

Title: Research methodology

Lecturer: Ass. prof. N.R.Bukharaev, CSc. in Math.

Term:

Lectures + seminars : 18+18 academic hours

ECTS credits:

FEL www:

Annotation:

The purpose of this discipline is to present a broad panorama of perspectives of science, methodological principles and approaches to scientific research in the field of software engineering. The main tasks of the discipline are a study of the general principles of research methodology, an acquisition of research methods based on the general trends of software engineering and an organization of research work in professional activities.

Course Objectives:

Students who have completed the study of this discipline have to

- know the basic logical methods and techniques of scientific research, theory and methodological principles of modern science;
- be able to provide a methodological justification of scientific research, apply the modern methods of research to make the reasonable judgments in the field of professional activity;
- possess the skills of the logical and methodological analysis of the processes and results of scientific research.

Syllabus:

1. Science as a form of social activity and its application to software engineering. Philosophy of science. Science as a learning process. Science as a system. Science and Society. Features of modern science.
2. Nature of scientific knowledge and its functions. The structure of scientific knowledge. Empirical and theoretical levels of knowledge, the relationship of levels of knowledge. The structure of scientific discipline.
3. Scheme research. Types, forms and organization of scientific papers. Qualification of the results of scientific activity.
4. Methodological bases of research. Forms of theoretical thinking. Formal logic as a method of thinking, the laws of formal logic, the composition and structure of the proof. Basic laws of thought in dialectical logic.
5. Software Engineering as a branch of scientific knowledge. Scientific methods in software engineering. Specificity and overall value of methods. Theoretical and empirical methods in software engineering. Construction and use of mathematical models

References:

The main textbooks

- 1) Рузавин Г.И. Методология научного познания : учеб. пособие : рек. УМЦ/ Г. И. Рузавин. - М.: ЮНИТИ-ДАНА, 2009.-288 с.

- 2) Кузнецов И.Н. Научное исследование : методика проведения и оформления/ И.Н. Кузнецов . -3-е изд., перераб. и доп.. -М.: Дашков и К, 2008.-458 с.
- 3) Кожухар В.М. Основы научных исследований: учеб. пособие/ В.М.Кожухар, М. Дашков и К, 2010. -216 с.

Additional textbooks

- 1) Шкляр М.Ф. Основы научных исследований: учеб. пособие/М.Ф.Шкляр. -2-е изд., М.: Дашков и К, 2008, 2009, -244 с.
- 3) Безуглов Г.И. Основы научного исследования: учебное пособие для аспирантов и студентов-дипломников/ И.Г.Безуглов, В.В.Лебединский, А.И.Безуглов, -М.: Академический Проект, 2008. -195 с.
- 4) Бережнова Е.В. Основы учебно-исследовательской деятельности студентов:
- 5) учеб.: доп. Мин.Обр. РФ/ Е.В.Бережнова, В.В. Краевский. -3-е изд., стер., -М.: Академия, 2007. -128 с.