PROGRAMME INFORMATICS

The engineering thesis in computer science, in the field of technical sciences, addresses a practical problem in computer technologies. A student defines the practical problem, reviews the domain literature and available computer tools, chooses the appropriate technical solutions to the problem in question, summarizes, and draws conclusions. The elaborated solution and the precisely described process of its design, implementation, and testing confirm the student's engineering skills.

REQUIREMENTS FOR FINAL PROJECT

- **Substantive requirements**:
  - Abstract and keywords.
  - Introduction – to the problem domain, settling of the problem in the domain, objective of the thesis, scope of the thesis, short description of chapters, clear description of contribution of the thesis's author – in case of more authors table with enumeration of contribution of authors.
  - Analysis of the problem – state of the art, problem statement, literature research (all sources in the thesis have to be referenced), description of existing solutions (also scientific ones, if the problem is scientific), algorithms, location of the thesis in the scientific domain.
  - Requirements and tools – functional and nonfunctional requirements, use cases (UML diagrams), description of tools, methodology of design and implementation.
  - External specification – hardware and software requirements, installation procedure, activation procedure, types of users, user manual, system administration, security issues, examples of usage, working scenarios (with screenshots or output files). In the case of projects containing a hardware part - electrical parameters, controls, description of device startup procedure.
  - Internal specification – concept of the system, system architecture, description of data structures (and databases), components, modules, libraries, resume of important classes (if used), resume of important algorithms (if used), details of implementation of selected parts, applied design patterns, UML diagrams. In the case of projects containing a hardware part - schematic diagram, printed circuit board design.
  - Verification and validation – testing paradigm (e.g. V model), test cases, testing scope (full/partial), detected and fixed bugs, results of experiments (optional).
  - Summary - achieved results with regard to objectives of the thesis and requirements, possibilities of further development (e.g. extension of functionality), encountered difficulties and problems.
  - Bibliography – the list of literature sources used in the thesis.
  - List of abbreviations and symbols.
  - List of additional files in electronic submission (if applicable).
  - List of Figures.
  - List of Tables.
- **The title of the thesis, its chapters and sections** should precisely and correctly correspond to their content.
- Each abbreviation should be presented in full at the first occurrence. All abbreviations and symbols should be listed and explained in an appendix.

FORMAL REQUIREMENTS

- **General issues**:
  - Fulfillment of all conditions:
    - min. 30 pages (counted from the first page of the Introduction chapter to last page of the Summary),
    - min. 5 000 words in the body of the thesis (without the text in tables, captions, codes and pseudocodes).
    - ✓ In the case of work done by several authors:
      - can be written jointly by maximum of 3 students,
      - requirements regarding the number of pages and words should be multiplied by the number of authors,
      - the parts prepared by individual students should be distinguished, and thus each author's contribution to the preparation of the thesis should be specified.
  - The thesis should comply with the provided template.
  - Page, chapter, section, subsection, table, figure and listing numbering is obligatory.
  - The technical documentation should be uploaded to the APD system separately.
  - The diploma thesis is submitted through the APD system only. Submission requires uploading of all files necessary to evaluate the thesis (thesis text and additional files, if needed, according to the supervisor's directions).
  - The required statements and documents (according to current regulations of the Silesian University of Technology) should be submitted to the Student Services Office.
- **Figures and tables:**
  - Each figure has a number and a caption below.
  - Each table has a number and caption above.
  - Each table and each figure has to be referenced at least once in the body of the thesis.
  - A table or a figure must not be separated from its caption (e.g. by a page break).
  - Figures, tables, chapters etc. should be referenced by their number. Do not use phrases like „the figure below" or „the table above…".
  - All figures should be created by the author of the thesis, justified cases of figures from other sources should be properly referenced and included after proper permissions from their authors have been granted.
- **Language:**
  - Use correct English – spelling, style etc.
  - Do not use slang or informal language.
  - Use precise language, adequate terms.
- **Symbols and math formulae:**
  - Mathematical formulas should be composed according to the rules of mathematical typesetting.
  - Each formula must have a number.
- **Bibliography:**
  - All cited parts have to be clearly marked as citation (from the beginning to the end). Sources of all cited parts have to be referenced – failure to meet these conditions may result in the work being considered plagiarism. All these are checked in the Unified Anti-plagiarism System (Jednolity System Antyplagiatowy).
  - Figures taken from other publications (in well justified cases) should indicate a proper reference.
  - The bibliography should hold at least 5 sources
    - technical reports,
    - books
    - specialized internet sources, or
    - scientific publication

- All referenced sources have to be cited in the thesis.
- The bibliography list should be placed after the body of the thesis.
- A bibliography item for a book holds: author(s), tittle, publisher and year.
- A bibliography item for an article holds: author(s), tittle, tittle of journal, number, volume, pages and year.
- A bibliography item for Internet sources holds url address and access date.

<u>A reference list, table of contents, list of tables, list of listings are not numbered as a chapters.</u>

- **Thesis text, software code and test data availability:**
  - Source code of software created for the thesis (if such software was developed), test data and other components required for thesis evaluation and verification of software developed, for tests rerun etc., should be uploaded to the APD system. Lack of these in the submission may lead to a "failed" grade.
  - If actual test data cannot be made publicly available, an artificial/generic dataset should be uploaded to make thesis evaluation possible.
  - If the thesis involved software development or design or construction of hardware equipment, uploading a film (compressed to a .zip format) showing them in action is required.
  - Thesis supervisor may additionally require submission of a CD/DVD, containing thesis text and all supplementary files, before their upload to the APD system.