*\*this translation does not include appendix 1 ‘Internship agreement’ and Annex 1 ‘Internship task’ from the original document*

J. Dekhtuar, V. Zemite

"Medical Engineering and Physics" bachelor and master's study program

“Nanoengineering” master study program

**INTERNSHIP: GENERAL GUIDELINES**

**1. Introduction**

Internship training takes place in the bachelor's and master's study programs “Medicine Engineering and Physics” and in the master’s study program “Nanoengineering”. Bachelor program includes 26 CP internship, master program includes 6 CP internship. 1 CP corresponds to 40 hours study workload. As a result of the internship the student should train skills and competences required to for the due development of an engineering project, bachelor's thesis, or master thesis. The internship system, implemented at BINI, will help to gradually achieve this goal, keeping student activities closely related to the real life.

**2. Internship system**

The internship is based on as system approach, that consider internship as a component of the learning process. The internship has participants, goals, objectives, stages, and feedback. The feedback enables to manage and improve both the internship and the learning process.

Direct participants of the internship:

* students,
* internship coordinator from RTU,
* supervisors at the internship site.

Objectives of the internship for students:

* to acquire practical skills required to work on technological operations;
* to connect the theoretical knowledge acquired during the studies with the practical problem solving in design and technology;
* to carry out research activities;
* to collect information and materials for the development of engineering project, bachelor's or master's thesis;
* to initiate the development of an engineering project, bachelor's or master's thesis.

Objectives of the internship coordinator from RTU:

* to improve own qualification and competencies;
* to collect information for the update of the study process and study programs following advanced trends in medical engineering, medical physics and in nanoengineering.

Objectives of the internship for internship supervisors from the internship place:

* to assess the readiness of trainees (students) for the internship;
* to select suitable students for potential jobs.

Stages of the internship

1. Basic skills acquisition practices (basic skills in machining of materials and assembly of electrical / electronic circuits, for the 1–2-year students of the bachelor program, 4 weeks);
2. Clinical internship (basic skills in use of clinical diagnostic and therapeutic equipment and systems, for the 3–4-year students of the bachelor program, 8 weeks);
3. Research and science internship (basic skills in the research work, for the 4-year students of the bachelor program, 6 weeks)
4. Design and technology internship (basic skills in the design and maintenance of mechanical, electrical, and electronic systems of the medical equipment, use and implementation of technological processes in manufacturing technology, for the 4–5-year students of the bachelor program, 8 weeks).

Appropriate methodological materials have been developed in detail for each stage of the internship to detail the goals, tasks, requirements for students, etc. of the internship.

The feedback is provided via student reports, student questionnaires, and internship supervisors surveys.

**3. Organisation of the internship stages**

The place and time of the internship is recommended by the internship coordinator from RTU and approved by Director of the Institute for Biomedical Engineering and Nanotechnology (BINI). The students may to propose their own place for internship, upon discussion and individual agreement with RTU internship coordinator.

The BINI director assigns an RTU internship coordinator to each student.

The internship task is formulated by the RTU internship coordinator in cooperation with the internship supervisor at the place of internship. The task, issued it to the student by RTU internship coordinator, should be approved by the study program director in the internship diary. The student should confirm assignment of the internship task by the personal signature in the internship diary

The student reflects all the activities performed during the internship in the internship diary. The diary also includes a reference from the internship supervisor concerning student performance at the place of internship. Upon the end of internship, the internship supervisor signs this review from the internship place and assign his / her assessment (mark) on the student's work.

If a student faces pitfalls or shortcomings in the organization of the internship and internship itself, he/she should immediately inform the RTU internship coordinator and the internship supervisor at the place of internship.

Upon the end of internship, the student should prepare a written report, that is further presented in person to the evaluation board. The board is nominated by the Director of BINI.

RTU internship coordinator ensures internship planning, organization, and supervision in cooperation with the internship supervisor at the place of internship. The internship supervisor ensures that the students acquire the relevant skills from the internship place. If the internship supervisor faces shortcomings or deficiencies in the organisation of internship, or poor performance and indiscipline by student, he/she should immediately inform RTU internship coordinator.

The relationship between the student, RTU and the place of internship was established by a tripartite agreement. The student should communicate with the RTU internship coordinator for elaboration of the above agreement

During the internship, the student must comply with the internal procedures, occupational safety, and regulation of the place of internship

List of internship documents:

1. Tripartite agreement between the student, RTU and the place of internship (Appendix 1). The student’s individual task for internship should be attached to the agreement;

2. Internship diary.

3. Internship report.

**4. Internship report**

The student writes the internship report individually and presents it in person to the evaluation board during defence procedure. The student should base the report on the internship task and the diary.

The report must be brief but at the same time, sufficiently complete, coherent, accurate and written in technical language. The report could be supplemented with sketches, photos, diagrams, various standard forms, and forms used in place of practice.

Content of the report:

* Title page
* Internship task
* Table of content
* Introduction
	+ Structure and function of the internship place
	+ Main technological / clinical processes at the internship place
* Brief description of the work performed.
* Occupational safety measures at the place of internship.
* Radiation safety measures at the place of internship (if applicable).
* Collected materials / data for the development of an engineering project / master's / bachelor's thesis.
* Conclusions and recommendations.
* A copy of the Bachelor's / Master's thesis / Engineering project task (is mandatory for the 3rd internship stage).
* References.
* Appendices (sketches, photographs, diagrams, drawings, etc.) that confirm the student's work during internship.

Internship report formatting.

* The internship report should be written on one side of an A4 sheet. Page margin sizes: 3 cm for the left edge, 2 cm for the other edges. Pages should be numbered. The work should be bound by any means, e.g. stapler folder.
* The report should be written in typewrite; the internship task may be completed by hand. The cover page should be prepared in print following template provided at the Annex 2.
* References should be numbered in square brackets (e.g., [1,2]). Equations and mathematical formulas should be numbered in parentheses (e.g., (1.2)). Figures must be included in the text, and provided with numbered captions (e.g., Fig. 3. Endoprosthesis). The tables should be provided with numbered captions (e.g., Table 2.1. Dimensions of endoprostheses). When showing values in the table, this measurement units should be indicated. Use Arabic numerals for numbering through the report.
* Recommended volume of the report is 10 - 20 pages.

**5. Defending the internship**

The defence of the internship takes place in public and is evaluated by a previously approved board.

The internship defence procedure could be organized at the internship place or at RTU.

The defence of the internship take place only if the student has submitted to the board:

* Internship task.
* Internship diary duly completed and with all signatures. The diary should have an evaluation of the student’s performance (mark) and reference by the supervisor from the place of internship.
* Internship report.

During the defence, the student presents the achieved results and answers the questions of the board members.

It is recommended to use multimedia technique (PowerPoint) for the presentation. When evaluating internship, the commission takes into account the evaluation (mark) by the supervisor from the place if internship.

Annex 2

Riga Technical University

Faculty of Mechanical Engineering, Transport and Aeronautics

Institute if Biomedical Engineering and Nanotechnologies

**INTERNSHIP REPORT**

(internship stage)

(internship place)

Internship duration from \_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_

(student’s name, surname, signature)

(student’s ID number, group)

Evaluation board mark:

Chair of the evaluation board (Surname, Signature, Date)

**Riga, 20**