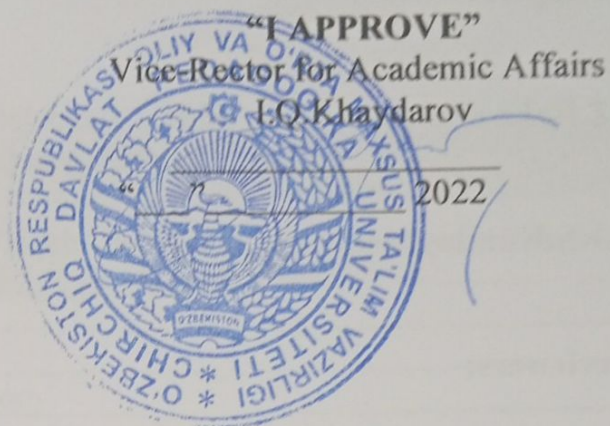


**THE REPUBLIC OF UZBEKISTAN**  
**MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION**  
**CHIRCHIK STATE UNIVERSITY OF PEDAGOGICS**



**General Physics (Mechanics)**  
**Curriculum (SYLLABUS)**

**(1<sup>st</sup> course)**

<b>Field of knowledge:</b>	100000 – Education
<b>The field of education:</b>	110000 - Education
<b>Course of Study:</b>	60110700 – Physics and Astronomy education

**Chirchik-2022**

The working curriculum (syllabus) of the board of Chirchik State Pedagogical University, approved by report, no \_\_\_, on “\_\_\_” \_\_\_\_\_ in 2022

**Developers:**

**S.Z.Rakhmanov** -PhD, Associate proffessor department of “Physics” Chirchik State Pedagogical University

**Y.Kh.Khudayberdiyeva** -Teacher department of “Physics”, Chirchik State Pedagogical University

**Reviewers:**

**K.R.Nasriddinov** -Doctor of physical and Mathematical Sciences, Professor of department “Physics”, Chirchik State Pedagogical University.

**B.N.Nurillayev** -PhD, Associate professor, Tashkent State Pedagogical University named after Nizamiy

The working curriculum (syllabus) was considered and recommended for approval at the meeting department of “Physics”, faculty of Physics and Chemistry, Chirchik State Pedagogical University, no \_\_\_, on “\_\_\_” \_\_\_\_\_ in 2022.

**The head of the department:**

**A.M.Tillaboyev**

This working curriculum (syllabus) of the subject was approved by the meeting council of department “Physics”, faculty of Physics and Chemistry, Chirchik State Pedagogical University on “\_\_\_” of \_\_\_\_\_ in 2022.

**Dean of the faculty:**

**I.G.Tursunov**





## Curriculum (SYLLABUS)

Faculty of Physics and Chemistry

60110700 – Physics and Astronomy  
education

General information		
<b>Subject name:</b> General Physics (Mechanics)		
<b>Science code:</b> Phys 1136	<b>Loan amount:</b> 6	<b>Semester:</b> 1
<b>Department name:</b> Physics		
<b>Science teacher:</b>		
<b>Email:</b> <a href="mailto:yulduzxudoyberdiyeva96@mail.com">yulduzxudoyberdiyeva96@mail.com</a>		
<b>Subject type:</b> Compulsory		
<b>Form of education:</b>	Day time	
<b>Evaluation form:</b>	Exam	
<b>The language of science:</b>	Uzbek	

Summary of science
The content of general Physics (mechanics) is students understanding of motion and its types, force, work and energy. The laws of conservation also study issues related to the mechanics of fluids and phenoma such as waves and vibrations in solid bodies, sound propagation, and their applications.

Educational results:
<p><b>Students who completed the course:</b></p> <ul style="list-style-type: none"> <li>• Demonstrates a deep understanding of general physics (mechanics) concepts and principles;</li> <li>• Deeply analyzes the essence of general physics (mechanics) methods;</li> <li>• They knowhow to use appropriate general physics (mechanics) tools to solve problems in professional activity;</li> </ul> <p><b>Competencies to be acquired as a result of the course (KK-1)</b></p> <ul style="list-style-type: none"> <li>• In the future professional activities, they will acquire knowledge, skills and abilities in the fields of general physics.</li> </ul>

Content of science	
Form of classes: Lecture	
<b>M1</b>	Introduction to General Physics. Straight line motion. Speed. Acceleration.



	Rotational motion, normal, tangential and total accelerations.
M2	Curvilinear motion, Motion of objects thrown horizontally and at an angle to the horizontal.
M3	Fundamentals of dynamics, Newton's laws. Additivity of mass.
M4	Frictional forces. Sliding friction. Rolling friction. Internal friction. Movement of bodies in a viscous medium.
M5	Kepler's laws. Universal law of gravitation. Gravitational constant
M6	Mechanical work, work of force and its unit. Conservative and non-conservative forces and systems. Power and its unity
M7	Mechanical energy and the law of conservation of mechanical energy. Power.
M8	Body momentum and its conservation law. Recovery coefficient.
M9	Movement of the center of mass. About mass and geometric centers of bodies. Motion of a body with variable mass.
M10	Reactive action. Meshchersky equation. Siolkovsky formula. Rockets..
M11	Elastic forces. Types of deformation. Hysteresis of elasticity. Deformed body energy.
M12	Noninertial counting system. Inertia forces. Flat rotating number system. Centrifugal force. Centrifugal force machine. Coriolis force.
M13	Galilean permutations. The classical law of adding velocities. The principle of invariance. Limit of application of classical mechanics.
	<b>Intermediate control</b>
M14	Elements of the special theory of relativity. Galileo's principle of relativity and laws of electrodynamics. Einstein's principle of relativity. Lawrence substitutions.
M15	Solid Mechanics. Motion of a solid body. Moment of force. Dependence of the torque on the direction of the force. Kinetic energy of a rigid body rotating about a fixed axis.
M16	Moment of inertia. Steiner's theorem.
M17	The fundamental equation of the dynamics of rotational motion. The work done by the moment of constant force. Momentum and its conservation law. Moments of momentum of objects with different geometric shapes. Momentum of momentum of a system of material points. Free bullets. Gyroscope.
M18	Fluid mechanics for liquid. Pascal's law. Archimedean force.
M19	Fluid flow. The continuity equation. Bernoulli's equation. Toricelli's formula. Flow reaction.
M20	Mechanical vibrations. Oscillating motion. Harmonic vibrations. Velocity and acceleration of an oscillating system. The energy of the oscillating system. Mathematical, spring, physical and torsional pendulums. Free and forced vibrations. Resonance. Adding vibrations Lissajous shapes.
M21	Mechanical waves. Propagation of vibrations in an elastic medium.



	Longitudinal and transverse waves.
M22	Wave equation. Wave and energy. Acoustics. The stage of the sound. Ultrasound. Infrasound.
<b>Form of training: Practical(A)</b>	
A1	Linear motion in a straight line. To Move.
A2	Acceleration. Free fall of objects.
A3	Motion of an object thrown vertically upwards. Non-uniform motion in a straight line
A4	Graphs of motion, velocity and acceleration.
A5	Movement in a Rotate
A6	Curvilinear movement. Normal and tangential accelerations..
A7	Movement of horizontally thrown objects. The movement of objects thrown at an angle to the horizon.
A8	Forces. Newton's laws.
A9	Frictional forces..
A10	Movement of bodies on an inclined plane. Blocks.
A11	Mechanical work and power
A12	Mechanical energy Kinetic and potential energy. The law of conservation and circulation of energy.
A13	Body momentum and its conservation law.
A14	Elastic forces. Gravity. Archimedean force.
A15	The whole universe is the law of gravity. Kepler's laws. Space velocities.
A16	Mass, velocity and length in relativistic mechanics, Moment of inertia.
<b>Current control- 1</b>	
A17	Speed and kinetic energy of rotating body. The fundamental equation of the dynamics of rotational motion
A18	Momentum and its conservation law's.
A19	Mechanics of liquids and gases. Bernoulli's equation
A20	Movement of bodies in a viscous medium
A21	Movement of bodies in a viscous medium
A22	Mechanical vibrations. Add vibrations
A23	Mechanical waves. Acoustics.



### Methods of teaching and learning

The module is organized through lectures and practical classroom training, as well as independent educational activities of students. Lectures provide theoretical information necessary for the analysis of general physics (mechanics) course topics. In practical classroom sessions, general physics (mechanics) course problems (examples and problems) are presented and students are given the opportunity to practice applying the necessary physical methods and techniques to solve them. In independent educational activities, students should study the topics in depth and analyze the topics using literature and scientific journals and sources.

Type of training	A dedicated hour
Lecture	44
Practical	46
Independent education	90
Total hours of study and teaching of students	180

### Criteria for evaluation and control of student knowledge in science

Monitoring and evaluation of students' knowledge is carried out through student activity, mid-term control, final control, and assessment of independent education.

- **Intermediate control**—This is an important stage of assessment by the teacher of the student's knowledge and practical skills acquired in the first part of the module, and is an indicator of future mastery of this subject. Assessment of students' knowledge in mid-term control is carried out through oral question-and-answer and written work. If the student does not pass the mid-term examination, he will be given the opportunity to retake it **2 more times. 20 percent of the total evaluation.**

- **Evaluation of independent education**— it is carried out through the completion of practical projects assigned by students in a collective manner and individually. Each student is given one team project and two individual projects. The student studies and conducts research on the given issue, understanding the goals and objectives of the assigned project. Analyzes the obtained results, prepares presentations with conclusions and defends them. The number, subject, content of the projects, methods of implementation and deadlines are fully disclosed in the working science program. **50 percent of the total evaluation.**


- **Final control** - is a summative stage of evaluation of knowledge and practical skills of the student by the professor-teacher. Final control is conducted in the form of a written work. **30 percent of the total evaluation**

A student must not engage in any activity that may lead to academic misconduct. For example, plagiarism, collusion, falsification of results, violations during the examination process, i.e. use of notes and handouts, telephone and other means of communication, communication with others inside or outside the examination room are prohibited. Students who are guilty of this will be removed from the control or examination process, and their grade will be zero.

Depending on the characteristics of the subject (course), changes and additions may be made to the evaluation and control criteria.



### Basic literature

1.	Ferdinand P. Beer., E. Russell Johnston., John T. DeWolf., David F. Mazurek. "Mechanics of Materials" McGraw-Hill Education 2012y.	
2.	M.O'lmasova. "Mexanika, molekulyar fizika va issiqlik". T., «ЎҚИТУВЧИ» 1997.	
3.	Абдурахманов Қ.,Эгамов Ў. "ФИЗИКА КУРСИ".Тошкент-2010 й.	
4.	N. A. Sultanov. "Fizika kursi". Farg'ona – 2011	

### Recommended additional reading

1.	J.A.Toshxonova va b. Fizikadan praktikum. Mexanika va molekulyar fizika. Toshkent, "O'qituvchi", 2006.
2.	М.Исмоилов, П.Хабибуллаев, М.Халиулин "Физика курси" Тошкент, "Ўзбекистон", 2000.
3.	В.С.Волкенштейн. Сборник задач по общему курсу физика. Москва, "Наука", 1992.
4.	Детлаф А.А., Яворский Б.М.. Курс физики. I-III том. Москва, "Высшая школа", 1994.
5.	Рахматуллаев М.. Физика курси. Механика. Тошкент, "Ўқитувчи", 1996.

### Internet addresses

1. [www.cspi.uz](http://www.cspi.uz)
2. [www.edu.uz](http://www.edu.uz)
3. <http://ziyonet.uz>
4. [www.pedagog.uz](http://www.pedagog.uz)
5. <http://qr.natlib.uz/>
6. <https://www.kitob.uz/>