



**UNIVERSITY OF CRAIOVA**  
*Research and Cooperation*

**2013-2014**



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**RESEARCH - DEVELOPMENT - INNOVATION  
ACTIVITY**

**AND**

**COOPERATION WITH THE  
SOCIAL - ECONOMIC AND CULTURAL  
ENVIRONMENT**

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## 1. RESEARCH - AN IMPORTANT COMPONENT OF OUR INSTITUTIONAL STATED MISSION

***The scientific research*** is an essential component in the activity of our academic staff and it is carried out on the following levels:

- Fundamental research;
- Applicative research;
- Advanced technological research;
- Project, expertise and consulting activities;
- Obtaining new products and materials.

***The scientific research mission*** in the university is to generate knowledge and to transmit, disseminate and capitalise the scientifically researched and acquired knowledge.

These objectives can only be accomplished by developing and promoting:

- Scientific research, technological development, project designing and consultancy activities;
- Innovations in the fundamental and applicative research domain;
- Knowledge transfer through education and professional training through technological transfer and by technological, informational and communicational means;
- Human resources for research.

***The main objectives*** established in the institutional strategy and accomplished in the research activity are the following:

1. Research integration in the national, European and international system;
2. Quality assurance for the research activity;
3. Provision of Human resources for research;
4. Development of the research infrastructure.

The ***specific actions*** in the fundamental and applicative scientific research activity are targeted at:

- Developing and emphasising the scientific knowledge in the priority domains of the fundamental sciences;
- Researching to enhance the methods and instruments for the reorganisation and control of the social-economic system dynamics of the country;
- Contributing to the modernisation of the technologies and activities needed for the development of the Romanian industry;
- Scientific partnership activities with institutions of higher education and research in the country and abroad;



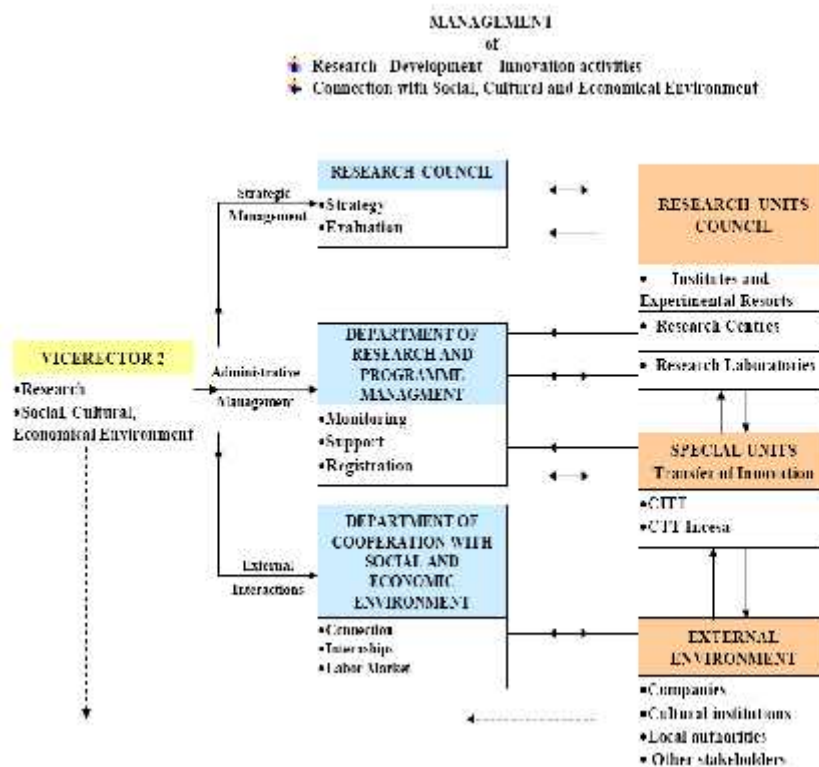


- Getting involved in major research programmes with national and international financial support, specifically in the PC 7 programme, PN II, research programmes financed through post-adherence European funds.

**The forms** in which the scientific research activity has been materialised lately:

- Grant-based research financed through PN II programme;
- Participation at the Framework programme 7 of the European Research Commission;
- Participation at the Operational Programme Increase of Economic Competitiveness, Priority Axis 2 – Research, Technological Development and Innovation for competitiveness;
- Participation at programmes financed by other national and international institutions;
- Agreement-based research in collaboration with the economic agents;
- Individual research in each department;
- publications (articles, treaties, monographies), in reviews and at publishing houses accredited at the national and international level;
- PhD research projects and papers and PhD theses;
- patents of innovation and invention.

**The management** of the research activities and of the cooperation with the social-economic and cultural environment is illustrated below.







## 2. RESEARCH – DEVELOPMENT INFRASTRUCTURE

The research-development activity has been unfolding in research centres and laboratories, in varied expertise domains, which provide an efficient infrastructure.

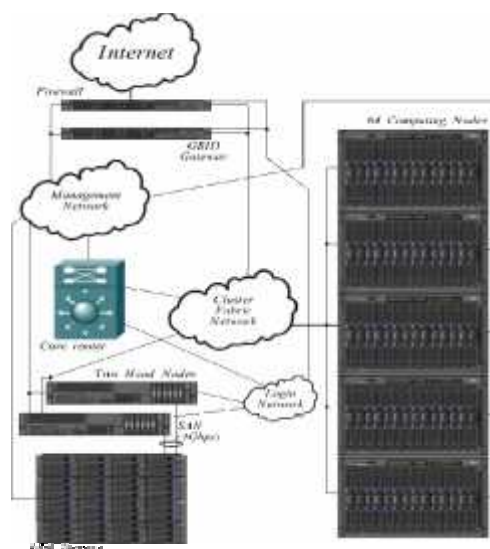
- » **Research and excellence centres: 2,**  
CENTRE FOR NONLINEAR ANALYSIS AND APPLICATIONS  
CENTRE FOR INDUSTRIAL ROBOTS AD FLEXIBLE FABRICATION LINES
- » **CNCSIS acknowledged research centres** in 2003-2006: 8
- » **University acknowledged research centres:** 22

There are also two specialised structures included in the technology and innovation transfer, which provide the interface between the academic research and the social, economic and cultural environment in the region:

- *Centre for Innovation and Technological Transfer (CITT)* – a centre that offers a wide range of consultancy services in innovation.
- *Centre for Technological Transfer INCESA* – an accredited POSDRU centre "Interuniversity Virtual Community for Science, Technology, Innovation and Intellectual Property Improvement".

Two projects have been financed through the Sectoral Operational Programme: "Increase of Economic Competitiveness":

INCESA (RESEARCH -  
INFRASTRUCTURE FOR APPLIED  
SCIENCES), 45.000.000 lei irredeemable  
funds, under implementation.



OLTENIA GRID CENTRE, 1.494.000 lei irredeemable funds, finalised in 2011.





### 3. PRIORITY DOMAINS OF THE RESEARCH ACTIVITY

Taking into consideration the priority domains included in the National Plan for Research, Development and Innovation II (PNCDI-II), namely the Community Programme (PC7) of the European Union, the University of Craiova has established the following **priority domains** in the research activity:

1. nanosciences, nanotechnologies, new materials and new technologies for production;
2. information and communication technology;
3. energy;
4. environment;
5. transport;
6. food, agriculture and biotechnologies;
7. social, economic and humanities sciences.

**Main research themes** approached by the UCV specialists:

Main Fields	Example of Research Themes
<b>Exact sciences</b>	<i>Mathematics and Informatics:</i> Mathematical methods with application in informatics; Methods for intelligent calculus; Controlling and stabilising the equations and equation systems with partial derivatives; The asymptotic behaviour of the solutions to the evolution equations; The numerical analysis of some evolutionary processes; Dynamic studies and branching in dynamic systems in economy and biology; <i>Chemistry:</i> Electrochemistry and corrosion, Nanostructure hybrid materials, Analytical control of environment quality. <i>Physics:</i> Mathematical and theoretical physics; The anomalous transport in plasma; Experimental methods in material science.
<b>Social and economic sciences</b>	<i>Economy, finance and management:</i> Data analysis and knowledge automatic extraction; Intelligent systems for business; Strategic approaches with effect on the competitiveness; Economic and financial processes at the macroeconomic and microeconomic level; Specific principles and particular aspects on accounting informational system at the microeconomic level. <i>Social sciences, philosophy:</i> The demographic tendencies on the Romanian society; The labour market needs and the potential of the active persons during the economic crisis; Occupational interests of adolescents and youth population; Relationship between theology and philosophy; Geographical database of Craiova and periurban area; Dictionary of political personalities in historical Oltenia; News collecting, editing and paging. <i>Law:</i> Law system between stability and reform; European Union Law Enforcement.



Main Fields	Example of Research Themes
<b>Human sciences</b>	<p><i>Letters:</i> Contemporary Romanian or foreign language; History of Romanian Literature; General and contrastive linguistics; Postmodernism in Romanian literature; Pragmatics of the literary discourse; Cultural history and theory; Communication Theory and sociology; Media communication, Media discourse, Media literature; Social and Cultural Anthropology, Urban anthropology; general sociology, Mass-media and social communication.</p> <p><i>Arts:</i> Studies, experiments and creation in shows; Theatrical anthropology and cultural management; Research and studies in musicology;</p> <p><i>Theology:</i> Christology of the first centuries; Spirituality of the Christian monachism in the IVth - VIth century; Human rights from the perspective of the Orthodox Church; Theology and Philosophy in Saint Dionysius the Areopagite's work;</p> <p><i>Physical Education and Sports:</i> Educational alternatives in Physical Education and Sports; The Sport Impact on the personality; Management and marketing in sport; Walk Evaluation by means of non-invasive methodologies; Global and analytical assessment in neuro-muscular diseases; Assessment and monitoring of the physical exercise effects on the metabolic syndrome; Study of the muscular training on the muscular tonus;</p>
<b>Engineering sciences</b>	<p><i>Electrical engineering:</i> Energy; Environment; Innovative processes and products in electrical engineering; Computer-based engineering; Transports; Industrial Management.</p> <p><i>Mechanical engineering:</i> Mechatronic systems applied in minimally invasive surgery; Biomechanics and bionics; Burning of inferior solid combustible with non-pollutant technologies; Analysis of structural integrity at normal and low temperatures; Precision and quality of the complex forms generated by cutting; Energetic efficiency in hydraulically driven systems;</p> <p><i>Systems, computer and communication engineering</i> (electrical machines and electrical operating systems, including real time systems and integrated systems; Mechatronics and robotics; Intelligent structures for communications: The RFID technology applications, applications with low power radio modules, modules for multimedia interactive training; Multimedia applied in medicine; Distributed intelligent systems and E-learning systems; Complex applications in computer networking in heterogeneous environment.</p>
<b>Agricultural and horticultural sciences</b>	<p>Determining the ecologic adaptation capacity of some agricultural and horticultural species under climate change conditions; Evaluation, preservation and use of the biodiversity for agricultural sorts improvement; Durable, qualitative agriculture; Pollutant substances and agricultural ecosystems; Interdisciplinary research on the thermodynamic assessment and monitoring of pollutant processes and stress factors in the agro-alimentary domain; Interdisciplinary research on the thermodynamic assessment and monitoring of technological equipment/machinery and processes in the food industry</p>

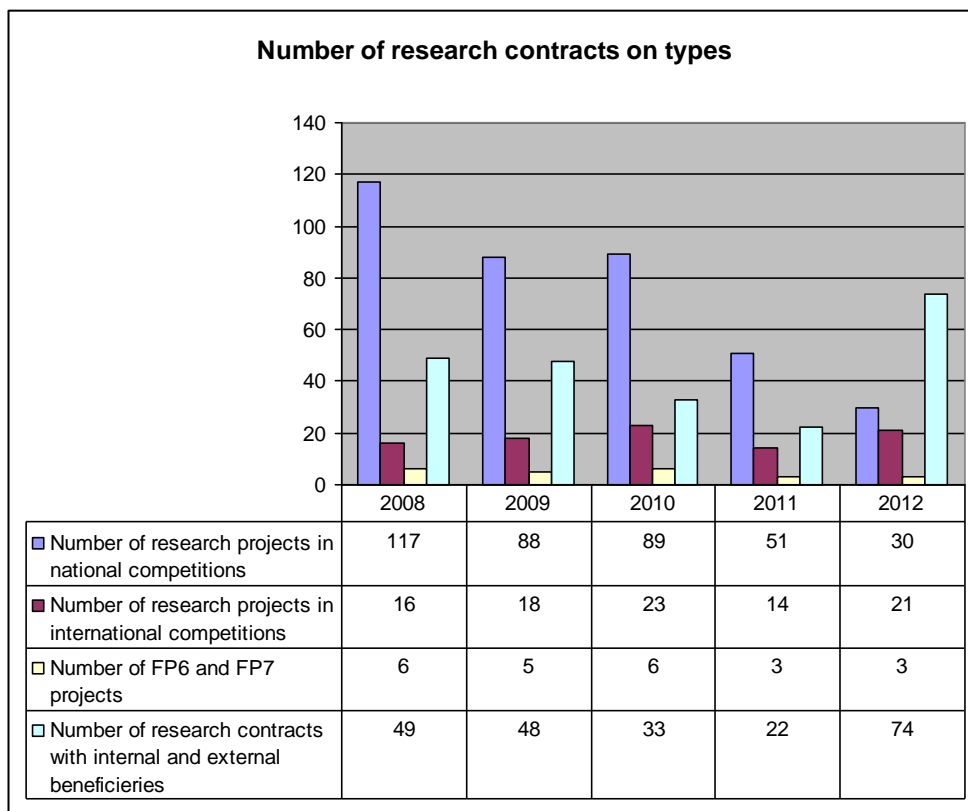




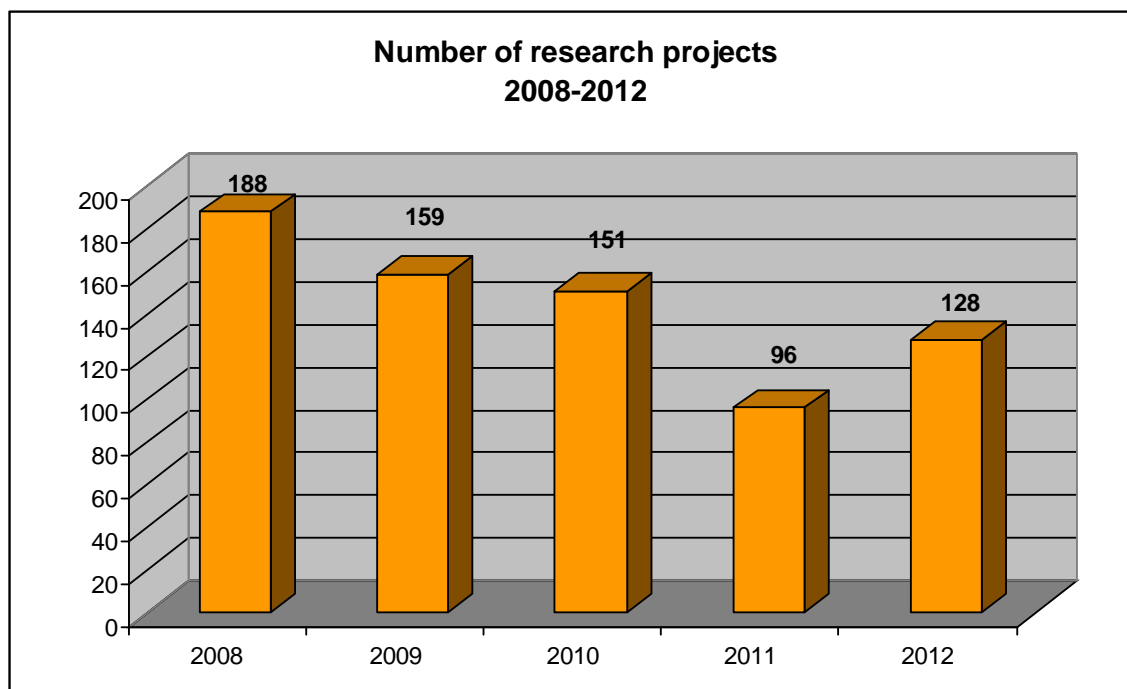
#### 4. SCIENTIFIC RESEARCH ON CONTRACTUAL BASIS

According to the type of programme, the running projects fall into:

- Exploratory research projects, IDEI type: 4
- Research projects for involving young teams, TE: 4
- Postdoctoral research projects, PD type : 5
- Research projects Partnership type : 7
- Other types of projects in national competitions: 10
- Research projects FP7 type: 3
- Other projects in international competitions: 20



Year	Projects won in national competitions		Projects won in international competitions		Projects with internal and external beneficiaries		Total	
	Number of topics	Value (lei) (4,5lei/€)	Number of topics	Value (lei) (4,5lei/€)	Number of topics	Value (lei) (4,5lei/€)	Number of topics	Value (lei) (4,5lei/€)
2008	117	14,337,662	22	1,073,514	49	903,614	188	16,134,790
2009	88	6,605,341	23	1,273,367	48	1,430,554	159	9,009,262
2010	89	7,804,192	29	1,392,540	33	1,028,122	151	10,224,854
2011	51	6,265,138	23	2,175,727	22	412,278	96	8,987,753
2012	30	5,028,436	24	1.781.135	74	1.009.659	128	7,819,230



Among the economic agents beneficiaries of the research results we mention:

**National companies:**

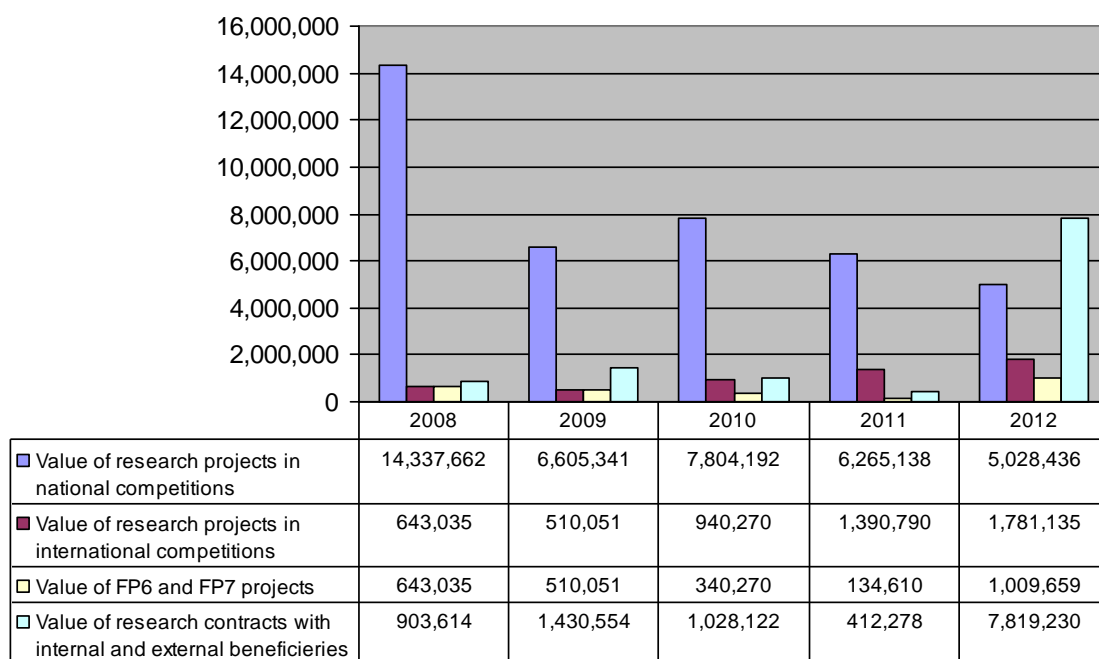
Oltchim SA, Transelectrica SA, Complexul Energetic Turceni SA, ALRO Slatina, ICEMENERG Bucharest, etc.

**International companies:**

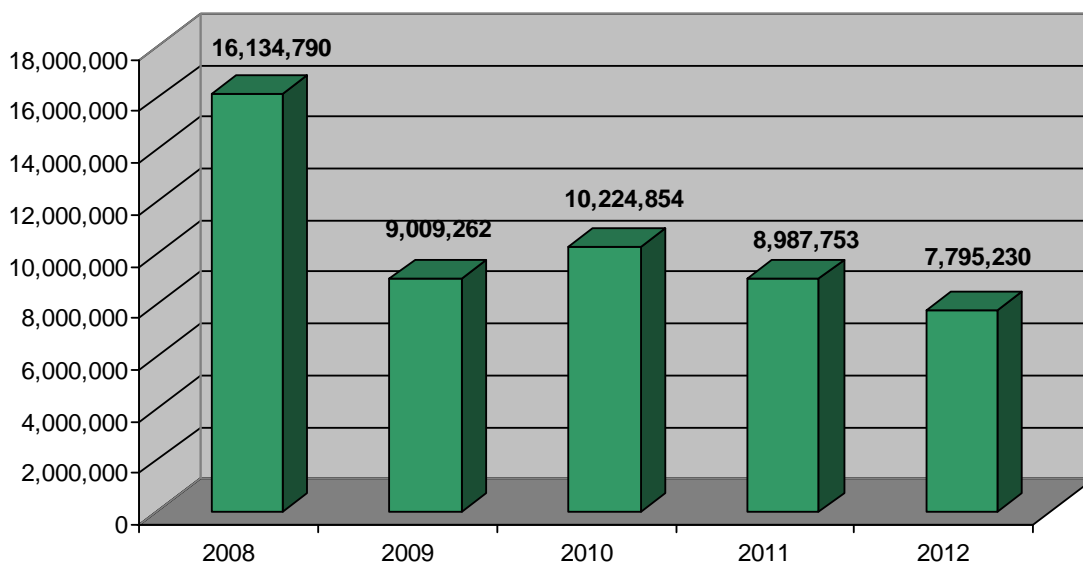
Pirelli Tyres Romania, Group Renault Romania, SARL France Prestations, CIPRA-AISBL Brussel, Alnarp Suedia, Cummins Generators Technologies Romania, Ford Romania, etc.



Value of research contracts on types



Total value of research contracts 2008-2012 (lei)





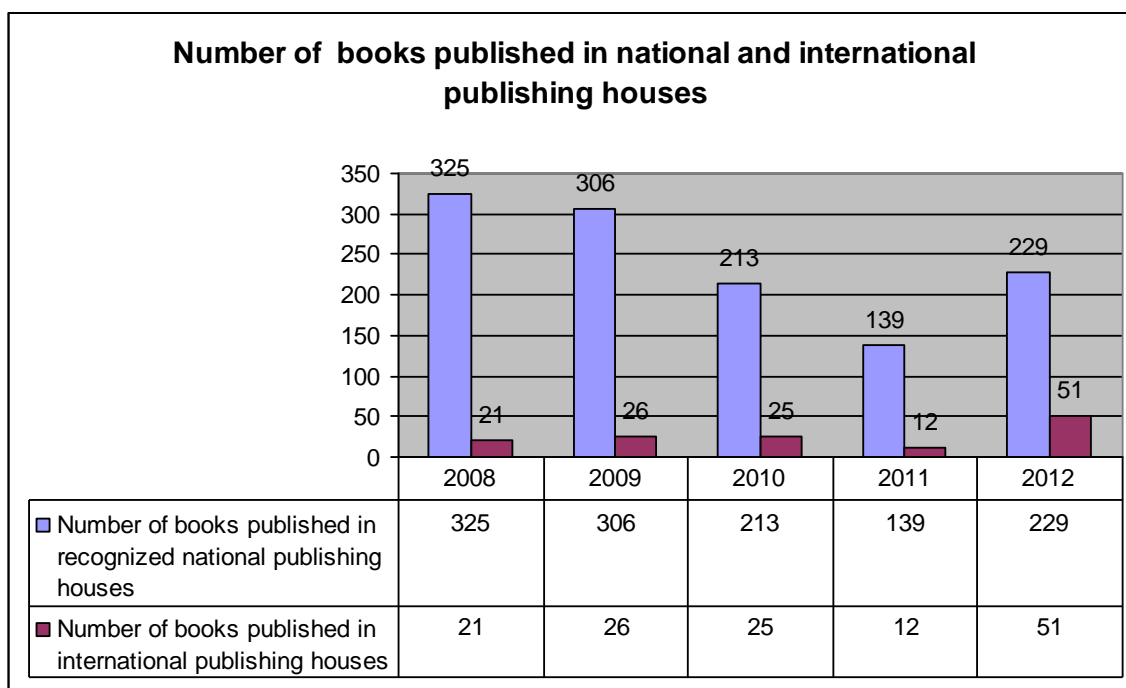


## 5. DISSEMINATION OF RESEARCH RESULTS

The dissemination of research results between 2008-2012 through published books, scientific research papers, patents and intellectual property products is illustrated in the following tables and diagrams.

### Books published between 2008 and 2012:

Anul	No. of books published in recognized national publishing houses	No. of books published in international publishing houses
2008	325	21
2009	306	26
2010	213	25
2011	139	12
2012	229	51

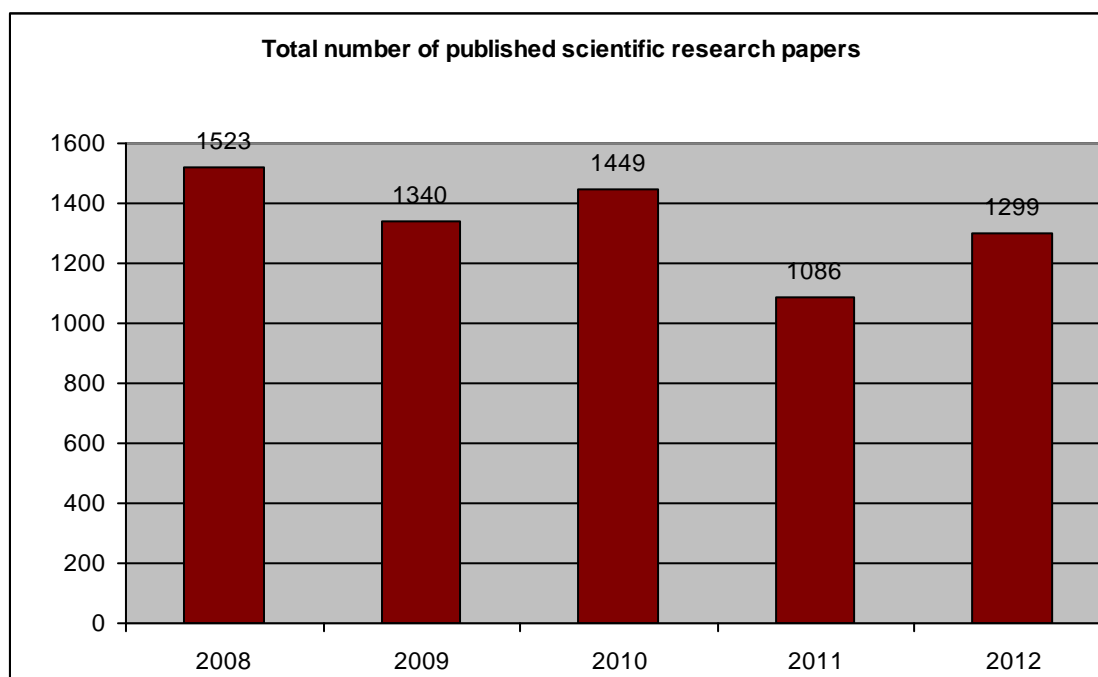


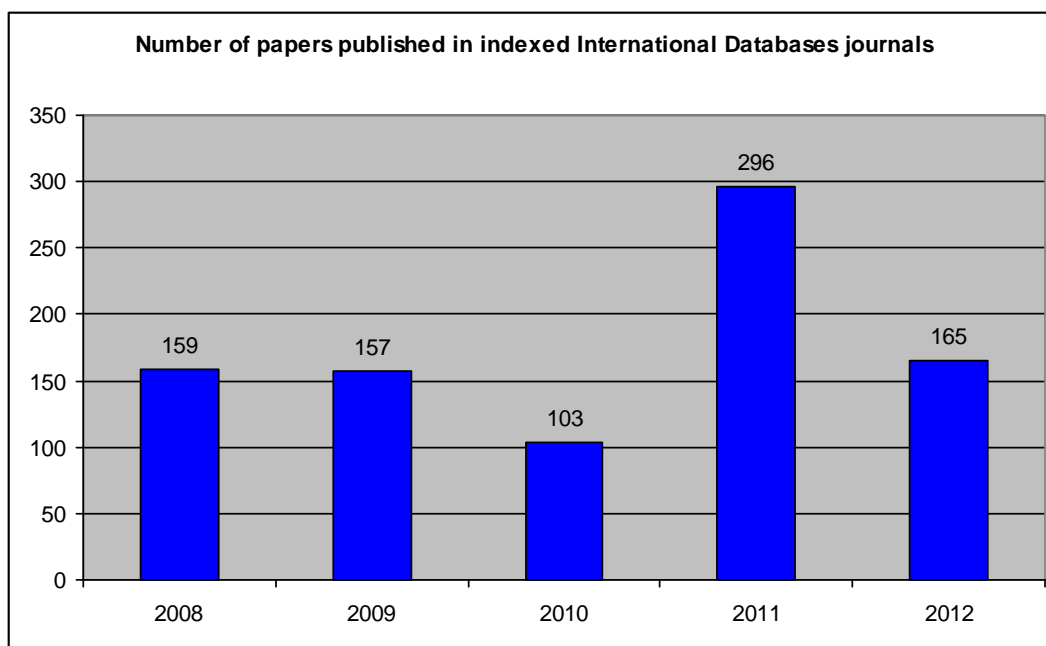
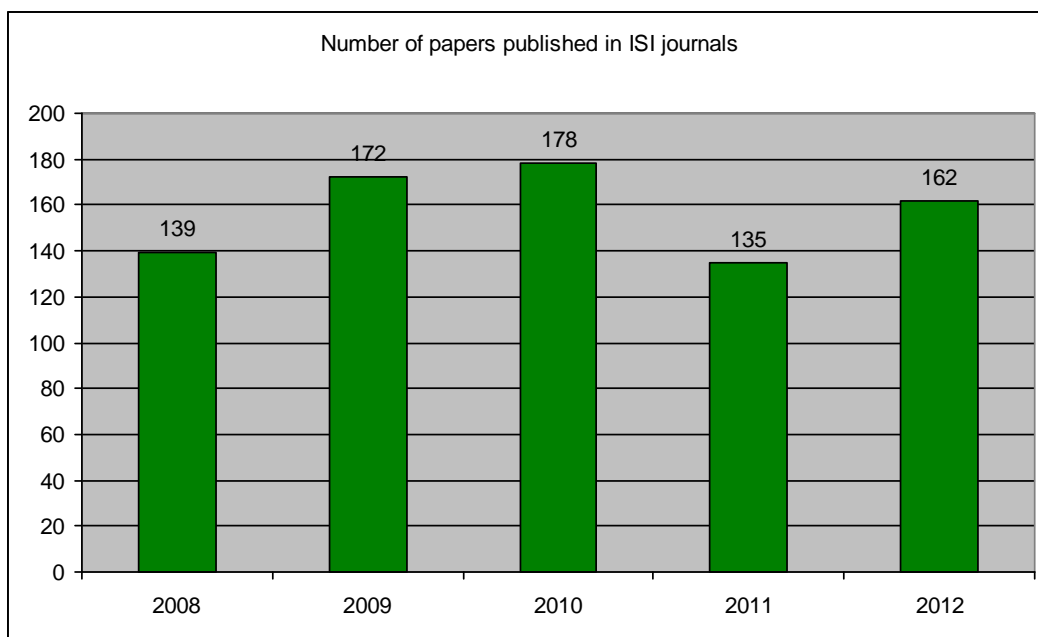


### Research papers published between 2008 -2012

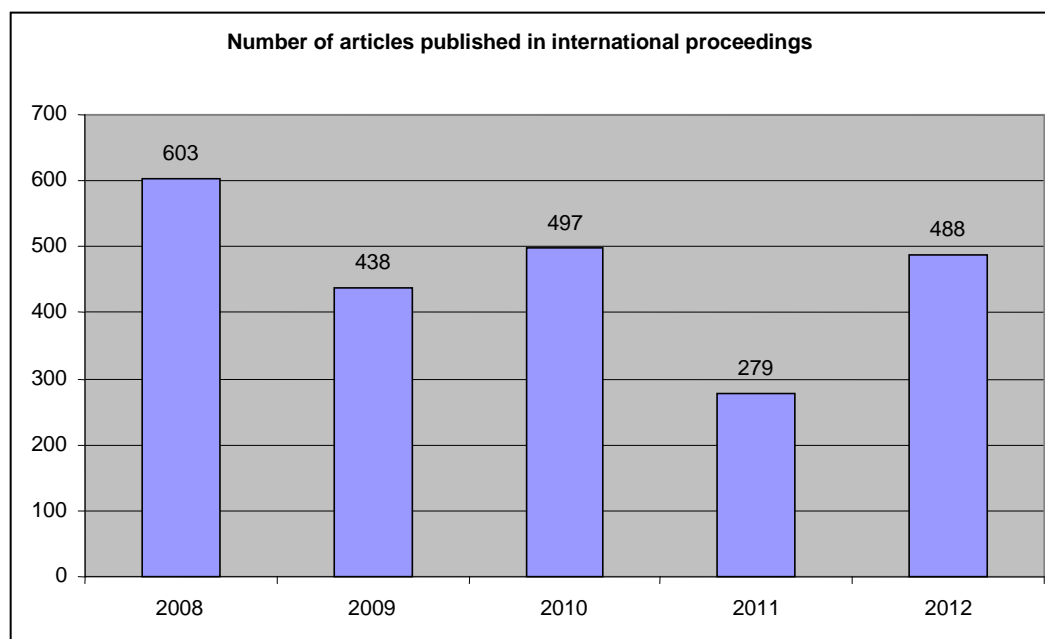
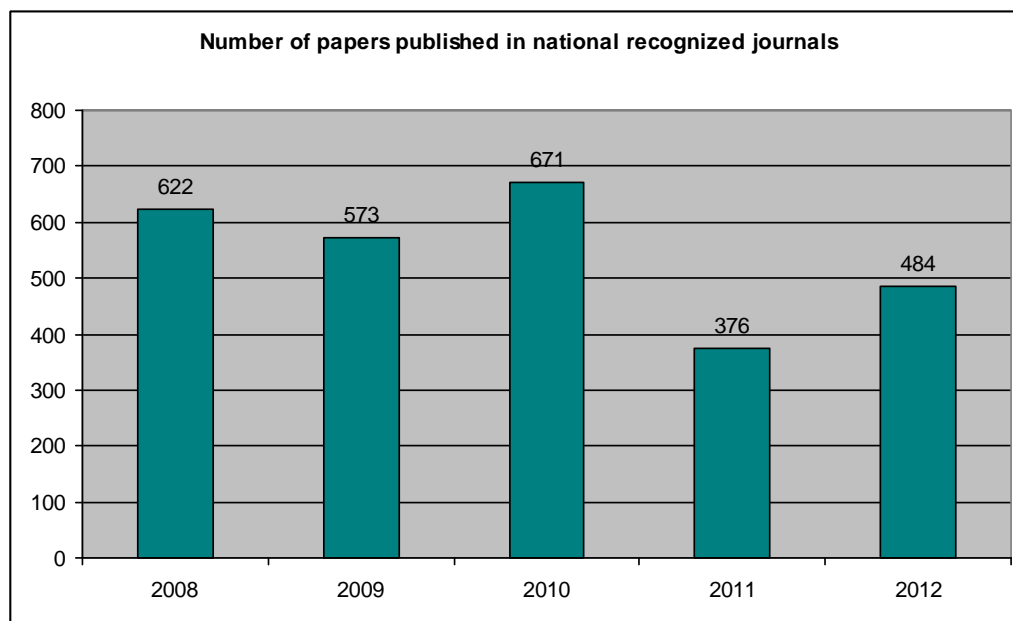
The dynamics of the dissemination of research results through scientific research published papers can be illustrated as follows:

Year	No. of papers published in ISI journals	No. of papers published in journals indexed in International Databases	No. of papers published in national recognized journals	No. of papers published in international proceedings	Total
2008	139	159	622	603	1523
2009	172	157	573	438	1340
2010	178	103	671	497	1449
2011	135	296	376	279	1086
2012	162	165	484	488	1299



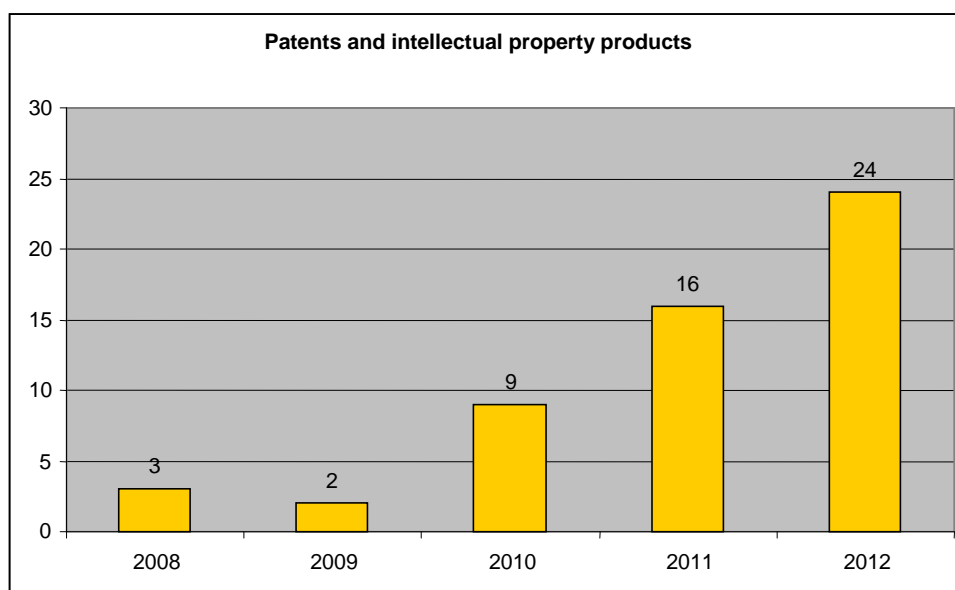






### Patents and intellectual property products

Year	No. of patents and intellectual property products
2008	3
2009	2
2010	9
2011	16
2012	24



## 6. DOCTORAL RESEARCH

Three Doctoral Schools function in the University of Craiova with 26 domains:

- **Exact Sciences:** Physics, Chemistry, Mathematics, Information
- **Engineering:** System Engineering, Energetic Engineering, Mechanical Engineering, Electrical Engineering, Materials engineering, Industrial engineering, Computers and Information Technology, Mechatronics and Robotics, Automation, Agriculture, Horticulture
- **Social Sciences and Humanities:** History, Law, Philology, Sociology, Economy, Cybernetics and Statistics, Finance, Accountancy, Economy and International Business, Management, Theology.

### Completed Ph.D. theses

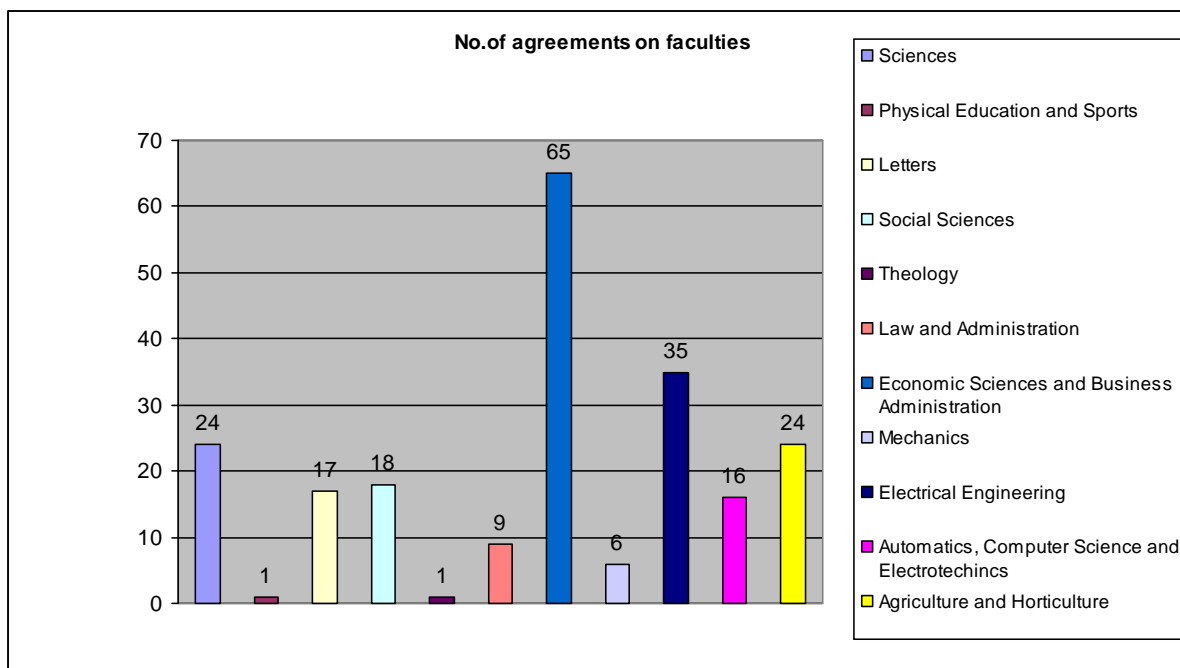
Year	No. of theses
2007	110
2008	82
2009	164
2010	152
2011	174



## 7. COOPERATION WITH ECONOMIC AND SOCIAL ENVIRONMENT

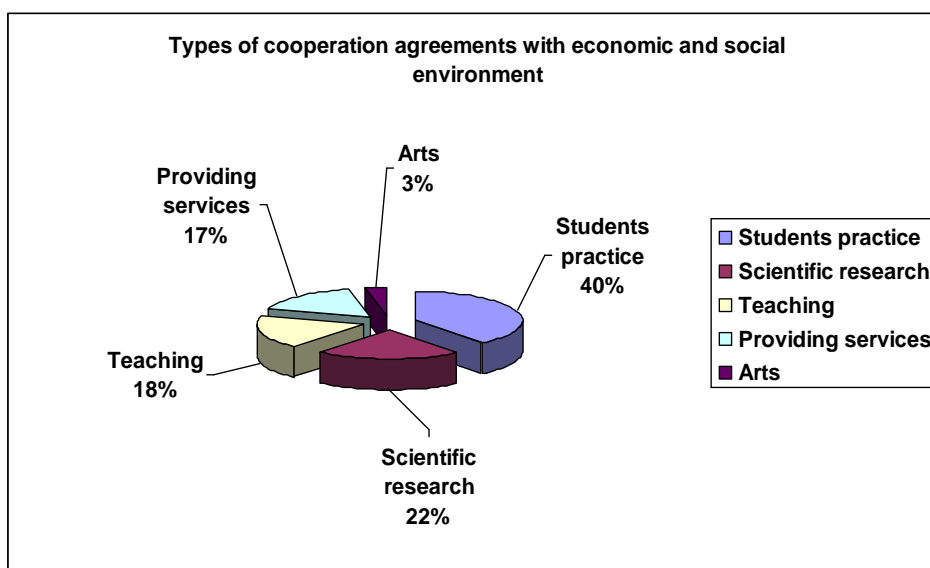
The **University of Craiova** favours the development of investments in the human resources and the prevention of social exclusion, by correlating the education offer with the needs for a durable advancement, starting from the analysis of the three basic pillars: economic development, social development and environment protection. The priorities of the business companies led to an exploitable knowledge transfer converted in products and services. The university adopts a much wider approach to the social and economic environment, based on a understanding of the needs of the potential training beneficiaries.

**At the university level, cooperation agreements** have been concluded for the students' practical training, scientific research, services provision for IMM (small and medium-sized companies), multinational companies, well-known companies, such as Pirelli Tyres Romania, Renault Technologie Roumanie, S.C. IPA CIFATT Craiova, Popeci Utilaj Greu S.A., Cummins Generator Technologies, S.C. Automobile Dacia S.A. etc.



In accordance with the objectives and activities included in the cooperation agreements, these can be presented as follows:





**Actions carried out in order to consolidate the collaboration with the social and economic environment:**

- Organization of the *Regional Economic Forum*;
- Meetings with the representatives of the economic environment in the South-West Oltenia region;
- Workshops with representatives from the social-economic environment in order to build competitiveness poles;
- Preparation and organisation of individualised internships for the elaboration of graduation papers/dissertations based on topics proposed in collaboration with the social, economic and cultural environment;
- Education offer tailored in accordance with the needs on the labour market;
- Programmes and projects financed with European funding; collaboration projects with economic agents from the country or from abroad that would comply with the priority axes of the Agence Universitaire de la Francophonie (i.e. professional insertion, internships for Bachelor's programme, and research internships for Ma and PhD students).
- Participation in project activities centred on job-related matters, employment opportunities and labour market access facilitation for the students.

In 2012, University of Craiova participated as partner in four proposals willing to establish **competitiveness poles in the region** in the frame of EU Sectoral Operational Programme "Increase of Economic Competitiveness" (POS CCE). The four proposals are

- *TurOlt InTT* - Tourism Innovation and Traditions in Oltenia
- South-West Oltenia Automotive
- *Integrated automation Systems*
- *INOVTRANS* – Innovation in transport.

# *Notes*

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