

**DATABASE AND SOFTWARE SUITABLE FOR ON-LINE TESTING ECE
STUDENTS**
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Abstract. Database and software used for testing students' knowledge on circuit theory are described. The database contains around 100 questions and around 400 answers. Both questions and answers are randomized when testing. The approach developed for full-time students can be successfully used for distance studies.

In Belarusian State University of Informatics and Radioelectronics (BSUIR), Minsk, Electronics and Computer Engineering (ECE) students have typically one to two semesters of electrical circuit theory (ECT) during their 2nd year. The reported testing system was initially developed to evaluate the knowledge of the first two blocks of the linear circuits: a) basic concepts and DC analysis; b) AC analysis and resonances [1]. Later one more block c) Fourier Transform, Transients, Three Phase Systems was added to cover the whole course of electrical circuit theory.

The system of programmed testing presents actually a questionnaire with a set of questions covering appropriate block of the course. Each question is represented in the text accompanied by formulae and/or circuit diagrams. The students are to choose one of four answers to each question. The questionnaire is realized as an Excel spreadsheet.

In fact, the questionnaire presents a kind of database containing test questions of ECT. At present the database contains around 100 questions. Described testing has been in use for two years. More than 300 ECE students from 6 faculties were tested on a 100 point scale. The results were recalculated into ten point grading system.

For every testing session, i.e. for each student group or/and for each student the questions are randomized. Furthermore, the answers within each question are randomized as well. Randomization has been realized by two macros written in Microsoft Visual Basic: one for random sorting questions and the other one for sorting the answers within each question.

However the approach has been developed for full-time education students to ensure testing students within the frames of modular rating system [2] it can be successfully used for distance studies as well. In this case the database together with appropriate software is placed at the university's website to use it on-line. The system offers the following benefits:

- a distant student can run software at university's website and perform self-testing covering either a block of course or the whole course;
- the system can be easily extended/modified/amended in order to keep it in line with updated curriculum, if needed;
- analysis block (absent now) can be added to analyze the students' mistakes and to provide the feedback for students to support their activities and material revision.

Literature

1. Zadedyurin Ye., Zadedyurina S. Development and Implementation of Programmed Testing When Teaching Electrical Circuit Theory to ECE Students. HIGHER TECHNICAL EDUCATION: PROBLEMS AND WAYS OF DEVELOPMENT. Materials of VI International Scientific-Methodological conference, Minsk, Belarus, November 28-29, 2012, 173-174.

2. Zadedyurin Ye., Svita I. Development and implementation of modular rating system: Experience Gained in BSUIR, Minsk. COMPETENCE OF CONTEMPORARY SPECIALIST: THE UNITY OF THEORY AND PRACTICE. Proceedings of the 7th INTERNATIONAL CONFERENCE, Kaunas, Lithuania, 2013, pp. 98-101.