent Industrial Electronic Systems - IIES Research Center

The center IIES director is:
Prof.PhD.Eng. Mircea CIUGUDEAN, Ph.D. advisor.
Web page: http://www.etc.utt.ro/ea
E-mail: mircea.ciugudean@ etc.utt.ro.
The center functions in accordance with certificate CNCSIS, nr. 106/CC-C/11.05.2001..

RESEARCH PROJECTS, CONTRACTS AND GRANTS

SIARAS, Skill-based Inspection and Assembly for Reconfigurable Automation Systems
Participant as: Team member
Program: EU Sixth Framework Programe
FP6- 017146, 2005
Members:
1. Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V., D
2. Asentics GmbH & Co.KG, D
3. ABB Automation Technologies AB, D
4. Sick AG, D
5. Inos Hellas SA, GR
6. Lunds Universitet, SW
7. "Politehnica" University of Timisoara, RO
8. S.C. Robcon SRL, RO

Local members: Prof. dr. eng.Ivan BOGDANOV and prof. dr. eng. Vasile GUI.

FIELD AND GRANT DESCRIPTION
The project concerns about the novel concept "skill-based manufacturing", i.e. production units with embedded knowledge about their skills being able to interact to solve a given manufacturing task. Given the situation of the existing highly automated manufacturing systems, the automate design and/or reconfiguration of the known manufacturing systems has to be achieved.

ACTIVITIES AND RESULTS

- Modelling the skills of the systems components (actuators, sensors, robots, machines, machine components);
- Matching and modelling of production tasks;
- Creating of two main servers: the Skill Server and the Task Server for the main data bases;
- Skill-Mining;
- Automate design of systems configuration.

CNCSIS grant No. 639, type A, ***Integrated Environment for Assisted Movement of Visually Impaired***
Director: Prof.dr.eng. Virgil TIPONUT
Value: 30,000 RON
Members: Prof.dr.eng. Alexandru GACSADY, Lect.eng. Calin LAR, Lect.dr.eng. Stefan ONIGA, Lect.eng. Ioan GAVRILUT, Lect.eng. Ciprian GAVRINCEA, Assist.eng. Laviniu TEPELEA

FIELD AND GRANT DESCRIPTION

The project aims to an integrated environment that improves the mobility of visually impaired into a limited area. The proposed solution includes a wearable equipment, placed on to the subject, that guides the blind user to navigate autonomous with obstacles avoidance and a stationary equipment, which supervises the motion, in order to avoid some unexpected events.

ACTIVITIES AND RESULTS
- Design of the architecture of an integrated environment for assisted movement of visually impaired,
- Ultrasonic/visual sensor module development,
- GPS/GSM unit development.

CNCSIS grant AT 69, nr. 27688 / 14.03.2005 ***Artificial Intelligence in building a face detection and recognition system***

Value: 10,000 RON
Director: Lect.dr.eng. Cătălin-Daniel CĂLEANU
Members: Lect.dr.eng. Muguraş Mocofan, Assist.eng. Valentin Maranescu, Caciora Radu, student, Adrian Harea, student

FIELD DESCRIPTION

As a consequence of the international status-quo, an increasing interest has been found for security and surveillance applications. Among them, facial detection and recognition represent a key paradigm, having the advantage of being a passive and nonintruzive

technique. Main purposes of the present project are: search for an appropriate AI based architecture for the problem of facial detection and recognition and the design and implementation of such system (PC + video camera or dedicated hardware) having real time capabilities. The research work is focused on investigation of features extracting techniques (e.g. interest operator, Gabor filtering, self-organizing neural networks) and on finding a face recognition suitable neural classifier architecture.

ACTIVITIES AND RESULTS:

- A study of the most appropriate features extracting techniques for the facial recognition problem
- A study of the most appropriate classification schemes for the facial recognition problem
- Software implementation of a facial detection and recognition system
- As grant results, two proposed articles in international periodicals were made.

CNCSIS Grant No 32940, theme 16, code 175, A type: *Polution Free Electrical Energy Converters Using Soft-Switching Techniques*

Value: 10,000 RON

Director: Assoc.prof.dr.eng. Dan LASCU

Members: Prof.dr.eng. Viorel POPESCU, Lect.eng. Adrian POPOVICI, Lect.eng. Dan NEGOIȚESCU, Assist.eng. Mircea BĂBĂIȚĂ, Eng. Alin PARASCHIV, Eng. Ovidiu VĂTAFU

FIELD DESCRIPTION

The purpose of the project is the study, design and experimental results of soft-switching pollution free energy converters, in order to improve energy consumption for industrial and home appliances. All these converters have to comply with international standards of electromagnetic compatibility (e.g. CENELEC, IEC, VDE and IEEE 519 norm) together with high efficiencies and low size and weight.

Extending the soft-switching techniques from dc/dc converters to traditional active power factor correction circuiuts and to new structures, suitable for a certain technique is the strategy adopted in the project, as a solution for high packing degree. Design algorithms and equations, with models for the proposed architectures, together with computer aided design programs have been and will be developed. A comparative performance study regarding the power quality parameters, simplicity, efficiency and cost has been and will continue to be performed between the elaborated solutions.
The main reason of this project proposal is that in the future energy quality and energy processing improvements will be an important demand for the integration of Romania in the European energy system.

ACTIVITIES AND RESULTS

- ZCS and ZVS BUCK and BOOST three phase family circuits, including one-cycle control are developed and investigated
- A soft-switching synchronous rectifier based PFC circuit was introduced
- A single-phase BOOST type PFC circuits obtained from a BUCK structure using the duality principle is proposed
- Large signal and small-signal models are developed and controller design using the K factor method was performed
- MATLAB design programs and CASPOC library blocks for simulation were also developed. A comparative analysis between different PFC families was performed regarding dynamical and steady-state behavior.

CNCSIS Grant No 32940, theme 24, code 187, A type: ***Modern methods for high efficiency electrical energy processing using matrix converters***

Value: 7,000 RON

Director: Prof.dr.eng. Viorel POPESCU

Members: Assoc.prof.dr.eng. Dan LASCU, Lect.eng. Adrian POPOVICI, Lect.eng. Dan NEGOIȚESCU, Assist.eng. Mircea BĂBĂIȚĂ, Eng. Csaba WEKERLE, Eng. Corneliu JURCA

FIELD DESCRIPTION

Industrial interest for matrix converters is growing because this type of frequency changers is single stage, they require minimal components, they exhibit high power density and they are very efficient. The matrix converters have received considerable attention with the progress of power devices. The objectives of the research are a theoretical analysis and design approach for matrix converters. Another objective is achievement of a software simulator for matrix converters with friendly graphical interface. In the final we intend to build an experimental model in order to verify the validity of developed theory, simulation models and accuracy of generated control signals.

ACTIVITIES AND RESULTS

- Comparative analysis of different simulation packages for matrix converters simulation.
- Development of an integrated software simulator.
- Experimental models.

CEEX-MATNANTECH, grant No. 337/2005: ***Advanced piezoelectric monocristals with alpha quarz structure in extreme hydrothermal conditions for electronics and communications***

Director: Prof.dr.eng. Horia CÂRSTEA

Contract No. 692/2005: ***Data Acquisition System for thermic profile control in reflow glue oven***
Director: Prof.dr.eng. Horia CÂRSTEA
Beneficiary: S.C. Telco EFTC
Value: 2,500 RON

4.2 Research Center On Instrumentation, Measurement And Electromagnetic Compatibility (IMCEM)

The research center IMEMC director is:
Prof. dr. eng. Alimpie IGNEA**,** Ph.D. advisor.
Web page: http://www.meo.etc.utt.ro/imcem/
E-mail: alimpie.ignea@ etc.utt.ro.
The Center functions in accordance with certificate CNCSIS, nr. 102/CC-C/11.05.2001.

RESEARCH PROJECTS, CONTRACTS AND GRANTS

CNCSIS grant No.32940/22.06.2004, Theme No. 14, Code 173, ***Electromagnetic monitoring in Spitalul Clinic Judetean No.1 Timisoara***
Director: Prof.dr.eng. Alimpie IGNEA
Value: 17,319 RON
Members: Prof.dr.eng. Traian JURCA, Prof.dr.eng. Aldo DE SABATA, Prof.dr.eng. Mircea CHIVU, Assoc.prof.dr.eng. Mihaela LASCU, Assoc.prof.dr.eng. Eugen MARZA, Assist.eng. Ciprian DUGHIR, Assist.eng. Adrian MIHAIUTI, Assist.eng. Cora IFTODE, Assist.eng. Liliana STOICA

FIELD AND GRANT DESCRIPTION
Considering the increase of electromagnetic pollution, electromagnetic monitoring becomes very important at locations with a specific destination, especially the ones that include life protection. Spitalul Clinic Judetean nr.1 of Timisoara (Department Hospital) is a high-class unit, with modern equipment, which performs a wide range of surgical interventions. From the point of view of electromagnetic compatibility, the hospital is a large electric power consumer, built in a place with high electromagnetic perturbations (radio and TV emitting antennas, tramway and trolleybus lines, big enterprises around, mobile communication networks, its own electric and electronic equipment, etc). The electromagnetic monitoring in the hospital is recomended because: it allows identification of the quiet zones, the ones with major risk level and the means to reduce that level, the placement of some equipments, etc. Monitoring assumes identification of

perturbation sources, followed by measurements of perturbations level. Measurements are done daily, weekly or for a long term, correlated with other events (tramways passing by, lightings, etc). The conducted perturbations will be supervised in the electrical supply network and other networks. The monitoring of radiated perturbations concerns RF emissions, and the hospital's perturbing sources (the existing ISM equipments). Determining the correlation between perturbations, their sources and the transmission means allow for the reduction of their level. The information we get during the monitoring process will be arranged into a map of perturbations distribution according to their characteristics: continuous or intermittent behaviour, level, frequency range, etc. During measurements we will use the telemetry on INTERNET.

ACTIVITIES AND RESULTS :

- Data recording and choice of monitoring methods
- Identification of sources for disturbances, monitoring points establishment and elaboration of monitoring methods concerning the disturbances types
- Perturbations level measurement
- Low frequency magnetic field induction measurement
- External sources radiated high frequency perturbations measurement.
- Continous magnetic field induction measurement
- Design and realization of data aquisition systems for monitoring the transmission of conducted perturbations

PNCDI-INFRAS Program nr. 247 / 2004 ***Interlaboratory tests for uncertainty measurements evaluation in electromagnetic compatibility***
Director: Prof.dr.eng. Alimpie IGNEA
Value: 23,500 RON
Members: Prof.dr.eng. Traian JURCA, Prof.dr.eng. Aldo DE SABATA, Assist.eng. Adrian MIHAIUTI, Assist.eng. Cora IFTODE

FIELD DESCRIPTION

- Study concerning the testing methodology on perturbations receivers used for measuring electromagnetic interferences in the electromagnetic compatibility settled domain;
- Elaborating the interlaboratory comparation size scheme in Round Robin system (circular test);
- Design and realization of verifying systems concerning the perturbations receivers and preparing the testing procedures;
- Design and realization of unit source for mobile perturbations;
- Interlaboratory attempts with perturbations receivers for each partner;
- Processing and evaluation of interlaboratory measurements results.

ACTIVITIES AND RESULTS:
The **first phase** was ended on 31 March 2005 financed with 3,500 RON through a study concerning the electromagnetic perturbations sources used in CEM which is part of the research report concerning all the participants to the INFRAS contract.
The **second phase** was financed with 20,000 RON. An experimental model for a *comb* generator was realized and presented at the Conference *Doctor ETC*; this paper will be also published in the Politehnica University scientifique bulletin.

Work-shop organisation

a) Harmonisation of the Romanian Regulations with European directives in the following domains: Low Voltage, Electromagnetic Compatibility, Radio and Telecommunications equipment, Auto equipment
Date and place: Petroşani, 2 June 2005
Piteşti, 12 October 2005
The following papers were presented:
- European Directive 89/336/EEC on Electromagnetic Compatibility (Eng. Lucian URSEA – General Politics Industrial Direction Counselor, Ministry of Education and Research)
- European Directive 99/5/EEC R & TTE (Eng. Radu ENESCU - IGC Bucureşti)
- European Directive 95/54/EEC – Automotive (Prof.dr.eng. Andrei MARINESCU; Scientific Vice Director - ICMET Craiova)
- Electromagnetic Compatibility – a Fashion or a Must? (Prof.dr.eng. Alimpie IGNEA - „Politehnica" University of Timişoara)

b) Electromagnetic compatibility aspects in medicine
Date: 9 November 2005
Place: "Politehnica" University of Timişoara
Organisers: - "Politehnica" University of Timişoara - Spitalul Clinic Județean (Department Hospital) no.1 of Timişoara
- General inspectorate for communications and information technology Timişoara
Workshop program:
1.*Fundamental notions in electromagnetic compatibility, Prof. dr. eng. Alimpie IGNEA.*
2.*Measurements methods for electromagnetic field influence upon living organisms, Assoc. prof. dr. eng. Mihaela LASCU, Assist. eng. Cora IFTODE.*
3. *Perturbations monitoring of electrical energy power supply, Assist. eng. Ciprian DUGHIR.*

COST 289 Spectrum and Power Eficient Broadband Communications
Prof. Aldo DE SABATA is delegate 2 for Romania, representative of the "Politehnica" University of Timişoara.

4.3 Communications Department Research Activity

RESEARCH AND DUCATIONAL PROJECTS, CONTRACTS AND GRANTS

CNCSIS grant no 27688/14.03.2005, Code 29, type A, ***Digital receiver performance enhancement using the wavelet theory***
Director: Prof.dr.eng. Alexandru ISAR**,**
Value: 16,000 RON
Members: Prof.dr.eng. Miranda NAFORNIȚĂ, Prof.dr.eng. Andrei CÂMPEANU, Assoc.prof.dr.eng. Dorina ISAR, Lect.dr.eng. Cornel BALINT, Assist.eng. Horia BALTA, Assist.eng. Radu LUCACIU, Assist.eng. Andy VESA, Assist.eng Mirela VIOR, Assist.eng. Corina NAFORNITA, Student Virgil POPOVICI, Student Cristian DELFI, Student Calin PUSCAS, Student Cristina TOROK

FIELD DESCRIPTION
The study and implementation of some denoising techniques based on wavele theory.
The simulation of some Maximum A Posteriori filters for the treatment in the wavelet transform domain with parameters adapted to different classes of communication signals perturbed by different kinds of noise.

ACTIVITIES AND RESULTS
A number of 8 dissertations were sustained and a number of 10 papers were published in journals and proceedings this year.

CNCSIS grant no.32940/2004, theme 6, code 517, type A, ***Nonlinear methods and techniques in telecommunications***
Director: Lect.dr.eng. Georgeta BUDURA**,**
Value: 20,000 RON
Members: Prof.dr.eng. Miranda NAFORNITA, Prof.dr.eng. Ioan NAFORNITA, Lect.dr.eng. Corina BOTOCA, Assist.eng. Maria KOVACI, Assist.eng. Mirela BIANU, Assist.eng. Janos GAL, Dr. Ileana POPESCU, Eng. Marius OLTEANU, Eng. Marius SALAGEAN

FIELD DESCRIPTION
The research activities were oriented on practical solutions offered by the nonlinear models in the field of telecommunications. Two directions were considered: the methods of identifying and compensating unwanted nonlinearities based on the use of approximate nonlinear inverses to apply post-distortion and the nonlinear equalizers based on neural networks. In the first case the techniques that are considered can be subdivided into two main groups: time-invariant nonlinear models without memory (the power series and the

orthogonal polynomial representations), and time-invariant nonlinear models with memory (the Volterra and the Wiener models). In the second one the research activities were oriented on the implementation of neural equalizers based on radial basis functions.

ACTIVITIES AND RESULTS

A number of 9 papers were published in journals and proceedings this year and 5 diploma thesis were sustained.

CNCSIS grant No. 34702/24.06.2005, Code 47, type TD, *Digital watermarking of images in the transform domain*

Director: Assist.eng. Corina NAFORNITA

Value: 4,000 RON

FIELD DESCRIPTION

In the Internet communication era, the piracy of the multimedia products can be fought through watermarking. The marks can be either visible or invisible (safer because they aren't distinguishable). The image watermarking for authentication of intellectual property should allow: marking the original image; extraction of the mark from the received image; comparison between the two marks. Current techniques for image watermarking are spatial domain methods or frequency domain methods. The second one is used frequently and is more versatile. A topic research subject in this matter is finding the best transform, invariant to usual operations (translation, rotation, scaling etc). The mark must have useful information about the owner and the original image. A coding technique generates the mark. The transmission (mostly because of the compression) affects the image (hence the mark). Therefore the original and extracted marks are not identical. Turbo-codes have a high-correcting capacity; therefore they can be used when generating the mark. To compare the two marks, we compute the cross-correlation between them. The goal of this project is to propose robust watermarking methods using turbo-codes and other coding techniques and to investigate the applicability of watermarking for content authentication from multiple points of view (information transmission theory, signal processing, and telecommunications). We look for the best ways to embed, extract and compare the marks. We shall implement the software algorithms for the given methods.

ACTIVITIES AND RESULTS

Research has been done to understand the present watermarking techniques and their applications. We have published on the webpage of the Communications Dept, Electronics and Telecommunications Faculty, Polytehnica University of Timişoara, http://hermes.etc.utt.ro a research report entitled "State-of-the art in watermarking in the transform domain" that investigates the image watermarking techniques in the transform domain. Its content deals with the very actual problem of electronic commerce, and copyright protection of multimedia data (video, audio, images etc). The second report written in English entitled *Watermarking in the wavelet domain* has been

published at Politehnica Pub. We show basic concepts, classification of different watermarking techniques; the duality problem between watermarking and steganography towards compression is presented. We describe basic models used in watermarking, knowing the fact that this area lies between several research areas (steganography, spread spectrum communications, authentication, encryption, data fusion, human perception, fading etc). We give evalution criteria for watermarking (imperceptibility, peak signal-to-noise ratio, correlation between original and extracted watermark, fals positive/negative). We show advantages of watermarking in the transform domain for copyright protection, that proves to have higher performance against lossy compression, and other types of unintentional attacks. We propose our own method of watermarking that works in the wavelet domain, and uses the human visual perception and statistical characteriscts of the DWT. We compare the results with another well-known method that uses spread-spectrum techniques. Our method shows a higher performance. The results have been published in papers and a book.

CNCSIS grant No. 27688/14.03.05, CODE 600, type A, *Object tracking estimation in video sequences*
Director: Assoc.prof.dr.eng. Florin ALEXA
Value: 11,000 RON
Members: Prof.dr.eng. Corneliu I. TOMA, Prof.dr.eng. Vasile GUI, Lect.dr.eng. Muguras MOCOFAN, Lect.eng. Catalin CALEANU, Assist.eng. Andy VESA, Assist.eng. Ciprian DAVID, Assist.eng. Artur MULLER, Eng. Codrut IANASI, Eng. Andreea GALEANU, Stud. Daniela CLIM

FIELD AND GRANT DESCRIPTION: In the context of rapid developement of multimedia technologies, visual surveillance with traffic estimation and facial recognition represent an important goal for many applications. The objective is to develop a tool for people counting intended to offer statistical knowledge useful in the objective evaluation of the efficiency of the services delivered to clients in fast foods. The system will be able to accurately estimate the number of people passing through different areas and to derive mean, minimum and maximum amount of time for servicing clients at different moments of the day or to average such information on different time intervals. Always, it will be possible to used in automat traking of mobile robots. The system will operate based on a PC environment in connection with a variable number of webcams in an Ethernet network.
The goal of the work is to developp a system with robust and real-time operation. The system has to cope well with crowded environments. This will be achieved through the following contributions:

- a fast background detection using nonparametric kernel density estimation
- a robust and accurate tracking method for people tracking in crowded environmernts
- use of a multimodal strategy to improve segmentation and tracking results
- find robust solutions for using deformable models in people counting

• Accomplishing the proposed goals enables extention of the application range to several related fields, such as multimedia image sequence compression, video indexing for browsing, road traffic analysis etc.

CNCSIS grant No. 32940/2004, CODE 26, type AT, ***The Traditions and Culture in the Multiethnic Region of Banat – interactive presentation on CD-ROM and Internet***
Director: Lect. dr. eng. Muguras MOCOFAN
Value: 12,000 RON
Members: Assoc.lect.eng. Diana ANDONE, Assist.eng. Marian BUCOS, Assist.eng. Gabriela GLAVAN, Assist.eng. Arthur MULLER

FIELD AND GRANT DESCRIPTION: The main goal was to present and to record in digital format the main popular traditions during the year, the image of the multiethnic Banat village, the cultural pieces produced by some ethnic communities in Banat: Romanians, Hungarians, Germans, Serbs, Croats, Czechs, Jewish, Gypsies.
The CD_ROM application and the web site encourage multidisciplinary co-operation between the projects realizes (culture people, ethnologists, anthropologies, multimedia developers, graphicians, specialists in communication and audio-video) as well as between the actors of the project: Banat village inhabitants.
Our multimedia products can be use as support for understanding tolerance and inter-ethnic co-operation for young's (pupils, students), and the broader community through Internet.

During the period 2004-2005, the main traditions of the Banat ethnic groups it was observed and recorded as audio and video. The team of specialists interview people from all these groups in order to understand the significance of these ceremonies for their life. Elements of the multiethnic Banat village are recorded (architecture, costumes, tools). The materials are processed from an anthropologic point of view, by identifying and interpreting the particularities and the interferences between traditions to the different ethnics in Banat. A comparison is made between the obtained results and some old evidences kept by the Archive of the University of West from Timisoara, in order to obtain a historical perspective of the traditions and inter-ethnic relations. We have now a collection with pieces of music, dance, literature, painting realized by Banat's inhabitants.

Target group and beneficiaries:
- Members of the Banat's ethnic communities (in the country and abroad) interested in their own traditions and the influence of other ethnics in their traditions
- Tourists and visitors of Romania
- Students in ethnology, anthropology and journalism
- Ethnologies and anthropologies scientific communities.

CEEX Project, Contract Nr. CEX 05-D8-77 / 19.10.2005, *Foresight Scenarios for the Romanian Economical Sectors with Inovation Potential in the View of the Year 2020 „INOVFOR”*, period 2005-2008, UPT coordinator

Director: Assoc.prof.dr.eng. Marian MOCAN
Value 2005: 50,000 RON
Members: Prof.dr.eng. Radu VASIU, Prof.dr.eng. Nicolae ROBU, Prof.dr.eng. Marius OTESTEANU, Prof.dr.eng. Ivan BOGDANOV, Prof.dr.eng. Aldo DE SABATA, Assoc.lect.eng. Diana ANDONE, Lect.dr.eng. Mugur MOCOFAN, Assist.eng. Marian BUCOS, Assist.eng. Mihai ONITA, Eng. Marius CONDREA, Eng. Iasmina ERMALAI
Partners: I.N.C.S.M.P.S. Bucharest
I.P.A. SA Bucharest
CURS SA Bucharest
INOE Bucharest

FIELD AND GRANT DESCRIPTION: The main goal of the project is to elaborate a National Strategy for Research – Development – Innovation, and according to that to develop a R&D National Plan for the period 2007-2013. This plan will be correlated with:

- the general external and security policy objectives, aiming to asses Romania as a power and stability factor in the Black Sea and the Balcam Peninsula area;
- the necessity of European integration, with minimal costs, having in view the strenghtening of the Romanian economy in order to face the competition on the new market;
- the strenghtening of the functionality of the specific economical mechanisms of an emerging market;
- the creation of the premises to decrease the differences between Romania and the other members of the European Union;
- the move towards an economy based on knowledge;
- the necessity to create the premises for the development of the domestic market, the increase of the work opportunities and of the profesional training, the amelioration of the working conditions, of the health and living conditions for the population, the creation of the local brands and trade marks;
- the creation of a scientific and technological stock, concentrated to the areas with good opportunities to make the most from the human capital;
- the design of the institutional system and of the regulations able to allow the sustainability, the development, the use and the efficiency of the scientific and technological capital, as determined;
- the coherent development of the resources and their correlation to the need of scientific and technological capital, for the areas with development potential.

The project objectives are:

- to make an analysis of the strong points, of the weak points, of the effective and potential opportunities, of the effective and potential factors of risk resulting from the economical evolution on long term, medium term and short term
- to develop a strategy and a potential national plan for R & D
- to make proposals able to create the framework and the instruments needed for valorising the existing opportunities, for translating some potential opportunities into effective ones, for minimizing the existing risks and for preventing the identified potential risks
- to elaborate the main scenarios for the Romanian economical and social development until 2020, as a premise for the elaboration of a consolidated foresight endeavour, made up from „critical domains / technologies"
- to elaborate the National Plan for research – development – innovation, that will include the means and ways to encourage and support the critical domains / technologies, the modalities for their effective implementation, the monitoring and evaluation tools, the financing mechanisms and resource allocation principles, the modalities to promote excelency.

Project details can be found at:
www.opendrum.utt.ro/inofvor

CEEX Project, Contract Nr. CEX 05-D8-5/ 10.10.2005, *Development of the Concept of Social Responsability in the Romanian Companies, in the European Context „RSE & UE"*, period 2005-2008, UPT partner

Director: Assoc.prof.dr.eng. Marian MOCAN
Value 2005: 60,000 RON
Members: Prof.dr.eng. Radu VASIU, Assoc.lect.eng. Diana ANDONE, Lect.dr.eng. Mugur MOCOFAN, Assist.eng. Marian BUCOS, Assist.eng. Mihai ONITA, Eng. Marius CONDREA, Eng. Iasmina ERMALAI
Coordinator: I.N.C.S.M.P.S. Bucharest
Partners: I.P.A. SA Bucharest
CURS SA Bucharest
INOE Bucharest

FIELD AND GRANT DESCRIPTION: The Lisbon Agenda (2000) establishes as the main strategical objectiv that „the EU should become the most competitive and dynamic knowledge based economy in the world, capable of sustainable economical growth, with more and better work places and with a bigger social cohesion". The project represents an effective contribution to the implementation of those desires.

The project objectives are:
- Realization of a report about the existing situation at international level, including in the EU, reffering to the concept of social cohesion

- Design of informatic instruments for documentation, communication, collaboration and implementation of some activities
- Elaboration of some empirical analyses regarding the existing situation in Romania, including the external dimension (Corporate Social Responsability – CSR)
- Elaboration of a methodology for the investigation of the internal dimension of IRS/CSR in Romania
- Elaboration of a methodology for the investigation of the dimension of IRS/CSR at the level of organisation in Romania
- Evaluation of the dimension of the economical, social and environmental aspects, at the elvel of organisation, in Romania
- Evaluation of the impact of IRS/CSR towards the competitivity, occupational quality, inclusion and social cohesion
- Determination of some directions of perspective in applying IRS/CSR in Romania, in European context.

Project details can be found at:
www.opendrum.utt.ro/rse&ue

INTERNATIONAL PROGRAMS:

Grant type, Brancusi 08886TM, *Debruitage des images SONAR en utilisant la theorie des ondelettes : applications aux systemes d'aide a la decision*
Director: Assoc.prof.dr.eng. Sorin MOGA, ENST-Bretagne
Value: 1843 EURO
Partners: ENST-Bretagne, Brest, France
Members: Prof.dr.eng. Jean-Marc BOUCHER, ENST-Bretagne, Brest, France
Assoc.prof.dr.eng. Dominique PASTOR, ENST-Bretagne, Brest, France
Prof.dr.eng. Ioan NAFORNITA, UPT
Prof.dr.eng. Alexandru ISAR, UPT
Assoc.prof.dr. Corina BOTOCA, UPT

FIELD AND GRANT DESCRIPTION
A new SONAR images denoising method, based on wavelets theory is developed. This is a pre-treatment method. Its results enhance the quality of post-treatment techniques like segmentation and classification.

ACTIVITIES AND RESULTS
Two research reports and four articles were published.

Contract with Ministry of Development Greece, and INTRACOM SA, Greece, ***Developement of Software Defined Radio Platform: Optimal Usage of Radio Resources and Multiple Air Interface Terminals***
Director: prof.dr.eng. Ioan NAFORNITA
Value: 140,000 EURO
Partner: National Technical University of Athens, Greece, Prof. Philip CONSTANTINOU

Research grant, ***Rain simulator – general considerations, standards, components simulation***
Director: Prof.dr.eng. Marius OTESTEANU
Value: 8,000 Euro
Customer: Siemens VDO Automotive

Members: Prof. Dr. Eng. Aurel GONTEAN, Prof. Dr. Eng. Vasile GUI, Eng. Stefan DUNA, PhD Student Georgiana SARBU, PhD Student Sandra RUGINA

Leonardo da Vinci II project: ***Retail Education Mechanism for On-line Training in Europe, (REMOTE)***
Director: Prof.dr.eng. Radu VASIU
Value: 34,352 EURO
Members: Assoc.lect.eng. Diana ANDONE, Assoc.lect.eng. Daniel HAIDUC, Assist.eng. Marian BUCOS, Assist.eng. Artur MULLER, Assist.eng. Mihai ONITA, Eng. Marius CONDREA
Partners: Ethos Associates, Nortwich, UK
Language Service Centre, Giessen, D
Theta Education & Training Madrid

FIELD DESCRIPTION: The project aims to develop a new, accessible web design qualification that can be accessed by a wide range of learners, including those with sensory disabilities, via a content rich CD. Formal assessment, certification and online tutor support are managed via a specially developed REMOTE Learning Hub. The programme will be available in English, Romanian, German and Spanish.

A key objective is removing barriers to learning and certification for disabled users and other encountering difficulties in accessing training or qualifications in basic web design. All aspects of product design, delivery and the learner support mechanisms have been developed in consultation with stakeholders to remove barriers to access.

The new qualification will be accredited in the UK by the NCFE (National Council for Further Education), and will recognize skills in basic, accessible web design to a consistent basic standard across Europe.

Project details can be found at:
www.remotetraining.org or
www.removingbarriers.com

Socrates Erasmus Curriculum Development project: ***International On-Line Master in Multimedia (IMM – CD)***
Director: Prof.dr.eng. Radu VASIU
Value: 40,600 EURO
Members: Prof.dr.eng. Nicolae ROBU, Assoc.lect.eng. Diana ANDONE, Lect.dr.eng. Mugur MOCOFAN, Assoc.lect.eng. Daniel HAIDUC, Assist.eng. Marian BUCOS, Assist.eng. Mihai ONITA, Eng. Marius CONDREA, Iasmina ERMALAI, PhD student
Partners: Univ. of Nice, FR
JME Associates, UK
Univ. of Technology, Kaunas, LT
E-Collegium, Budapest, HU
Univ. of Godollo, HU
Mimoza Kft, Budapest, HU
Univ. of Zvolen, SK

FIELD DESCRIPTION: The scope of the project, which is funded by the European Commission for 2 years (Oct. 2004 – Sept. 2006) is to introduce an International on-line Master degree in Multimedia. The consortium of participants established an International Academic Board that is responsible for establishing the curricula and for checking the quality of the courses. Each partner university takes part to the course development, the allocation of courses being done based on competition. Some of the courses might be allocated for development to recognized experts in e-learning from USA, Finland and Greece.

After course development, the degree program will run through e-learning, tutoring being realized on-line by the course developers. The partner universities will ensure local support centres, in order to allow face-to-face meetings for the students they enrolled. Final examination will be done through face-to-face examination done by the course leaders, the only participants to the degree program that will have to travel internationally.

"Politehnica" University of Timisoara is the program coordinator and contractor.

Further details on the project can be found at:
www.immaster.net

Leonardo da Vinci II project: ***Measure to Improve (METOIM)***
Director: Prof.dr.eng. Radu VASIU

Value: 51,476 EURO
Members: Assoc.lect.eng. Diana ANDONE, Assoc.lect.eng. Daniel HAIDUC, Assist.eng. Marian BUCOS, Assist.eng. Mihai ONITA, Eng. Marius CONDREA, Lucia RAZMERITA, journalist, Cristian TZECU, PhD student,
Partners: IAL Toscana, IT
BFI Steiermark Graz, AT
M2A Technologies, FR
Macedonian Institute of Employment (MAKINE), GR
OFA Kht., HU

FIELD DESCRIPTION: The project's main objectives are:
- to sensibilize managers and responsible working in Labour Social Association or Syndicates to improve the quality of, and access to, continuing vocational training and the Lifelong acquisition of skills and competences
- to arise conscience on workers about the importance of vocational activities, but also informal initiatives (i.e. for instance the participation to the so-called "Study Sessions" promoted by small groups of people to enhance their knowledge on a particular topic, participate to "Counselling sessions" whereby testing their competences and their known/unknown needs)
- to implement an innovative ICT tool which can be transferred to different contests, such as the entrepreneurial one, to measure the communication and information needs/demands
- to experiment the above said tool in a small representative group of "managers" and "workers" and/or "Labour representatives" and "workers"
- to promote equal opportunities, expecially at the Social representative level in order to carry out projects to help women to better balance their family with working timetable

Further details on the project can be found at: www.metoim.org

Leonardo da Vinci II project: *e2Engineering*
Director: Prof.dr.eng. Radu VASIU
Value: 20,003 EURO
Members Assoc.lect.eng. Diana ANDONE, Assist.eng. Marian BUCOS, Assist. eng. Mihai ONITA, Prof.dr.eng. Doina DRAGULESCU, Prof.dr.eng. Mirela TOTH-TASCAU, Eng. Marius CONDREA, Lucia RAZMERITA, journalist
Partners: Univ. Godollo, HU
Univ. Miskolz, HU
EADTU – European Association of Distance Teaching Universities, NL
Univ. of Gdansk, PL
Univ. of Kosice, SK

Ethos Associates, UK

FIELD DESCRIPTION: The project's aim is to develop IT tools able to facilitate on-line education in technical fields, especially Computer Aided Engineering. Course modules and examples of remarkable technical achievements will be developed and offered on-line using the COEDU e-learning platform. Courses will be developed jointly and will be translated and offered in five languages: English, Hungarian, Romanian, Polish and Slovakian. Pilot courses will be offered free of charge.

Socrates Minerva project: ***"e-Taster – short, free on-line courses – "tasters" – for multilingual, international delivery"***
Director: Assoc.lect.eng. Diana ANDONE
Value: 61,314 EURO
Members Prof.dr.eng. Radu VASIU, Lect.dr.eng. Mugur MOCOFAN, Assoc.lect.eng. Daniel HAIDUC, Assist.eng. Marian BUCOS, Assist.eng. Mihai ONITA, Eng. Marius CONDREA, Lucia RAZMERITA, journalist, Cristian TZECU, PhD student, Iasmina ERMALAI, PhD student,
Partners: Univ. Miskolcz, HU
E-Collegium, Budapest, HU
Univ. of Godollo, HU
Mimoza Kft, Budapest, HU
EADTU – European Association of Distance Teaching Universities, NL
Univ. of East London, UK
Univ. of Gdansk, PL
Univ. of Kosice, SK
Univ. of Plovdiv, BL

FIELD DESCRIPTION: The project aims to develop a multilingual platform for e-learning course delivery. It also aims to develop short on-line courses, "tasters" for full version content offered commercially.

5. Publications

5.1 Papers

1. Alexa, F., Gui, V., *Planar motion estimation algorithm for region based coding*. 2005 WSEAS Int. Conf. on Dynamical Systems and Control, Venice, Italy, 2005, pp 457-462.

2. Andone, D., Vasiu, R., Bucos, M., Muller, A., Raicovici, F., *Building Digital Bridges for People with Disabilities*, In *Lifelong E-Learning*, Published in Helsinki, Finland by EDEN (European Distance and E-Learning Network, June 2005, pp. 340-345.

3. Andone, D., Boyne, C., Dron, J., Pemberton, L., *What Is It to Be a Digital Student in a British University?*, 5th IEEE International Conference on Advanced Learning Technologies, ICALT 2005, Kaohsiung, Taiwan, IEEE Computer Society Press, Los Alamitos, CA, pp. 925-928.

4. Andone, D., Dron, J., Boyne, C., Pemberton, L., *Digital Students and Their Use of E-learning Environments*, Proceedings of the IADIS International Conference "WWW/INTERNET 2005", Lisbon, Portugal, 2005, pp. 302-306.

5. Andone, D., Vasiu, R., *Instant Communication Methods – Development and Analysis*, Proceedings of the EADTU International Conference, Rome, Italy, 10-11 November, 2005, CD ROM+Internet edition, 6 pages. http://www.eadtu.nl./proceedings.

6. Avram A., Carstea H., Tanase M. E., Lie I., *The Impact of Manufacturing Issues above Lead Free Soldering Alloys,* Proceedings of 28th International Spring Seminar on Electronics Technology, ISSE 2005, Wiener Neustatd, Austria, pp. 279-282.

7. Babaita M., Papazian P., Popovici A., Avram A., Lie I., *New Control Techniques for Hibrid Regulator*', ICMCS-05, Proceedings of the 4'th International Conference on Microelectronics and Computer Science 2005, Chişinău, Republic of Moldova, Vol.II, 2005, pp. 405-408.

8. Babaita M., Papazian P., Popovici A., Avram A., Tănase M.E., *New control techniques for hybrid regulator,* Proceedings of the 4th International Conference on Microelectronics and Computer Science ICMCS – 2005, Chisinau, Republic of Moldova, vol. II , pp. 406-409.

9. Babaita, M., Popovici, A., Avram, A., Popescu, V., *A new technique for hybrid controller used for DC motor drive*, Proc. Of the 8th International Conf. on Eng. Of Modern Electric Systems, Oradea, 2005, pp. 25-29.

10. Babaita, M., Popescu, V., Popovici, A., Lascu, D., Negoitescu, D., *Control Technique With Fast Response For Power factor Correction Recrifiers*, WSEAS, International Conf. on Dynamic Systems and Control (Control '05), 2005, pp. 421-426.

11. Balas, M., Ciugudean, M., Balas, V., *The family of fuzzy, self-adaptive interpolative controllers. Perspectives,* Journal of Inventics, No. 48, 2005, pp. 13-23.

12. Balint, C., *Efficient LSP Computation and Quantization,* International Symposium on Signals, Circuits and Systems ISSCS 2005, Iaşi, Romania, 2005, Vol.1, pp. 175-178.

13. Balta H., Kovaci M., Naforniță M., *A New Method for the Simulation of the Nakagami Flat Fading (Radio) Transmission Channels*, Annals of the University of Oradea, Fasc. Electrotehnics, Electronics Section, 2005, pp. 21-24.

14. Balta H., Kovaci M., *The Turbo-codes Performances in the (Radio) Rice Flat Fading Channels*, The Military Technical Academy 31st internationally attended conference "Modern Technologies in the XXI Century", 6 pages, in print.

15. Balta H., Kovaci M., De Baynast A., *Performance of Turbo-Codes on Nakagami Flat Fading (Radio) Transmission Channels*, Thirty-Ninth Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, California, 2005, 5 pages, in print.

16. Balta H., Kovaci M., Naforniță M., *A Study on Turbo Coding Systems with π/4 Shifted DQPSK Modulation*, Proceedings of International Symposium SCS, ISSCS'2005, Iasi, 2005, pp. 367-370.

17. Balta H., Kovaci, M. *A Study on Non-Binary Turbo Codes*, The 36-th International Scientific Symposium of the Military Equipment & Technologies Research Agency, Bucharest, 2005, pp. 214-219.

18. Balta H., Miloş A., Răşinar M., *Rayleigh and Rice Radio Fading Channels Simulation*, Bulletin of the University Petrol-Gaze, Ploiesti, Vol. LVII, Technical Series Nr. 2/2005, Electrotehnics, Electronics, pp.51-56.

19. Balta H., Polverea, I. Gheorghiță I., *Convolutional Codes Performances in Turbo Configuration*, Bulletin of the University Petrol-Gaze, Ploiesti, Vol. LVII, Technical Series Nr. 2/2005, Electrotehnics, Electronics, pp.57-62.

20. Balta H., Trifina L., Rusinaru A., "*The Effect of Puncturing on the Convolutional Turbo-Codes Performance*", The 36-th International Scientific Symposium of the Military Equipment & Technologies Research Agency, Bucharest, 2005, pp. 288-293.

21. Belega D., Stoiciu D., *Quality Assessment of a Square Wave as a Function of Levels Accuracy,* Proceedings of the 14th IMEKO Symposium on New Technologies in Measurement and Instrumentation and 10th Workshop on ADC Modelling and Testing, vol. I, , Gdynia/Jurata-Poland, 2005, pp. 254-257.

22. Belega, D., Dallet, D., *A/D Converters testing based on beat frequency method*, Proc. of the Third IEEE Workshop on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, Sofia, Bulgaria, 2005, pp. 13-17.

23. Belega, D., *Characteristics of the Insertion Loss of some EMI filters*, Revue Roumine de Sciences Techniques, Serie Electrotechnique et Energetique, No. 1, 2005, pp. 67-80.

24. Belega, D., *The maximum sidelobe decay windows*, Revue Roumine de Sciences Techniques, Serie Electrotechnique et Energetique, No. 3, 2005, pp. 349-356.

25. Borda, M., Naforniță, I., Isar, D., Isar, A., *New instantaneous frequency estimation method based on image processing techniques,* Journal of Electronic Imaging, April-June 2005, volume 14, Issue 2, pp. 023013-1-11.

26. Botoca, C., Budura, G., Miclău, N., *A new competitive learning algorithm for data clustering*, Proceedings of the 4th International Conference on Microelectronics and Computer Science ICMCS – 2005, Chisinau, Republic of Moldova, 2005, pp. 75-78.

27. Botoca C., Budura, G., Miclău, N., *Radial Basis Function equalization using competitive learning*, Revue Roumaine des Sciences Techniques, Serie Electrotechnique et Energetique, Tome 50, Vol. 4, 2005 pp. 451-464.

28. Budura, G., Botoca, C., *La construction d'un modele nonlineaire a l'aide de series Volterra et Wiener*, Revue roumaine des sciences techniques, serie Electrotechnique et energetique, Tome 50, Vol. 4, pp. 465-475.

29. Budura, G., Botoca, *Nonlinearities Identification using The LMS Volterra Filter*, WSEAS International Conference on Dynamical Systems and Control, Venice, Italy, 2005, pp.148-153.

30. Budura, G., *Nonlinear Systems Identification using the Volterra Model*, International Symposium on Systems Theory, SINTES 12, Vol.1, Craiova 2005, pp.25-30.

31. Campeanu, A., J. Gal, *Design of Active Filters Simulating Mesh Current Equation of LC Ladder Filters*, Proceedings of International Symposium on Signals, Circuits and Systems, ISSCS 2005, Iaşi Romania, pp. 335-338.

32. Campeanu, D., Câmpeanu, A., *PEAQ – An Objective Method To Asses The Perceptual Quality of Audio Compressed Files,* Proceedings of International Symposium on System Theory, SINTES 12, 2005, Craiova, România, pp. 487-492.

33. Carstea, H., Golet, I., Mitariu O., *Detecting errors sequential testing method, within electronic equipments, using non-uniform covering probabilities* - Annals of the University of Oradea, May 2005, pp. 29-33.

34. Carstea, H., Rif, M., Bercovici, A., "*Method and transducer for measuring and controlling thin films layers*" - Annals of the Universitaty of Oradea, May 2005, pp. 33-37.

35. Carstea, H., *Optimal corrective maintenance strategies applied to high-reliability electronic equipments*" - International Symposium for Design and Technology of Electronic Packaging, Cluj-Napoca, 2005, pp. 199-202.

36. Carstea, H., Bercovici, A., "*Methods and models of thermal analysis for the electronic modules*" - International Symposium for Design and Technology of Electronic Packaging, Cluj-Napoca, 2005, pp. 293-295.

37. Carstea, H., Ionascu, P., "*The protection of electronic equipments at electrostatic charges and discharges generated perturbations*" - The Second Workshop of Electromagnetic Compatibility, Cluj-Napoca, 2005, pp. 44-61.

38. Ciugudean, M., Filip, A., Avram, A., Pantis, M., *A New High Stability Sine Oscillator with Simulated Inductance*, Proceedings of the 4th International Conference on „Microelectronics and Computer Science" ICMCS-05, Chisinau, Republic of Moldova, 2005, pp. 356-359.

39. De Sabata, A., *Sampling Theorem for Multidimensional, Multiband Signals*, WSEAS Transactions on Signal Processing, Issue 3, Vol. 1, Dec. 2005, pp. 458-461.

40. De Sabata, I.,, De Sabata, A., *Thermodynamic Derivation of the Expressions of Force and Energy in the Maxwell-Hertz Theory*, Scientific Bulletin of the "Politehnica"

University of Timisoara, Trans. on power Engineering, Tom 50(64), Fasc. 1-2, 2005, pp. 185-194.

41. Dughir, C., *Detecting Symmetrical Disturbances in the Electrical Power Systems*, in Proc. of the Scientific Communications Session "Doctor Etc 2005", Timişoara, 2005, pp. 26-29.

42. Dughir, C., *Perturbations monitoring of electrical energy power supply*, in *Electromagnetic compatibility aspects in medicine*, Waldpress Pub., Timişoara 2005, pp. 61-70.

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44. Gacsadi, R., Reiz, I., Gavrilut, L., Tepelea, V., Tiponut, V., *Noise removal in images by using cellular neural networks*, Proceedings of the International Conference on Engineering of Modern Electric Systems (EMES'2005, Oradea, 2005), pp. 47-53.

45. Gasparesc, G., *Wavelet Analysis forTransient Perturbations biexponential impulse and damped sinus***,** Proc. of the Scientific Communications Session "Doctor Etc 2005", Timişoara, 2005, pp. 30-33.

46. Gavrilut, A. Gacsadi, L. Tepelea, V. Tiponut, V., *Motion planning for two mobile robots in an environment with obstacles by using cellular neural networks,* Proceedings of the 7-th International Symposium on Signals, Circuits and Systems, (ISSCS 2005), Iasi, Romania, 2005, pp. 801-804.

47. Gavrilut, A. Gacsadi, L. Tepelea, V. Tiponut, V., *Target search by mobile robot in a labyrinth by using cellular neural networks*, Proceedings of the International Conference on Engineering of Modern Electric Systems (EMES'2005), Oradea, 2005, pp. 54-59.

48. Ianasi, C., Gui, V., Alexa, F., Toma ,C. *Fast and Accurate Background Subtraction for Video Surveillance, Using an Adaptive Mode –Tracking Algorithm*. WSEAS Int. Conf. on Dynamical Systems and Control, Venice, Italy, 2005, pp 391-397.

49. Ianasi, C., Toma, C., Gui, Pescaru, V. D. *Kernel selection for mean shift background tracking in video surveillance*, Proc. 4th Int. Conference on Microelectronics and Computer Science, ICMCS05, Chişinău, republic of Moldova, 2005, Vol. II, pp 389-392.

50. Ianasi, C., Gui, C. V., Toma, C., Pescaru,D. *A fast algorithm for background tracking in video surveillance using nonparametric kernel density estimation*, Facta Universitatis, Nis, Serbia & Montenegro, Vol. 18, No. 1, 2005, pp. 127-144.

51. Ignea, A., *Fundamental notions in electromagnetic compatibility*, in *Electromagnetic compatibility aspects in medicine***,** Waldpress Pub., Timişoara 2005, pp. 5-33.

52. Ionel, S., *Correlative Analysis Parameters of Air Quality*, Fachtagung der Alexander von Humboldt Stiftung, vol. 2, "Politehnica" Pub., p. 175.

53. Ionel S., Ionel I., Bisorca D., *Correlation Analysis for Traffic Induced Pollution*, Proceedings of the EAEC European Automotive Congress, 2005, Belgrade.

54. Ionel I, Ionel S., *Short-Time spectra and Correlation Analysis of Air Pollution Signals*, Proceedings of the 14 th International Conference on Thermal Enginnering and Theromogrammetry, 2005, Budapest.

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56. Isar, A., Moga, S., Lurton, X., *A Statistical Analysis of the 2D Discrete Wavelet Transform,* Proceedings of International Conference AMSDA 2005, Brest, France, 1275-1281.

57. Isar, A,. Moga, S., Augustin, J. M., Lurton, X. *Multi-scale MAP Despeckling of SONAR Images,* Proceedings of IEEE International Conference Oceans'05, Brest, France, 2005, pp. 325-331

58. Isar, A,. Moga,S., *A New Method for Denoising SONAR Images*, Proceedings of IEEE International Symposium SCS'05, Iasi, Romania, 2005, pp. 469-472.

59. Isar, A,. Moga,S., *Le débruitage des images SONAR en utilisant la transformee en ondelettes a diversite enrichie,*Rapport de recherche LUSSI-TR-2004-5-FR, ENST-Bretagne, Brest, France, 108 pages.

60. Ivan, C., Popescu, V., *PFC circuits – performances and characteristics*, Proc. of the 8th Internat. Conf. on Eng. of Modern Electric Systems, Oradea, 2005, pp 80-86.

61. Keller, G., Lascu, D., Myrzik, J., *State-Space control structures for Buck converters with/without input filter*, 11th European Conference on Power Electronics and Applications, EPE 2005, Dresden, Germany, pp. 171-150.

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5.2 Books

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2. Belega D., *Electrical and Electronic Measurements*, "Politehnica" Pub., ISBN 973-625-242-2, 205 pages, published in Romanian.

3. Gacsadi, A., Tiponut, V., *Data Acquisition Systems*, University of Oradea Pub., 2005, ISBN 973-613-868-2, 190 pages, published in Romanian.

4. Ionel, S., *Spectral Estimation with MATLAB Experiments*, "Politehnica" Pub., Timisoara, 2005. ISBN 973-625-293-0, 120 pages, published in Romanian.

5. Ionel, S., *Electronic Devices and Circuits*, "Politehnica" Pub., Timisoara, 2005, ISBN 973-625-124-1, 302 pages, published in Romanian.

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8. Muresan, T., Gontean, A., *Digital Circuits,* "Vest" Pub., Timisoara, 2005, ISBN 973-613-868-2, 218 pages, published in Romanian.

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6. Other activities

Our Faculty and its staff are deeply interested in maintaining the existing relationships with other Universities and promoting new ones.

6.1. International cooperation

SOCRATES/ERASMUS COOPERATION AGREEMENTS

1. *Director:* Prof. dr. eng. Mihail Eugen TANASE
Partners : University of Bremen, Germany
ACTIVITIES AND RESULTS
- Students exchange

2. *Director:* Prof. dr. eng. Dan STOICIU
Partners : Université de Rennes 1, France

ACTIVITIES AND RESULTS
- 3-month practical stages in Timisoara of two French students
- One-week teaching period of Prof. Gilles LE CERTEN at the Faculty of Electronics and Telecommunication of Timisoara.
- One-week teaching period of Prof. Pascal YON at the Faculty of Electronics and Telecommunication of Timisoara.

3. *Director:* Prof. dr. eng. Dan STOICIU
Partners : Université d'Angers, France

ACTIVITIES AND RESULTS
- 3-month practical stages in Timisoara of two French students
- One-week teaching period of Prof. Jean-Pierre PECQUEUR at the Faculty of Electronics and Telecommunication of Timisoara.
- One-week teaching period of Prof. Philippe LUCIDARME at the Faculty of Electronics and Telecommunication of Timisoara.

4. *Director:* Prof. dr. eng. Dan STOICIU
Partners : Berufsakademie Loerrach,
Germany

ACTIVITIES AND RESULTS
- One-week teaching period of Prof. Eckhart HANSER at the Faculty of Electronics and Telecommunication of Timisoara.
- Two-week teaching period of Prof. Dan STOICIU at the Berufsakademie Loerrach.

5. *Director:* Prof. dr. eng. Aldo DE SABATA
Partners : Politecnico di Torino, Ttaly

ACTIVITIES AND RESULTS
- One-week teaching period of Prof. Ladislau MATEKOVITS at the Faculty of Electronics and Telecommunication of Timisoara
- One-week teaching period of prof. Aldo De SABATA at the Politecnico di Torino.

6. *Director:* Prof. dr. eng. Miranda NAFORNITA
Partners : Univ. de Nantes, Ecole Polytechnique, France
Members : Prof. Safwan EL ASSAD

7. *Director :* Prof. dr. eng. Miranda NAFORNITA
Partners : Univ. ENST Bretagne, France
Members : Prof. Catherine DOUILLARD

8. *Director :* Prof. dr. eng. Corneliu TOMA
Partners : University of Bremen, Germany
Members : Prof. dr. eng. Alex GRÄSER

- Prof. Vasile GUI, Invited Prof. at Oulu Polytechnic, Institute of Technology, Oulu, Finland

- The following conferences have been held at our faculty by staff from the University ENST Bretagne, France (in French):

Jean-Marc BOUCHER
1. *Classification par SVM(support vector machine) des ondes P d'un electrocardiogramme*
2. *Classification par SVM(support vector machine) d'images SONAR;*

Dominique PASTOR:
Probabilités conditionnelles. La détection des cibles radar

Catherine DOUILLARD,
Turbocodes

André QUINQUIS, ENSIETA
Representations temps-frequence et temps-echelle;

Gilles COPAIN
Cooperation Homme-Machine; modeles d'aide à la décision;

6.2 Student Research Activities

The following graduation projects received maximum qualification:

Cosmin MOISA, *Testing, acquisition and signal processing device for an inductive sensor*, Advisor Prof. dr. eng. Ivan BOGDANOV

TOTH Zoltan, *Experimental study of the roughness of nanotechnological surfaces using raster microscopy*, Advisor Prof. dr. eng. Vasile GUI

BALLA Reka, *Control strategies for a mobile platform*, Advisor Prof. dr. eng. Ivan BOGDANOV

Lucian Marius RACOLTA, *Boost phenomenon in dc-dc converters*, Advisor Assoc. prof. dr. eng. Dan LASCU

Liviu Cristian BEORCEANU, *Programable temperature regulator*, Advisor Prof. dr. eng. Aurel GONTEAN

Radu Cosmin BUGLE and Andrei BUZGAN, *GPS system with GSM data transmission*, Advisor Prof. dr. eng. Virgil TIPONUT

Adrian HAREA, *Automatic Hardware Validation of the Engine Control Unit*, Advisor Prof. dr. eng. Traian JURCA

NAGY Istvan Robert, *USB-CAN Bootstrap Loader*, Advisor Prof. dr. eng. Traian JURCA

Lucian CAPRARESCU, *Constant current source for high speed analog to digital converter*, Advisor Prof. dr. eng., Mircea CIUGUDEAN

MIKLOS Marius Ady, *Graphic programming in biomedical signal processing*, Advisor

Assoc. Prof. dr. eng. Mihaela LASCU
Tiberiu Mihai GORBE, *Measurement of electrical parameters for some passive elements*, Assoc. Prof. dr. eng. Mihaela LASCU

Alecu GRIGORE, *General purpouse timer array configuration tool for the infineon audo-sig TC 17xx microcontroller family*, Advisor Prof. dr. eng. Aurel GONTEAN

Adrian LOLESCU, *Unitary testing using the RTR Attol language*, Advisor Prof. dr. eng. Alexandru ISAR

Cosmin ANDREESCU, *Parallel database supported application of different job evaluation tools*, Prof. dr. eng. Radu VASIU

Raluca DABICI and Elena DAVID, *TCP in Intenet*, Advisor Prof. dr. eng. Miranda NAFORNITA

Alin Marian MARGULESCU, *Interleavers for Turbocodes*, Advisor Prof. dr. eng. Miranda NAFORNITA

Delia Ramona CRACIUNESCU, *Turbocodes*, Advisor Prof. dr. eng. Miranda NAFORNITA

Petru Andrei ADAM, *Handover 2G-3G. Implications for the MSC emulator*, Advisor Lect. dr. eng. Cornel BALINT

Ovidiu Lucian PETRESCU, *Evolution of MSC emulator (B9 variant) Implementation of Voice Group Call Service*, Advisor Lect. dr. eng. Cornel BALINT

Daniel Iulian ZIRMER, *Adaptation of the MSCEmu interface to the LSUv3 equipment*, Advisor Lect. dr. eng. Cornel BALINT

Ioana ADAM, *Management of meteorological data in the POLLUCOM experimental model*, Advisor Prof. dr. eng. Alexandru ISAR

Rubin DAB, *Stack analyzer for microcontrollers*, Advisor Prof. dr. eng. Liviu TOMA

Marius ROMAN, *Protocol analyzer for mobile communications – mapping on the Ater-mux interface*, Advisor Prof. dr. eng. Marius OTESTEANU

Nadina Tamara PAMPU, *Protocol analyzer for mobile communications. Dynamic allocation on the Abis statistically multiplexed interface*, Advisor Prof. dr. eng. Ioan NAFORNIȚĂ
Valentin Marius MARIAN, *Testing of the protocol analyzer for mobile communications*, Advisor Prof. dr. eng. Marius OTESTEANU

Nicoleta Daniela MARGARIT, *Analysis of PCM links with special devices*, Advisor Prof. dr. eng. Ioan NAFORNITA

Georgiana SARBU- DOAGA,*Video signal generator with FPGA*, Advisor Assoc. Prof. dr. eng. Florin ALEXA

Catalin Florin CHIOREAN, *Design and configuration of a BTS and an OMC-R*, Advisor Assoc. prof. dr. eng. Eugen MÂRZA

Alin SARPE, *BSC and TC design and configuration* , Advisor Prof. dr. eng. Ioan NAFORNITA

Ramona Nicoleta CRACIUN, *Planning of a UMTS network*, Advisor Prof. dr. eng. Ioan NAFORNITA

Andrei Sorin OANA, *Study of interference between mobile communications systems*, Advisor Assoc. Prof. dr. eng. Eugen MARZA

Sandra RUGINA, *Correlative receivers*, Advisor Assoc. Prof. dr. eng. Eugen MARZA

Bogdan MINESCU, *Post-traitement d'un graphe de mots en reconnaissance de la parole continue (in French)*, Advisor Assoc. prof. dr. eng. Eugen MARZA

BENKO Zsombor Barnabas, *Impact of CDMA IS-95 and CDMA-PAMR systems on 900 MHz GSM system,* Advisor Assoc. Prof. dr. eng. Eugen MÂRZA

IOZSA Arpad, *Smoothing methods for antenna patterns*, Advisor Assoc. prof. dr. eng. Eugen MARZA

Octavian URDAREANU, *Analysis of tests from the radio optimization platform*, Assoc. prof. dr. eng. Florin ALEXA

VINCZE Andras, *Data acquisition system through GSM*, Advisor Assoc. prof. dr. eng. Eugen MARZA

Claudia Ionica BORDEA, *Digital techniques in modern television*, Advisor Prof. dr. eng. Corneliu TOMA
Ana Maria TERBEA, *Photo images processing for Multimedia applications*, Advisor Prof. dr. eng. Corneliu TOMA

Georgiana Suzana STANCA, *Communications Department web site – Multimedia direction*, Advisor Prof. dr. eng. Corneliu TOMA

Ioan Daniel COZMA, *Application for interactive multiple choices in higher education*, Advisor Prof. dr. eng. Corneliu TOMA

Dorina Liliana MOSTIS, *Database for management of optional disciplines in higher education*, Advisor Prof. dr. eng. Corneliu TOMA

Cornelia Sonia CAPRA, *Staff database for the university web site*, Advisor Prof. dr. eng. Radu VASIU

Eliza Tatiana DUNA, *E-learning platform customization for on-line Multimedia master degree*, Advisor Prof. dr. eng. Radu VASIU

Corina Adriana OPRIS, *SMS transmission to students from the e-learning platform for the International On-Line Master*, Advisor Prof. dr. eng. Radu VASIU

Alexandru Cosmin PASCU, *Virtual training system for electronic equipment testing*, Advisor Prof. dr. eng. Radu VASIU

Delia TOMUTA, *Graphic design and university research staff design implementation*, Advisor Prof. dr. eng. Radu VASIU

BARTOK Zsolt, *Movement tracking in video sequences*, Advisor Prof. dr. eng. Corneliu TOMA

Ciprian ODOROABA, *Feature extraction for pattern recognition*, Advisor Prof. dr. eng. Vasile GUI

Vlad Petru BOIBOREAN,*Update of informational design for the Multimedia center Opendrum web site*, Advisor Lect. eng. Diana ANDONE

Andreea BALASIU, *Design and implementation of administrative facilities for for the Multimedia center Opendrum web site*, Advisor Lect. eng. Diana ANDONE

Simona SAMFIRA, *Advanced frequency planning techniques in the GSM mobile communications system*, Assoc. prof. dr. eng. Eugen MARZA

Florin Lucian SEMENESCU, *STMI-PCM optical interface*, Advisor Prof. dr. eng. CORNELIU TOMA

Lucian Petrut STAN, *Line interface module for PCM frame analyzer*, Advisor Prof. dr. eng. Marius OTESTEANU

Silviu Ioan STANCIU, *Graphic interface for portable PCM flow analizer development*, Advisor, Prof. Dr. eng. Marius OTESTEANU

Cristian Daniel CROITORU, *Interactive interaction in SVG*, Advisor Lect. eng. Daniel HAIDUC

Catalin CROITORU, *Online maps system*, Advisor Lect. eng. Daniel HAIDUC

Dinu CAMPEANU, *Evaluation through objective methods of perceptual actuality of audio signals*, Advisor Prof. dr. eng. Corneliu TOMA

Adrian TUFIS, *Online ticketing through Internet*, Advisor Prof. dr. eng. Corneliu TOMA

Delia ROSCA, *E-commerce databases security*, Advisor Lect. dr. eng. Muguras MOCOFAN

Iasmina Leila ERMALAI, *Development medium for virtual shops*, Advisor Lect. dr. eng. Muguras MOCOFAN

Daniela Narcisa FUIOREA-BULUCEA,*Video formats in Multimedia applications*, *CD-ROM application*, Advisor Assoc. prof. dr. eng. Florin ALEXA

Catalin TATU, *Development and implementation of web applications with Wireless Markup Language*, Advisor Prof. dr. eng. Radu VASIU

Horea Maxim DANCIU, *Data structuring with Extensible Markup Language*, Advisor Prof. dr. eng. Radu VASIU

Camelia CALTU, *Implementation and management of databases for mobile terminals*, Advisor Assit. eng. Arthurt MULLER

Florin Cristian CABA, *Surveillance systems from mobile telephony terminals*, Advisor Assist. eng. Arthurt MULLER

The following dissertations received maximum qualification:

Emilian JORZA, *Biomedical signal processing. Electrocardiogram. Pan-Tomkins algorithm,* Advisor Prof. dr. eng. Traian JURCA

Iulian Paul FUCA-TOMESCU, *Spectral estimation method based on the weighted sum of LSP polynomials,* Advisor Prof. dr. eng. Liviu TOMA

Ionut Dan JICOANE, *Radiation patterns for wire antennas,* Advisor Prof. dr. eng. Aldo DE SABATA

Calin Valentin MUNTEAN, *Measurements for Radio Network ptimisation,* Advisor Prof. dr. eng. Alimpie IGNEA

Ovidiu OANA, *Remote Inventory in a GSM Network ALCATEL Solution,* Prof. dr. eng. Alimpie IGNEA

Clara DANCIU, *Le debruitage des images SONAR en utilisant la transformee en ondelette a diversite enrichie (in French),* Advisor Prof. dr. eng. Alexandru ISAR

SANDOR Levente, *Methode de debruitage des images SONAR en utilisant des transformees en ondelettes redondantes (in French),* Advisor Prof. dr. eng. Alexandru ISAR

Mihaela DRAGAN, *L`utilisation des reseaux de neurones en turbo-decodage (in French),* Advisor Prof. dr. eng. Alexandru ISAR

Dusan STAN, *Fuzzy Controler implemented in a CPLD circuit for an automated vehicle control,* Advisor Assoc. Prof. dr. eng. Dan ANDREICIUC

Marius Ovidiu BUDISTEANU, *Digital predictive current control for dc-dc converters,* Advisor Assoc. Prof. dr. eng. Dan LASCU

Sebastian Catalin POP, *Mobility in UMTS,* Advisor Prof. dr. eng. Ioan NAFORNITA

George ROMAN, *Multiproptocol switching based on tags,* Advisor Prof. dr. eng. Ioan NAFORNITA

6.4 Social life

Our students have free access to the Central Library of "Politehnica" University and to the library of Electronics and Telecommunications Faculty. They are also allowed to consult each Department's Library.

The Central Library contains over 600,000 volumes and offers subscriptions to 2,800 technical publications.

We are publishing the Scientific Journal of "Politehnica" University of Timisoara, being in charge with "Transactions on Electrical Engineering, Electronics and Communication".

Our University and also the Library are connected to the Internet:

- **http://www.upt.ro** = The University Web site,
- **http://www.library.upt.ro** = The Library Web site.

The students can get accommodation in a student hostel under certain conditions. This accommodation consists of:

- one room apartments,
- 4 place rooms including bathrooms,
- 2 place rooms.

We assure for all our students the possibility to have meal in the University refectory.

Our students have various offers of recreation, health and welfare such as:

- The Students' House with several departments for different activities, artistic groups and writers' club.
- The "Politehnica" Sport Association which always reached high sports performance.
- Two sports arenas with: tennis courts, basketball, football, handball grounds, gymhall, nautical and horse racing bases.
- Medical assistance provided in consistent number of consulting rooms.

In our town there are also several social and cultural institutions namely:

- The National Theatre with three sections: Romanian, German and Hungarian,
- The Opera House,
- The Philharmonic Orchestra.