# DEVELOPMENT OF TECHNICAL MECHANICS AND ROLE IN MECHANICAL ENGINEERING.

*Senior lecture, Ziyayev Abdukarim Toshpo'latovich*
*Fergana Polytechnic Institute*
*Haydarov Ro'zimatjon Rustamali o'gli*
*Student, Fergana Polytechnic Institute*

**Abstract:** this article talks about the essence of technical mechanics, history of development, conducted research and scientists who contributed to the science.

**Key words:** technical mechanics, interrelationship with other disciplines, machine, mechanism, machine details

It necessitates the usage of cutting-edge production methods and technologies, the advancement of mechanical engineering, and the instruction of highly qualified specialists. This application greatly benefits from the technical mechanics science, which forms the core of the mechanical engineering scientific complex. One of the scientific pillars of contemporary technical sciences, technical mechanics provides the means for influencing the environment in order to amass material wealth and satisfy societal needs. That is, it makes labor easier and more productive by keeping the bodies in an equilibrium state or by providing a means of resolving issues with interaction during movement.[1]

The demand for technical sciences is growing as a result of the quick development of techniques and technologies, as well as the widespread use of computerization and control systems. In order to fully comply with state norms, the designed machines' details must be as light, sturdy, and friction-resistant as feasible. Technical mechanics studies the aforementioned specifications. The following disciplines are included in technical mechanics:

Theoretical mechanics is the science of the general laws of mechanical motion and the effect of material bodies on each other.

Material resistance is a science that studies the durability, integrity, durability, friction resistance properties of designed machines and their details.

Theory of mechanisms and machines is a science dealing with the structural structure of mechanisms, their kinematic and dynamic parameters, analysis and synthesis.

The science of machine detailing teaches the structure of the details and nodes that all machines share, as well as how to build and calculate a machine's strength.

The goals and obligations of science. Students are taught the fundamental principles of mechanical motion and the interrelationships of material bodies as part of science lessons. Methods of calculating it, types of deformation, the structure of mechanism joints and their economic calculation and design, calculation of the feasibility of details and nodes and the theoretical underpinnings of the project, construction types, structures, and solutions to various problems corresponding to them, knowledge, experience nikma, and skill development are some of the factors that go into determining it.

The system of intersecting forces at a point, the moment of force, the theory of pair forces, the system of forces located arbitrarily in the plane and in space, friction, centers of gravity, the motion of a rigid body, rotational and plane-parallel motion, complex motion of a point, basic laws of dynamics, material point and mechanical system dynamics, general theorems, etc. Understanding of structural components, transverse deformation, Poisson's ratio, material characteristics and classification, allowable stress, shear strain, allowable stress in shear, calculation of riveted and welded joints, comprehension of torsional deformation, geometric properties of flat cross-sectional surfaces, Dalamber's principle, and the main types of mechanisms and machines and their elements, kinematic characteristics of mechanisms, designing the kinematic scheme of mechanisms, types of motion transmission mechanisms and their characteristics, force calculation of mechanisms without taking into account the friction force in kinematic pairs, gears, epicyclic mechanisms and their kinematic analysis, ball mechanisms, static and dynamic balancing of mechanisms and their cost-effective calculations, requirements for the machine, its details and nodes, mechanical transmissions, friction and belt transmissions, chain, gear, worm transmissions, reducers, shafts and axles, bearings, couplings, to give concepts about threaded, keyed and slotted connections, their practical and economic importance, the function and general structure of belt drives, their application, advantages and disadvantages and their calculation procedure, the structure of chain drives, Students are taught about reducers through the teaching of kinematics and geometry, the structure of gears, benefits and drawbacks, worm gears, peculiarities of bevel gear computation, shafts, axles, and their calculation, selection of bearings, and couplings.

The famous Greek scientist Archimedes (287–212 BC) is credited as being the inventor of mechanics. Archimedes studied fluid mechanics, the theory of levers, and locating the centers of gravity of objects.

A notable individual from the Ascent era, Leonardo da Vinci researched the theory of friction and the impact of forces on bodies.

The laws of inertia were established by the Italian physicist Galileo-Galilei (1564–1642). He worked with the problems of estimating the movement, speed, and acceleration of material points.

Christian Huygens, a Dutch scientist, developed the theories of curvilinear motion, percussion, and the physical pendulum (1629–1695).

Isaac Newton, an English physicist, developed the fundamental rules of dynamics.

The idea of equal power and its moment was first brought to science by the French scientist Varin'on.

The mechanics of solid solids, liquids, and celestial bodies advanced significantly in the 17th and 18th centuries. In developing analytical techniques for the analysis of infinitesimal quantities founded by Newton and Leibniz, Bernoulli, Euler, Dalamber, and Lagrange were involved.[2]

References

1. A.M.Urunov, T.Q.Ostonov, S.M.Elmonov TEXNIK MEXANIKA Samarqand – 2021
2. Information obtained from the Internet