Course title: OPERATIONS MANAGEMENT

Lecturers	Assoc. Prof. Martina Tomičić Furjan, Ph.D. Assoc. Prof. Igor Pihir, Ph.D. Ana Kutnjak, M. Econ. Larisa Hrustek, M. Econ.
Language of instruction	Croatian and English
Study level	Bachelor
Study programme	Information and Business Systems
Semester	2nd (summer)
ECTS	4
Goal	Introduction to basic organizational business processes and presentation of a company as a system. Study in detail business logic and algorithms of typical business processes. Systematize information, material and other organizational flows. Explain the role of the latest information and communication technologies in company's performing, analyzing, and managing business processes.
General and specific learning outcomes	1. Consolidate the business logic and algorithms for realization of typical business processes, and a model of business rules specific for a given business field in different organizations. 2. Formally describe, by using appropriate methods and techniques, basic business processes and their execution algorithms. 3. Compare the applicability of algorithms of particular process flows in a concrete case. 4. Analyze optimal solutions in a business environment and align the design of an organization with the architecture of its information system. 5. Recommend the application of adequate methods and algorithms for solving a business problem situation, and formulate the options for support, automation and improvement based on the application of ICT. 6. Apply techniques and methods of project management to information and communication technologies (ICT) development and implementation projects. 7. Define and quantify project goals and subgoals, and relate them to activities, including risk analysis and indicators. 8. Prepare a project execution plan (time plan of activity execution, budget, required human resources and communication plan). 9. Determine information and material flows linking business processes into a logical business technology. 10. Analyze a business process model and data model for a given business field.
Content	**1. Introduction to Operations Management.** Concept of an organization. Systematic, organizational and functional presentation of an organization. Basic transformational process and the relation of a company with its environment. Organization as a system, its processes as elements of the organizational system, information, material and other flows as relationships between the elements. **2. Product planning and selling.**

	Description of the planning process and product sales. Concept and phases of the sales cycle. Customer and buyer identification. Customer needs analysis and value proposition canvas creation. Demand forecasting as a technique of sales planning. Forecasting methods (method of time series and regression analysis). Measures of forecasting accuracy. Use of Excel for forecasting. Analysis of activities and data required to carry out sales planning. **3. Production and resource planning.** Description of production and resource planning. Technical and technological production planning: process and product design, generating basic technical and technological documentation, generating Bill of Materials. Operative production planning: Master Production Schedule, Master and structural data of materials, Bill of materials explosion. Independent and dependent demand, Material requirements planning, Planned order releasing as results of MRP. Analysis of activities and data required to carry out production and resource planning. **4. Production capacities planning and scheduling in real conditions.** Capacity requirements planning. Strategies of occupation of production capacities. Relationship between work order and workplace. Rational „lean“ production management. Methods of scheduling according to the number of jobs and the number of capacities needed for jobs. Optimal division of labor on one, two or more resources. Supervision of work done. Personnel scheduling. Analysis of activities and data required to carry out production capacities planning and scheduling. **5. Purchasing, stock and warehouse management.** Description of materials and production resources purchasing, Purchasing and stock management. Parameters of stock management. Models of stock management. Parameters of stock management. Stock costs. Minimal and maximal order quantities. Economic Order Quantity for different demand management models. Warehouse management. Technologies in warehouses. Warehouse management systems. Analysis of activities and data required to carry out Purchasing, stock and warehouse management. **6. Supply chain management.** Concept of supply chain. Supply Chain Management. Managing supply chain elements Role and significance of suppliers in the supply chain. Contemporary ICT in SCM. Global supply chains. Distribution of materials and goods through the supply chain. Basics of the Transportation problem. Analysis of activities and data required to carry out supply chain management. **7. Sales and operations planning.** Framework of sales and operations planning (S&OP). Methods for conducting a „game plan“ for allocation of capacities/resources and for determining strategies for demand fulfillment. Optimal production quantity in relation to production goals and resource constraints. Quantitative methods for S&OP. Costs determination for different production operative plans. Concept and general model of linear programming. Graphical model of linear programming – output mix problem in case studies. Analysis of activities and data required to carry out sales and operations planning. **8. Queuing and simulations.**

	Concept of mass serving systems and queuing in production. Elements of a mass serving system. Serving users in mass serving systems Single server model. Multiple server model. Applying simulations to optimize queues. Basics of Monte Carlo simulations. Analysis of activities and data needed to optimize queues and run simulations. **9. Project planning and time analysis.** Concept of projects and project planning. Project goal definition. Project team formation. Project planning through defining activities, project deliverables and project implementation responsibilities. Network diagram and Gant charts as a graphic presentation of project plans. Preceding's matrix. Rules of creating network diagrams. Project time analysis. Time calculation on the network diagram. Critical activities, critical path and project duration. Time reserves. Feedback and project supervision. Project implementation plan. Defining and quantifying project goals and objectives, and related activities, project deliveries and responsibilities. Computer tools for project planning and management. Analysis of activities and data required for project planning and time analysis. **10. Project examples, methodologies and certifications.** Examples of goals, sub-goals, activities and project deliveries of real life projects. Project application: project structure, resource and cost planning. Examples of project implementation plans (implementation timetable, budget, required human resources and communication and sustainability plan). Methodologies and certifications in project management. **11. Quality assurance in processes.** Concept of quality. Principles of total quality management (TQM). Quality costs. Product quality and service quality. Quality from the perspective of the manufacturer and the buyer or user of the product. Impacts of quality on productivity. Statistical quality control. Control cards and areas of application. Analysis of activities and data required for quality management. **12. Human resource management.** The concept of human resource management. Historical development of human resource management. Fundamentals of Job Design and workplaces. Development and trends in human resource management. Employees as a strategic enterprise resource. Analysis of activities and data needed to implement HR management. **13. Information systems for business process planning and implementation.** The role of information systems in the planning and implementation of business processes. Information technologies in product design, production process design, product manufacturing and business support. Overview of functional requirements for creating software modules in SW tools and reviewing existing tools to support business process planning and implementation. Review of the criteria for deciding whether to purchase or develop tools to support business process planning and implementation. **14. Development trends in operations management.** Actual development trends in the field of business process design, planning and implementation. The influence of development trends on the organization and the environment in which it operates. New information technologies and their application for improving business processes. The influence of new information technologies on the structure, culture and social system of organizations.

	15. Introduction into related disciplines: business process modeling, organizational performance measurement, digital transformation of organizations. Concept of business technology and business process modeling. Methods and models for measuring organizational and process performance. Frameworks and methods for digital transformation.
Exercises	Students solve problems and discuss examples connected to algorithms for particular business processes. Every unit of lectures is accompanied by seminars, enabling the students to apply the acquired knowledge on practical examples.
Realization and examination	written and oral exam
Related courses	1. Operations Management or Management of Operations in all business schools in Europe (e.g. Manchester Metropolitan University-Business School) and USA (e.g. University of Chicago- Graduate School of Business or MIT-Sloan).
Literature	Basic: Operations Management - course materials, available on the e-learning system. Additional: Russell, R.S., Taylor B.W.: Operations Management, John Wiley and sons, USA, 2011. Brown, S., Bessant, J., Lamming, R.: Strategic Operations Management, Routledge, UK, 2013.