



**OFFER SCIENTIFIC RESEARCH**

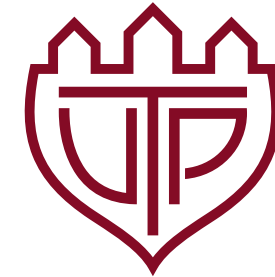
**FACULTY  
OF MANAGEMENT**

**FOR INDUSTRY**

**UTP University of Science and Technology  
in Bydgoszcz**

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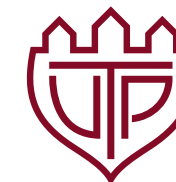
UTP University of Science and Technology  
in Bydgoszcz

**Offer Scientific Research  
Faculty of Management  
for Industry**

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## 1. General Information

The Faculty of Management was established on 1<sup>st</sup> September 2007 pursuant to the Rector's order No. 33/2006/2007 of 30<sup>th</sup> August 2007. The Faculty members pursue a wide range of interests and display the ability to combine academic knowledge with acquired skills, exercise interdisciplinary cooperation and respect the humanistic aspect of life of the individual. Continuous and versatile development is essential to the current academic staff of the Faculty. Considerable academic record is complemented by extensive cooperation with numerous specialists representing the scientific and practical potential on the regional, national and global level.

Research activity of the Faculty is a continuation of the University's previous programs concerning crucial economic and social problems. The strong ties between the Faculty of Management and business practice are reflected in numerous evaluations, opinions, analyses



and programs prepared for business and budget entities and other organisations as well. The key areas of the Faculty members' competencies are both research problems concerning the management of organisations and research on issues vital to the business environment of the said organisations.

The external relations of the Faculty are realised based on the provisions of the University's Mission Statement and Development Strategy, which have been included in the strategy of the Faculty of Management. The impact on the economic and social life of the region is primarily exerted through the cooperation with local government institutions, Governor of the Kujawsko-Pomorskie province, President of Bydgoszcz and other national and regional institutions of economic and social life. It has been reflected in the realisation of projects financed by the European Social Fund, many of which have been completed with distinction, such as the EQUAL project aimed at job activation in backward regions through unemployment mitigation. The Faculty members partake in joint projects and works of task teams, scientific associations and social organisations, economic and science and technology commissions as well as participate in the realisation of projects dedicated to the city of Bydgoszcz and Kujawsko-Pomorskie province. The contribution of the Faculty of Management to business practice is also realised by means of the student internship program which, especially in the case of Engineering Management major, has been designed in such a way to ensure that Faculty graduates become competent employees for the institutions where they served their internship. Another instance of relationship with business practice is the cooperation with representatives of companies and their branch unions as part of research projects (for example FP 6 FORWARDS), realisation of research vouchers and preparation of applications for new research

and development projects, in which case the managers' expertise in the demands of the executives is invaluable when formulating the aims and effects of projects undertaken by research teams.

## 2. Structure and contact details of the Faculty of Management

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## 3. Research areas of the Faculty of Management

The research areas investigated by the members of the Faculty of Management include the following issues:

1. Processes of Poland's economic development in comparison with other countries of EU.
2. Structural, including sectoral and territorial, determinants of economic development.
3. Processes of economic convergence and divergence (from an international, regional and local perspective).
4. Developing and backward areas in Poland; multifactorial national analysis in the system of communes, including cities and rural areas of high, medium and low level of economic development.



5. Factors of economic development including non-material resources, e.g. human and social capital.
6. Level and quality of life in regional and international perspective.
7. Consumption and consumer behaviour on the market.
8. Analysis of various goods and services markets, including ecological products markets.
9. Management of enterprises of various branches, including manufacturing and service enterprises, health care units and governmental organisations.
10. Social responsibility of enterprises and increasing their market competitiveness.
11. Networking in the development of entrepreneurship and concepts of territorial organisation of business activities.
12. Economic and structural policy on various levels of territorial organisation.
13. Tax system in Poland and other countries of EU.
14. Market analysis, product management and customer satisfaction measurement.
15. Legal issues concerning consumer rights protection after Poland's accession to the European Union.
16. Legal and organisational issues concerning concentration of merges and takeovers of economic organisations.
17. Competition law and economic competition on the market.
18. New business contracts in international commodity turnover,

leasing, factoring, franchising.

19. Legal aspects of initiating and conducting economic activity by national and foreign business entities on the territory of EU.
20. Penal responsibility pertaining to the conduct of business activities.
21. Restructuring and privatising enterprises.
22. The influence of EU legislation on member states in respect of exercising the freedom of economic activity and free movement of workers, goods and services.
23. Modelling of IT systems supporting activity-based costing (ABC) and activity-based management (ABM).
24. Application of business intelligence systems in management accounting and controlling.
25. Decision support systems in agriculture and agribusiness.
26. Application of artificial intelligence and expert systems in production management.
27. Computer methods of enterprise operating system management.
28. Marketing strategies of enterprises, particularly on goods and industrial services markets.
29. Dynamic model of strategy creation taking into account market volatility.
30. Competitive advantages - areas and means of their formation.
31. Innovation maturity and means of its creation.

32. Quality management.
33. Knowledge management.
34. Leadership.
35. Strategic management instruments in an enterprise.
36. Management of intellectual capital of enterprises.
37. Management of settlements between enterprises.
38. Financial management, finance and banking, economic and financial analysis of business entities.
39. Enterprise management strategies on professional services market.
40. Globalisation and internationalisation of enterprises.
41. Change management.
42. Marketing strategies.
43. Methods and techniques of marketing research.
44. Theory of capital structure.
45. Processes of obtaining sources of enterprise financing.
46. Financial analysis of enterprises.
47. Capital market development in Poland.
48. Financial analysis and utilisation of elements of accounting for enterprise operating efficiency improvement.



## 4. Research offer of the Faculty of Management

The research offer of the Faculty of Management encompasses the following problem areas:

### 1. Marketing research and market analysis:

- Design of specific marketing research.
- Conduct of marketing research covering:
  - ▶ branch analysis (including market competitors),
  - ▶ company location choice (sales venues)
  - ▶ sector sales analysis and demand analysis,
  - ▶ marketing testing of products introduced onto the market,

- ▶ customer research (including, for example, satisfaction, loyalty, loss of key customers, etc.),
  - ▶ brand and brand market position research (including brand awareness,
  - ▶ brand loyalty, etc.),
  - ▶ research of advertising campaign effectiveness and effectiveness of other promotion activities,
  - ▶ price research and analyses.
- Analysis and development of marketing research results.
  - Consulting in marketing decision finalisation (including crisis decision making).

## 2. IT-supported enterprise management:

- Analysis and evaluation of an IT system functioning in an enterprise.
- Enterprise audit in respect of preparation for implementation of a new IT system.
- Consulting in the choice of management-supporting IT systems.
- Expertises on determining the causes of IT system implementation failure.
- Development and implementation of decision support tools and systems and knowledge management systems.
- Development and implementation of expert systems employing artificial intelligence methods in production management.

- Decision support systems encompassing: tools for restructuring and adaptation processes in enterprises, application of IT support in enterprise management (including, for example, application of artificial intelligence methods and expert system in production management) production processes management in agribusiness enterprises.
- Methods of Modal Analysis as non-invasive procedures and means enabling to determine the deterioration level of material and building segments without damage to the tested constructions and materials.
- IT management systems in management-supporting production engineering and utilisation of tangible assets basing on latest IT solutions.
- Methods of development for quality purposes - their application in the phases of identification of needs and formulation of requirements, in development of goods and processes and in production preparation.
- Methods of quality control and management - applied mainly in production.
- Technology transfer between universities and industry - USA as the model example.
- Support of decisions concerning energy production form biomass.
- Creation of new management models and modification of traditional ones.
- Enterprise competitiveness - areas and methods of competitive advantage creation, search for the model of the 21st century.

ry enterprise.

- Innovations and enterprise marketing management.

### **3. Controlling and management accounting:**

- Enterprise audit in respect of preparation for implementation of operational controlling systems and management accounting (operational budgeting, activity-based costing, etc.).
- Analysis of the applied cost and revenue accounting system in respect of evaluation of the possibility to obtain information necessary for a multistage analysis of financial feasibility.
- Evaluation of suitability and implementation feasibility of an activity-based costing model.
- Development and cooperation in implementation of an activity-based costing system.
- Development and cooperation in implementation of a multi-stage contribution margin analysis utilised for financial feasibility evaluation.
- Development of systems for cost calculation and financial feasibility analysis based on the Excel Spreadsheet.
- Consulting in the choice of IT tools for supporting controlling and management accounting.

### **4. Innovations in enterprise management in a dynamic environment:**

- Search for and defining innovation niches of the largest area of competitiveness.
- Development of technical solutions in the sphere of products and technologies with the usage of individual invention algorithm.
- Development of innovative venture plans.
- Evaluation of development investment economic efficiency.
- Consulting in innovation teams building and operating.

### **5. Project management and evaluation research:**

- Evaluation research of, among others, social, infrastructural and banking projects.
- Development of monitoring and evaluation systems.
- Development of risk management systems.
- Cooperation in preparation of project applications financed by the European Union and other sources.

### **6. Support of management in agri-food sector units:**

- Evaluation of applied solutions to logistical problems in units and supply networks of agri-food sector.
- Development and cooperation in implementation of logistical solutions for enterprises of agri-food sector.
- Evaluation and implementation of quality systems in agri-food sector units.

- Consulting in waste management.
- Consulting in management of ecological products brands.

### 7. Business environment research:

- Business environment analysis including current changes (especially changes in the value system and their concomitant socio-economic trends, changes in the European political culture and in intercultural communication).
- Analysis of financial markets behaviour functioning and behaviour.
- Analysis of mechanisms and processes accompanying the implementation of economic reforms.

### 8. Sustainable and multifunctional development:

- Cooperation in creating regional development strategies, including rural areas development.
- Cooperation in creating development strategies for communes and provinces.
- Conduct of research on regional and local development.
- Creation of enterprise development strategy.
- Statistical analyses.

## Training offer of the Faculty

### Application of integrated ERP class systems in management:

- Structure of integrated systems and their role in management.
- Supply and inbound logistics: determination of material needs, creation of product inventory, creation of order documents and material supply receipts, warehouse tracking system, supply and shipment management.
- Customer service and outbound logistics management through the creation of inventory of counterparties, goods orders acceptance, order fulfilment tracking, order picking for recipients and freight forwarding.
- The course of production process planning and managing through planning of orders, material needs, production capacity, including analysis of accumulation of material, technical and human resources over a period of time; production orders balancing and accounting.
- Management of finances and accounting through analysis of account settlements with recipients combined with sales management and active debt collection, payables management, accounting of registered business operations, creation of basic accounting statements: trial balances, account record, ageing structure of receivables and payables, journals of accounts.
- Improvement of costs and results account, improvement of advanced finance and capital management by securing current capabilities of creating a profit and loss account and ratio analyses used in: decision processes, creation of balances

and cash flow statements, choosing between various sources of credit and variants of capital surplus investment.

- Improvement of human resources management through: updates of employee records, parametrisation of remuneration and deduction calculations on the salary sheet, output analysis of staff qualifications, analysis of planned absences in respect of preservation of work continuity in the enterprise.

### **Application of the Microsoft Excel spreadsheet in Management:**

- Basics of Microsoft Excel spreadsheet operation.
- Microsoft Excel in management.
- Microsoft Excel in management of public administration units.
- Microsoft Excel in management of costs and financial feasibility:
  - ▶ calculations of costs and sales prices,
  - ▶ calculations of costs according to Activity-Based Costing (ABC),
  - ▶ multivariate profit planning in a trade and a production enterprise with the utilisation of Scenario Manager,
  - ▶ cost assessment, budget establishment and displacement analysis,
  - ▶ financial feasibility analysis with the use of multistage contribution margin analysis,
  - ▶ multidimensional cost and revenue analyses conducted with the use of pivot tables,

- ▶ cost, price and profit optimisation with the use of the Solver tool,
- ▶ applications Microsoft Excel financial functions.

### **Other IT trainings:**

- Statistical data analysis.
- Operation of the, Regional data bank' database.
- Electronic signature.

### **Project Management:**

- Project Manager.
- Monitoring and evaluation of projects.

### **Soft skills training:**

- Human resources management (recruitment elements, employee traits, utilisation of all interests and skills of employees in increasing work efficiency, performance of employee and manager/executive tasks, educational competences of managers, etc.).
- Interpersonal communication.
- Organisational behaviour (group, conflict, teams, efficiency-boosting factors, etc.).
- Organisational culture.
- Problem solving and decision making.
- Motivation elements of negotiation (increasing efficiency, eva-

uation, reassignment, post change, change of responsibilities, etc.).

- Business coaching.
- Interpersonal coaching.
- Psychological consultations (job burnout, relaxation methods, depression, intrapersonal and interpersonal communication hindering work, recognising strengths and weaknesses and using them at work, addictions, etc.).

## 5. Profile of Laboratories of the Regional Centre for Innovation (RCI II)

As a part of the 'Regional Centre for Innovation - stage 2' project, the University of Technology and Life Sciences in Bydgoszcz has created 4 specialised research laboratories:

- Laboratory of Financial Accounting Systems and Human Resources Management.
- Laboratory of Management Accounting Systems and Controlling.
- Laboratory of Production, Logistics and Customer Service Management Systems.
- Laboratory of Business Intelligence Systems.

The aim of establishing the laboratories was to create conditions for enhanced transfer of knowledge and expertise from the sphere of

research and development to enterprises of the Kujawsko-Pomorskie province. The laboratories are suited for the conduct of enterprise-dedicated research, preparation of alternative solutions for computer-assisted enterprise management and realisation of joint projects.

The laboratories of the Faculty of Management have been equipped with high-class computer hardware as well as IT tools and systems for the support of management both in the sphere of day-to-day enterprise operations and strategic and tactical decision processes.

The Laboratory of Financial Accounting Systems and Human Resources Management is equipped with up-to-date computer hardware and audiovisual and video conferencing systems. The laboratory offers 4 workstations for cooperation with small and medium enterprises of various branches.

We also utilise specialised software (Simple ERP) which is a cutting-edge tool enabling cooperation with enterprises. It covers two areas of management activities:

1. The first concerns financial accounting, where the laboratory supports enterprises in managing their finances in full compliance with particular requirements of the Polish legal system, especially the Accounting Act and tax provisions.
2. The second area is staff management, where we can support Human Resources Management in the most important aspect of operating of every enterprise, with particular emphasis on staff efficiency increase and implementation of organisational improvements. We also offer full human resources and payroll management in compliance with the provisions of labour law.

The laboratory of Management Accounting Systems and Controlling has at its disposal a number of specialistic applications developed in the On-line Analytical Processing (OLAP) technology, dedicated to operational budgeting support, cost calculations and analysis of financial feasibility, as well as strategy management with the use of balanced scorecard (BSC). Apart from presenting the functionality of applications on real-life examples illustrating models for enterprises of various branches, the laboratory provides services in developing models of budgets, activity-based costing and financial feasibility analyses, as well as models of Balanced Scorecard.

The laboratory's offer dedicated to business encompasses the following services:

1. Presentation of the application of specialistic software in the development of budget models and of budgets themselves (development of budget variants, development of budgets on the basis of historical data, etc.), development of models of activity-based costing and evaluations of financial feasibility, as well as development of models of balanced scorecard.
2. Presentation - based on the developed examples of referential models - the applications of OLAP tools and tools for visualisation, reporting and analysis of data on operational and strategic controlling.
3. Development of referential models of activity-based costing, budget, balanced scorecard for hypothetical enterprises of various sectors and branches.
4. Development of a 'zero' model (activity-based costing, budget, balanced scorecard) for a specific enterprise in course of a close cooperation with that enterprise.



5. Computer implementation of the model (jointly developed or supplied by the enterprise) along with performance of calculations upon the provision of necessary data.
6. Development of decision models for management accounting and controlling within the framework of a spreadsheet.

The Laboratory of Production, Logistics and Customer Service Management Systems operates on integrated ERP and CRM class systems, which support management in production, logistics and customer service. Entrepreneurs considering changing or implementation of a new integrated IT system can review the functionality of various software packages. Apart from presentation of various possibilities of supporting management with the use of integrated systems the Faculty offers consulting and development services in adjusting universal software packages to the requirements of a specific enterprise.

The Laboratory of Business Intelligence Systems has been equipped with universal software designed for advanced data analysis (statistical analyses, OLAP multidimensional analyses, data mining, text mining). The laboratory provides services in developing statistical, econometric, prognostic and optimising models, as well as models of OLAP multidimensional analyses, data mining and text mining models concerning particular requirements of various enterprises and dedicated to support of various areas of management.

## 6. Research equipment of the Faculty of Management

The laboratories are equipped with servers, stationary workstations and cutting-edge mobile workstations. The computers in our laboratory operate on the following software:

- SIMPLE ERP
  - ▶ software dedicated to the conduct of full financial accounting and human resources management,
- SIMPLE CRM
  - ▶ software supporting management in production, logistics and customer service;

- Profit Management System (PMS)
  - ▶ software for cost and financial feasibility management in compliance with methodology of BI class activity-based costing developed by ABC Akademia company (Poland);
- PROFIX
  - ▶ software for budgeting and BI class analyses with workflow mechanisms (Canada);
- Optico
  - ▶ software for budgeting and BI class analyses developed by BMM company (Poland);
- Result Scorecard
  - ▶ software for strategy management developed by OTTIMA plus company (Poland);
- Corporate Performance Management package for large organisations developed by SAS Institute company
  - ▶ SAS Strategy Management
  - ▶ SAS Activity-based Management
  - ▶ SAS Financial Management.

Furthermore, the Faculty offers a research version of the SPHINX 4.5 artificial intelligence package including, among others, the PC shell expert system.



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