Signal Processing

Lecturer: Anikin Yury Aleksandrovich, C.Sc.

Semester: 3   **Duration**: 16 weeks

Workload (h): 108   **Presence** (h + CH): 32 (4)   **Self-Study** (h): 72

Contents: The course describes general methods of signal processing: filtering, frequency analysis, correlation, interpolation and extrapolation, the basic methods of image analysis and video. The course describes the perspective sectors and problems in which the signal gathering and processing trend to demand methods of Big Data: seismology, distributed arrays of sensors, sensors of mobile devices, "social sensing".

Background and relations to other courses: Basics of Statistics.

Main topics and learning objectives:

Themes	Learning objectives
The types of signals: analog, digital, symbolic, audial, video	*To know* the definitions and concepts from the field of signal processing, basic methods of processing different types of signals
Basic tasks of processing different types of signals	To know basic methods of processing different types of signals
The data formats for signal representing	*To be able* to implement the basic methods of signal processing, to evaluate the complexity of processing algorithms
Tools and services to be used with signals	To be able to use tools for processing and analyzing signals.
Signal processing and Big data - challenges and approaches	*To get the skill* of using BigData technologies for implementing signal processing applications

Assessment:

Formative: In interaction with lecturer and tutor during learning period. On site, skype, email are preferable.

Summative:

Number and Type; Connection to Course	Duration	Part of final mark in %
Oral Exam	90 min	100%

Learning outcomes:

Academic: *To get the skill* of using BigData technologies for implementing signal processing applications.

Prerequisites for Credit Points: The credit points will be granted when the course has been successfully completed, i.e. all parts of the examination are passed.