Engineering Mechanics

Timeline

around 600 BCE   **Thales of Miletus**. First Greek philosopher. He saw water as the origin of all things. Things describe a cycle of creation and decay. Astronomical and mathematical knowledge (prediction of the solar eclipse in 585 BCE).

384 to 322 BCE   **Aristotle of Stagira**. Greek philosopher, worked in Athens, pupil of Plato, tutor of Alexander the Great, founder of the Peripatetic school. Created the most universal system of ancient philosophy, containing materialistic and dialectical elements alongside objective, idealistic ideas. He opposed the heliocentrism of the Pythagoreans with his geocentrism.

287 to 212 BCE   **Archimedes**. Greek mathematician who worked in Alexandria and Syracuse. Made contributions to mathematics that were not surpassed until the 16th century. Calculations of circles and spheres, theory of the lever, buoyancy, construction of the screw. He applied his knowledge in practice (throwing machine).

1452 to 1519   **da Vinci, Leonardo**. Sculptor, master builder, painter, mathematician, writer in Florence, Milan and France. Construction of flying machines, "Treatise on Painting", studies in anatomy.

1548 to 1620   **Stevin, Simon**. Physicist, Quartermaster General of the Dutch army in Leiden. First to use experimental research, theorem of the parallelogram of forces, motion on an inclined plane.

1564 to 1642   **Galilei, Galileo**. Physicist, professor at the universities of Pisa and Padua. Creator of the modern scientific approach and experimental physics. He discovered the law of inertia, the laws of free fall and throwing motion, the principle of virtual work. Construction of a telescope, astronomical discoveries. As an opponent of Aristotle's teachings, hechampioned the teachings of Copernicus.

1571 to 1630   **Kepler, Johannes**. Mathematician and astronomer. Worked in Graz, Prague, Linz and elsewhere. Based on Tycko de Brake's observations of Mars, he was the first to attempt a dynamic explanation for planetary motion (Kepler's laws are the first mathematically formulated laws of nature), inventor of the astronomical telescope.

1602 to 1686   **Guericke, Otto von**. Physicist, engineer, worked in Magdeburg and Erfurt. Like Galileo, he introduced experimental methods to science. Inventor of the air pump, he discovered the physicality of air, its weight, expansion etc., construction of the first electric machine.

1629 to 1695   **Huygens, Christiaan**. Physicist, mathematician, Dutchman, member of the Royal Society London, Academy of Sciences Paris. Wave theory of light, laws of elastic shock, inventor of the pendulum clock, centre of oscillation of the physical pendulum, astronomical discoveries.

1635 to 1703   **Hooke, Robert**. Physicist, engineer, professor at Gresham College in London. Invented spring balance for pocket watch, optical telegraph, mirror telescope, circular dividing machine, cogwheel siren, microscope. Established Hooke's law, according to which the expansion of a spring is proportional to the load.

1643 to 1727   **Newton, Isaac**. Physicist, mathematician, Professor at Cambridge, President of the Royal Society in London. Founder of classical physics, law of gravitation, calculation of the mass of the moon and planets, expansion of the existing beginnings of differential and integral calculus, founder of acoustics, work in all areas of physics and mathematics.

1646 to 1716   **Leibniz, Gottfried Wilhelm**. Philosopher, mathematician, physicist, jurist, historian and linguist. Worked mainly in Hanover. Founder of the Academy of Sciences in Berlin. Developed differential and integral calculus, formulated the energy theorem, first calculating machine.

1655 to 1705   **Bernoulli, Jacob**

1667 to 1748   **Bernoulli, Johann**

1700 to 1782   **Bernoulli, Daniel**. Mathematician, from a Swiss family of scholars. Application of the new infinitesimal calculus, probability calculus, calculus of variations, hydrodynamics, principle of virtual displacement.

1707 to 1783   **Euler, Leonhard**. Mathematician, physicist. Worked at the St. Petersburg and Berlin Academy of Sciences. Extremely diverse mathematical works. In the field of mechanics, he created the foundations of the theory of the gyroscope, founder of hydromechanics.

1717 to 1783   **d'Alembert, Jean le Rond**. Mathematician, natural scientist, philosopher. Member of the academies in Paris and Petersburg. Development of infinitesimal calculus, differential equations; d'Alembert's principle of mechanics formally reduces the dynamic problem to a static one.

1736 to 1813   **Lagrange, Joseph-Louis**. Mathematician, professor in Turin, Paris, Academy of Sciences Berlin. Put the principle of virtual displacement at the forefront of mechanics, main principles of mechanics, calculus of variations, theory of algebraic equations, number theory.

1736 to 1806   **Coulomb, Charles-Augustin de**. French engineer and physicist, lived in Paris. He was concerned with electricity, torsion, friction and force conversion.

1777 to 1859   **Poinsot, Louis**. Mathematician, professor at the Ecole Polytechnique Paris. Introduced the concept of the pair of forces, works on geometry, statics, kinematics of the rigid body (inertial ellipsoid).

1781 to 1840   **Poisson, Siméon Denis**. Physicist and mathematician, professor at the Faculte des sciences in Paris. Promoted the development of theoretical physics, potential theory, elasticity theory, acoustics, heat conduction, probability theory.

1785 to 1836   **Navier, Claude-Louis Marie Henri**. Engineer, professor at the Polytechnic University of Paris. Founder of the scientific theory of elasticity and structural mechanics.

1788 to 1867   **Poncelet, Jean Victor**. Engineer and physicist, worked in Paris in the field of engineering mechanics, hydraulics, construction of water turbines.

1797 to 1886   **de Saint-Venant, Adhémar Jean Claude Barré**. Physicist, worked in Paris. Work on the theory of beam bending, torsion, bar vibrations, distribution of elasticity around a point, stress determination on partially plastic bodies.

1801 to 1862   **Ostrogradsky, Mikhail Vasilyevich**. Mathematician, worked in Petersburg. Development of integral calculus (multiple integrals), calculus of variations, theory of heat conduction, theory of elasticity.

1805 to 1865   **Hamilton, William Rowan**. Mathematician, Astronomer. Professor at the University of Dublin. Introduced the concept of potential in dynamics. Fundamental work on optics, analytical mechanics, vector calculus, calculus of variations. Formulated the most important integral principle of classical mechanics, Hamilton's principle.

1824 to 1887   **Kirchhoff, Gustav Robert**. Physicist, Professor in Breslau, Heidelberg and Berlin. He worked in many areas of physics: thermodynamics, electricity theory, rod oscillations, plate theory, spectral analysis, light propagation.

1826 to 1908   **Ritter, Georg Dietrich August**. Engineer, Professor at the Aachen Polytechnic. Textbooks on engineering mechanics, introduction of the principle of cuts in the theory of trusses.

1835 to 1918   **Mohr, Christian Otto**. Structural and civil engineer, Professor at Dresden Polytechnic. Works on strength theory, graphostatic treatment of construction tasks.

1847 to 1884   **Castigliano, Carlo Alberto**. Energy considerations used to calculate forces and deformations on statically determinate and indeterminate systems.

1850 to 1905   **Tetmajer, Ludwig von**. Active as an engineer in Switzerland and Austria. Works on stability problems.

1854 to 1924   **Föppl, August Otto**. Engineer, Professor at the Technical University of Munich. Expansion of engineering mechanics, especially problems of elasticity theory, strength theory, experimental work.

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