

| <b>General description of Master's programme</b>        |  |
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| <b>Master's programme</b>                               | Agroengineering  |
| <b>Specialization</b>                                   | Agromechatronics   |
| Institution(s)  | Astrakhan State University   |
| Accreditation organization(s)                           | The Ministry of Education and Science of the Russian Federation  |
| Period of reference                                     | Programme validated for 2 years for cohorts starting in September 2019   |
| Responsible person                                      | Nikolay Khurchak   |
| Qualification awarded                                   | Master of Science (M. Sc.)   |
| Length of programme                                     | 2 years  |
| Number of credits                                       | 120 ECTS-credits   |
| Cycle/Level of qualification                            | QF for EHEA: Second Cycle;EQF level 7;NQF for Russia: Master   |
| Fields of study   | Design and operation of mechatronic and robotic systems for agro-industrial complex.   |
| Specific admission requirements                         | <p>Required courses: Engineering and Computer graphics, Higher Mathematics, Computer science, Mechanics, Hydraulics, Electrical Engineering, Automation, Foreign language (English or German) (reading and translation with a dictionary)</p> <p>Formal: Bachelor's degree, Specialist Degree; 3 photos of 3x4 cm; passport</p> <p>The decision on enrollment is made based on the results of entrance exams.</p> <p>The composition of the examination board - 3 persons.</p> |
| Specific arrangements for recognition of prior learning | Exam questions   |
| Qualification requirements and regulations              | Bachelor's degree, specialist in engineering   |
| Mode of study   | Part-time  |
| Examination regulations, assessment and grading         | Protection of final qualifying work (WRC)  |
| Obligatory or optional mobility window                  | Students have a 32 week internship in companies in Russia or abroad to gain work experience and research.  |
| Work placement(s) if applicable                         | Design and service organizations   |
| Occupational profiles of graduates                      | Head of Bureau; Head of Department   |
| Access to further studies                               | The program provides qualification of candidates necessary (enough) for a career in research, industry and postgraduate studies in Technology and Agricultural mechanization.  |

| <b>Programme Profile Statement</b>   |
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| <p>MA Agromechatronics is a 24-month Master's programme.</p> <p>The teaching and learning aims of the programme are to prepare qualified engineers for the</p> |

development and operation of research in the field of mechatronics and robotic systems in relation to the agro-industrial complex. Students will develop:

- deep knowledge and understanding of engineering disciplines that underlie specialization;
- ability to search for the necessary information in the literature, databases and other sources of information;
- ability to analyze complex engineering products, processes and systems;
- ability to develop complex products, processes and systems;
- understanding of economic, organizational and management issues (such as project management, risk).

| <b>Programme Learning Outcomes</b>                           |  |
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| On completion of this programme, students should be able to: |  |
| LO1.   | Search, process and analyze information from various sources.  |
| LO2.   | Identify and analyze problem situations and new trends in agricultural engineering and robotics.           |
| LO3.   | To propose solutions to problems in the field of Agroengineering and Robotics.                             |
| LO4.   | Know, understand and use research methods to solve professional problems.                                  |
| LO5.   | Apply calculation and design methods to solve problems associated with robotized and mechatronic systems.  |
| LO6.   | Use modern communication technologies to present and transmit information in native and foreign languages. |
| LO7.   | Manage the project at all stages of its life cycle.  |
| LO8.   | Work effectively individually and as part of a team.   |
| LO9.   | Have skills to spread knowledge and to teach using modern pedagogical methods.                             |

| <b>The Programme Module Structure</b>     |  |                |
|---|--|----------------|
| <b>Year 1 (Two semesters of 52 weeks)</b> |  |                |
| <b>Code</b>                               | <b>Title</b>   | <b>Credits</b> |
| CU1                                       | Foreign language (professional)                                      | 8              |
| CU2                                       | Communicative technologies and the culture of business communication | 3              |
| CU3                                       | Methods of scientific research                                       | 4              |
| CU4                                       | Modern problems of Agroengineering                                   | 8              |
| CU5                                       | Digital Technologies in the Agroindustrial Complex                   | 3              |
| CU6                                       | Mechatronics and robotics  | 4              |
| CU7                                       | Measuring and information devices                                    | 3              |
| CU8                                       | Microprocessor Systems   | 3              |
| CU9                                       | Innovative Management (Project Management)                           | 4              |
| CU10                                      | Internship   | 9              |
| CU11                                      | Scientific-research work   | 12             |
| <b>Year 2 (Two semesters of 52 weeks)</b> |  |                |
| ...                                       | ...  |                |
| CU12                                      | Organization and Management of Production Processes                  | 3              |
| CU13                                      | Pedagogy of Professional Activity                                    | 2              |
| CU14                                      | Automated technical means in the agro-industrial complex             | 2              |
| CU15                                      | Operation of technical systems in agriculture                        | 4              |

|                      |  |            |
|----------------------|--|------------|
| CU16                 | Designing of Robotic Systems in the Agroindustrial Complex | 5          |
| CU17                 | Reliability of technical systems                           | 3          |
| CU18                 | Modern technologies and technical means in crop production | 3          |
| CU19                 | Optimization in Technology                                 | 2          |
| CU20                 | Diagnostics of technical systems                           | 2          |
| CU21                 | Internship   | 6          |
| CU22                 | Scientific-research work                                   | 21         |
| CU23                 | State final attestation. Defense of final qualifying work  | 6          |
| <b>Total credits</b> |  | <b>120</b> |

