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| **Course unit title** | **TOTAL QUALITY MANAGEMENT** |
| **Course unit code** | InfT6011 |
| **Type of course unit** | A part – Compulsory part |
| **Level of course unit** | 2nd cycle (Master) |
| **Year of study** | - |
| **Semester** | I |
| **Number of ECTS credits** | 4,5 |
| **Name of lecturer(s)** | Anita Jansone, Dr.sc.comp. |
| **Learning outcomes of the course unit** | **Aims of the course**  To impart basic knowledge of notion of quality, quality measurement and Total Quality Management (TQM).  To give understanding about basic principles of ensuring quality of software, its aims and to understand basic issues for ensuring quality's establishment and maintaining.  **Objectives of the course**  Students have to find out:   * Content quality's notion, to acquaint students with different quality's definitions and their usage in measuring quality; * notion of total quality; total quality management and its main activities principles * To give an overview on Latvia international standards of software engineering and adjustment of quality's standard ISO 9001:2000 in software industry.   **Results of the course (competences to be developed)**  Students have to master skills and abilities in estimating the quality of process and product and in organising total quality management.  Acquire basic notions of software's quality and master skills to work out documentation ensuring software's quality. |
| **Mode of delivery** | Face-to-face |
| **Prerequisites and co-requisites** | Software Engineering  Probability Theory and Mathematical Statistics |
| **Recommended optional programme components** | - |
| **Course contents** | The aim of the course - to impart basic knowledge of notion of quality, quality measurement and Total Quality Management (TQM). In the course is short historical summary of quality's notion; considered basic principles of Deming-based theory of quality; definitions of quality, their fields and usage in measuring quality. Notion of total quality and its action basic principles are given.  To give understanding about basic principles of ensuring quality of software, its aims and to understand basic issues for ensuring software's quality development, establishment and maintaining. There are given quality criterions of software; considered development, establishment and maintaining of software for ensuring quality. |
| **Course plan** | |  |  | | --- | --- | | **Theme** | **Sub-theme** | | 1. Overview on development of history of quality's notion.  2. Basic principles of Deming and Juran based quality theory.    3. Quality's definitions and their usage fields. Total quality management.  5. Quality - usage suitability.  6. Basic elements of effective activities of process oriented organising cycle.  7. Assessment and assessing.  8. Assessing and its role in ensuring quality.  9. Tools of quality's management and perfection. | Understanding of quality's notion development in the world (W. Taylor, J. Juran, W.E. Deming, F. Crosby, A. Feigenbaum, V. Mesvigs, K. Ishikawa ...) and in Latvia.  Basic principles of Deming-based theory of quality, the Deming cycle. The usage of Deming cycle in improving quality, examples of cycle action. Basic principles of Juran based quality theory. Different quality's dimensions of product and service.  ISO - 9000 series definition, Harvey and Green quality definitions. Notion of total quality. Total Quality Management Quality’s definition as a tool for improving and measuring quality. Principles of quality.  Definitions of quality and their usage in measuring quality of a product and process. Total quality and it basic principles, total quality management.  Mission, basis, vision, strategy and aim of the organisation. Studying, formulating and importance of the notion in organisation's business and its development.  Substance of assessing. Two dimensions of assessing: Self-appraisal and external assessment. Indicator of assessment.  Self-appraisal and its practical realisation.  Qualitative and statistic tools of quality management and improvement. | | 10. Systems of quality management.  11. Systems of quality management and their role in ensuring quality  12. EFQM (European Foundation Quality  Management) – Europe distinction system  13. Literature review on the questions about quality and quality management | Basic principles of total quality management, establishment of quality's management system, types of quality management system, documentation of quality management system: manual of quality's policy and procedures; set of normative documentation.  Definition of quality management system, its main principles, types, establishment of quality management system.  Notion of EFQM system and its activities principles. Usage of EQM system for improving quality.  Books, periodicals, Internet resources. | | 14. Overview on software quality's principles | Notion of software quality;  paraphernalia’s of software quality;  Quality management system (QMS ) and requirements to QMS; CMM; ISO | | 15. Overview on standard processes of software development and set of documentation | Standard processes of software development (processes of management, basic processes, maintaining processes).  Standard system of software engineering; Set of software documentation. | | 16. Project management | Planning of the project: calendar plan, control and frame of reference of carrying out of work; risk management. Structure and content of project management plan, examples. Standards of the Republic of Latvia. Information technology. Software engineering. Plan of software project management (LVS 67:1996). Tools of project management. | | 17. Examination and auditing | Technical managing examination and auditing, examples. Standards of the Republic of Latvia. Information technology. Software engineering. Software examination and auditing (LVS 74:1996) | | 18.Configuration directorate | Configuration directorate, including change management. Identification, management, control, examination and auditing of configuration’s item. Structure and content of project management plan, examples. Standards of the Republic of Latvia. Information technology. Software engineering. Plan of software project configuration’s management (LVS 69:1996) Tools of project configuration's management. | | 19. Documentation and documents management | Types of documents, principles of documents management and versification. Design of documentation, examples. Process of developing and maintaining software documentation. Standards of the Republic of Latvia. Information technology. Software engineering. Description of system actions concept (LVS 75:1996); Guide to specification of software requirements (LVS 68:1996); Advisable practice for describing software projecting (LVS 72:1996); Documentation of software user (LVS 66:1996).  Tools of documentation management. | | 20.Ensurance of quality | Structure and content of the plan ensuring quality. Measurement and data analysis. Standards of the Republic of Latvia. Information technology. Software Engineering The plan of insurance of software quality (LVS 65:1996); Plan of software verification and validation (LVS 71:1996) | | 21. Basic processes of software development | Processes of demands for analysis, projecting, implementation and testing. | | 22. Establishment and maintaining of software | Process of establishing and maintaining software | |
| **Recommended or required reading** | James R. Evans, Jame W. Dean, I.K. Total Qquality Management, Organization and Strategy, 2002.  Vincent K. Omachonu, Joel E. Ross. Principles of Total Quality. Third Edition,CRCS PRESS Boca Raton London New York Washington, D.C., 2004.- 493 pp.  Pressman, R.S. (1992) Software Engineering. Practitioner’s Approach. Third Edition. McGraw-Hill Inc.  William E Lewis (2004) Software Testing and Continuous Quality Improvement, Second Edition. CRC Press  James R.Evans, Jame.W.Dean, JR. Total Quality Management, Organization and Strategy. – Thomson, South – Western, USA, 2003, 399 lpp.  Ronald Kirk Kandt. Software Engineering Quality Practices. 2006, ISBN: 978-0-8493-4633-0 |
| **Planned learning activities and teaching methods** | Lectures, seminars, student's individual work |
| **Assessment methods and criteria** | **Exam**  Students have to understand the substance of quality's notion; they have to know definitions of quality and have to know how to use them in measuring and improving quality. They have to know basic principles of total quality management and requirements for its action. Students have to participate in seminars.  They have to do individual work themes.  They have to work out and present the plan of software management and plan of configuration management supplying demands. |
| **Language of instruction** | English |
| **Work placement(s)** | N/a |