

Toorikkonspekt kursuse “Biofüüsika” füüsikalistest küsimustest

# 1 . SISSEJUHATUS INTRODUCTION

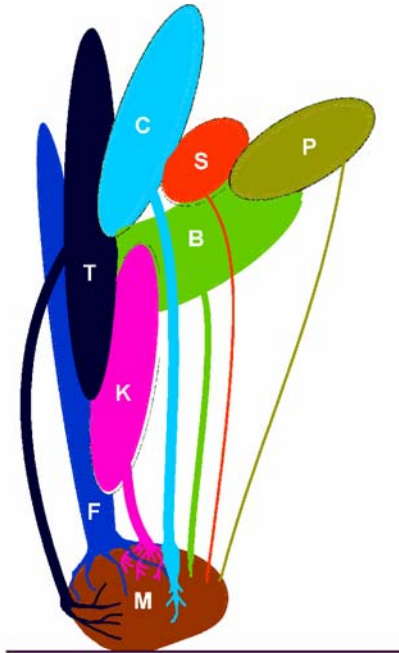
**KÄESOLEVAS FAILIS sisaldub konspekti toorik aine “Biofüüsika” järgmiste osade jaoks:**

Biofüüsika määratlus. Füüsika ja biofüüsika ajaloolised seosed bioloogia ja meditsiiniga. Modelleerimine - füüsika ja biofüüsika põhimeetod.

**THE PRESENT FILE contains provision for the course “Biophysics” corresponding to the following parts of the course:**

Notion of biophysics. Historical connections between biophysics, biology and medicine. Modeling as the general method of physics and biophysics.

**EKSOOTILINE "TEADUSETAIM"  
EXOTIC "PLANT OF SCIENCE"  
ЭКЗОТИЧЕСКОЕ «РАСТЕНИЕ НАУКИ»**



Idee: prof. R. Taagepera

- |                  |                 |             |
|------------------|-----------------|-------------|
| M - matemaatika  | mathematics     | математика  |
| F - füüsika      | physics         | физика      |
| K - keemia       | chemistry       | химия       |
| T - tehnika      | technics        | техника     |
| B - bioloogia    | biology         | биология    |
| P - psühholoogia | psychology      | психология  |
| S - sotsioloogia | social sciences | социология  |
| C - küberneetika | cybernetics     | кибернетика |

**Kreeka tähestik  
Greek alphabet  
Греческий алфавит**

Täht	Nimi	Ei ole!	Täht	Nimi	Ei ole!
A α	alfa	a	N ν	nüü	v
B β	beeta		Ξ ξ	ksii	
Γ γ	gamma		Ο ο	omikron	
Δ δ	delta	d, ð	Π π	püi	
E ε	epsilon	e	Ρ ρ	roo	
Z ζ	dseeta	z	Σ σ	sigma	s
H η	eeta	n	Τ τ	tau	t
Θ θ, θ	teeta		Υ υ	üpsilon	v
I ι	ioota	i	Φ φ, φ	fii	
K κ, κ	kapa	k	Χ χ	hii	x
Λ λ	lambda		Ψ ψ	psii	
M μ	müü		Ω ω	oomega	w

## AJALUGU – HISTORY - ИСТОРИЯ

*Meditsiin - Medicine -  
Медицина*

*Füüsika ja täppiseadused -  
Physics & Exact Sciences -  
Физика и точные науки*

≈400 (B.C.) **Hippocrates**  
(Greece)

≈150 **Galenus** (Rome)  
≈1000 **Avicenna**  
(IbnSina) (Bukhara)

1523 **Paracelsus**  
(Basel)

1543 **Vesalius**  
(Padua, Italy)

1628 **W. Harvey**  
(London,  
England)

\*1632 **UNIVERSITAS TARTUENSIS**

1683 **A. v. Leeuwen  
hoek**  
(Netherlands)

1796 **E. Jenner**  
(London)

1826 **K.E. v. Baer**  
(Dorpat-Tartu)

≈1840 **N. Pirogov**  
(Dorpat-Tartu,  
S.-Peterburg)

≈350 (B.C.) **Aristotle**  
(Athens)

≈250 (B.C.) **Archimedes**  
(Syracuse)

1632 **Galileo**  
(Pisa, Padua etc.)

1637 **Cartesius (Descar-  
tes)** (France,  
Netherlands, etc.)

1687 **I. Newton**  
(London)

1786 **L. Galvani** (Bologna, Italy)  
1799 **A. Volta** (Padua, Italy)  
≈1800 **T. Young** (London)

\* 1802 **G.F. Parrot**  
(Dorpat-Tartu)

≈1830 **M. Faraday**  
(Great Britain)

1840 **R. Mayer** (Germany)  
1841 **J. Poiseuille** (France)

1876 **R. Koch**  
(Germany)

1908 **W. Einthoven:**  
ECG (Netherlands)

1924 **H. Berger: EEG**  
(Germany)

1927 **A. Fleming:**  
antibiotics (London)

≈1930 **A. Fleisch**  
(Tartu)

≈1930 **L. Puusepp**  
(Tartu)

1939 **Artificial**  
circulation

≈1945 **Cardiac**  
catheterization

≈1970 **Use of laser in**  
medicine

1972 **X-ray CT**

1974 **Computerized**  
case history

≈1850 **H.v. Helmholtz** (Germ.)

≈1870 **A. Fick** (Germany)

1887 **A. Waller: ECG** (Great Britain)

≈1890 **F. Galton: u-sound**(Great Britain)

1895 **W.C. Röntgen** (Germ.)

1896 **H. Becquerel** (Paris)

1897 **J.J. Thomson** (London)

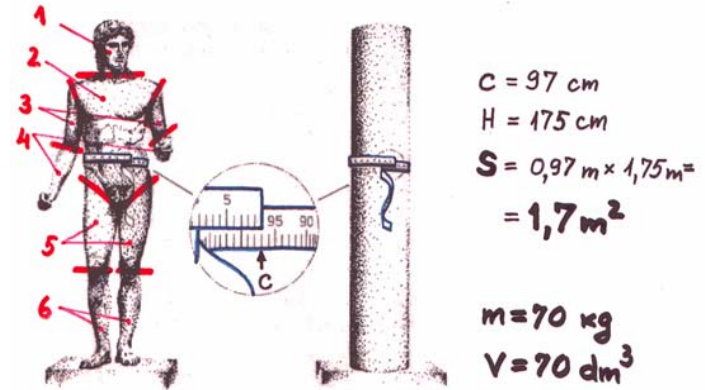
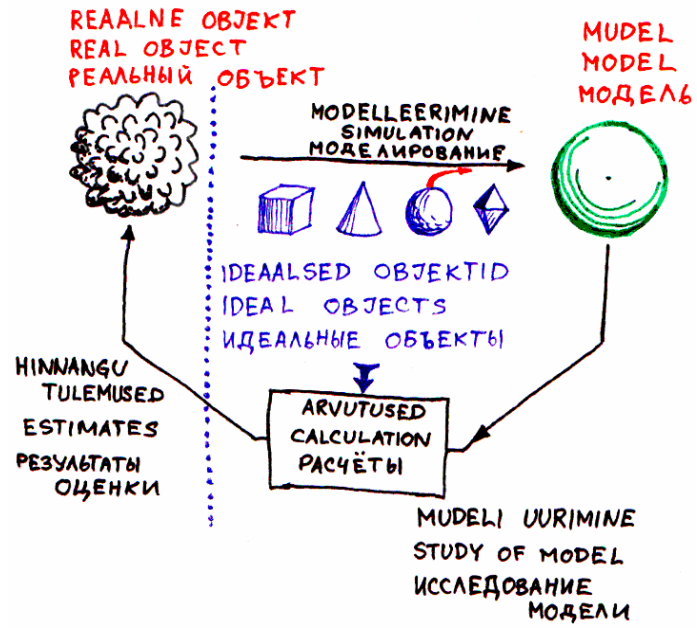
≈1935-50 **A. Turing,**  
**N. Wiener,**  
**J.v. Neumann**  
(G. Brit., USA)

1953 **Crick, Watson, Wilkins: DNA**  
(Great Britain)

1958 **Elmqvist, Senning: pacemaker**  
(Sweden)

1960 **Laser**  
1961 **Vostok-1**

1969 **Apollo-11**



Keha osa Body Part Часть тела	Massiosa Mass Fraction Доля массы
1	7%
2	43%
3	7%
4	6%
5	23%
6	14%
	<u>100%</u>