

Mechanics of Deformable Solids

Far Eastern Federal University

Degree or qualification is awarded: **Candidate of Sciences**

Language of study: **Russian**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **305 000 rub per year**

Programme webpage at the university website:

<https://www.dvfu.ru/upload/medialibrary/a06/%D0%9F%D0%B5%D1%80%D0%B5%D1%87%D0%B5%D0%BD%D1%8C%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%20%D0%B0%D1%81%D0%BF%D0%B8%D1%80%D0%B0%D0%BD%D1%82%D1%83%D1%80%D1%8B.%20%D0%BE%D0%B1%D1%8A%D1%8F%D0%B2%D0%BB%D0%B5%D0%BD%D0%BD%D1%8B%D1%85%20%D0%B2%20%D0%BD%D0%B0%D0%B1%D0%BE%D1%80%202020%20%D0%B3%D0%BE%D0%B4%D0%B0.pdf>

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In general, the program allows you to train a specialist, engaged in the development of scientific foundations for obtaining structural materials operating at high temperatures, under conditions of static, cyclic, vibration, dynamic and shock loading, high-speed deformation and explosive loads, under conditions of stress and strain concentration, low- and high-cycle fatigue, contact interactions and fractures, various types of wear (abrasive, corrosion-mechanical, adhesive and cohesive, fatigue, erosion, cavitation, fretting corrosion), as well as under mechanical, acoustic, aerodynamic and hydrodynamic, thermal, electromagnetic and radiation external influences.

Objects of professional activity of graduates:

- concepts, hypotheses, theorems, physical and mathematical models, numerical algorithms and programs that make up the content of fundamental and applied mathematics, mechanics and other natural sciences;
- methods of experimental study of the properties of materials and natural phenomena, physical and chemical processes that make up the content of fundamental and applied mechanics;
- computational and experimental technologies, production technologies (technologies for creating composite materials, technologies for metal forming by pressure and welding, technology for increasing the wear resistance of machine parts and apparatus), nanotechnology;
- structural materials operating at high temperatures, under conditions of static, cyclic, vibration, dynamic and shock loading, high-rate deformation and explosive loads, under conditions of stress and strain concentration, low- and high-cycle fatigue, contact interactions and fractures, various types of wear (abrasive, corrosion-mechanical, adhesive and cohesive, fatigue, erosion, cavitation, fretting corrosion), as well as in conditions of mechanical, acoustic, aerodynamic and hydrodynamic, thermal, electromagnetic and radiation external influences.

Types of professional activities of graduates:

Types and tasks of professional activity:

- Research activities in the field of fundamental and applied mathematics, mechanics, natural sciences
- Teaching activities in the field of mathematics, mechanics, computer science
- A graduate who has completed the postgraduate program will have the following professional

competencies:

- ability to design and carry out complex research, including interdisciplinary
- readiness to participate in the work of Russian and international research teams to solve scientific and educational problems
- master new modern methods and means of experimental research on the study of the processes of deformation, damage and destruction of materials
- Independently apply the methods of mechanics and computational mathematics, theoretical, computational and experimental research methods, methods of mathematical and computer modeling
- readiness for teaching in the main educational programs of higher education

A graduate who has completed the postgraduate program will have

the following professional competencies:

- ability to design and carry out complex research, including interdisciplinary
- willingness to participate in the work of Russian and international research teams to solve scientific and educational problems
- master new modern methods and means of conducting experimental research to study the processes of deformation, damage and destruction of materials
- independently apply the methods of mechanics and computational mathematics, theoretical, computational and experimental research methods, methods of mathematical and computer modeling
- readiness for teaching activities in basic educational programs of higher education

Specific features of the educational program:

- Qualification - Researcher. Research instructor.
- Standard development period - 4 years

Graduates of the direction possess competencies in the field of technologies for creating composite materials for deep-sea and space technology of a new generation, operating under extreme conditions of ultra-high pressure, under conditions of static, cyclic, dynamic and shock loading, stress and strain concentration, various types of wear, as well as possess competencies in the field of theoretical and experimental research and solving problems of strength, stability, durability of structures, composite structures, structures, installations and their elements, the use of software systems for computer design of machines, devices, equipment and modern technologies of finite element analysis.

The professional competencies of graduates are formed taking into account the requests of scientific institutes and research and production associations of enterprises, aircraft construction, automotive, shipbuilding and ship repair, industrial and civil construction of the Far East within the framework of such disciplines of the variable part of the general scientific and professional cycles as: "Computational Mechanics", "Mechanics deformable solid", "Problems of dynamics and strength of machines, devices and equipment", "Mechanics of composites", "Theory of plasticity and creep", "Theory of shells". Of these, more than 200 hours are offered as disciplines of choice by graduate students.

Graduates of the program in the direction of training / profile "01.06.01 Mathematics and Mechanics / Mechanics of a Deformable Solid" are in demand both by educational institutions and by design and engineering departments of scientific institutes and research and production associations of the Far East, such as the Institute of Automation and Control Processes of the Far Eastern Branch of the Russian Academy of Sciences, Institute for Problems of Marine Technologies, Far Eastern Branch of the Russian Academy of Sciences, Institute of Chemistry, Far Eastern Branch of the Russian Academy of Sciences, Institute of Mechanical Engineering and Metallurgy, Far Eastern Branch of the Russian Academy of Sciences, JSC Dalzavod Shipbuilding Center, JSC Sollers, JSC Dalpribor, JSC Radiopribor, JSC Far Eastern Scientific Research, Design and Research and Design Technological Institute of the Marine Fleet, OAAC "Progress" them. N.I.Sazykina, NPO Port CJSC, MORINFORMSISTEMA-AGAT OJSC, Izumrud OJSC

Specializations within this programme