

BUTE Faculty of Architecture		Department of Mechanics, Materials and Structures				
Subject: FUNDAMENTALS OF STRUCTURES		Code	Credit points	Date:	Semester:	Year:
Tuesdays lessons: Dr András Draskóczy	Thursdays lessons: Dr Dániel Vető	BME EPSTG201	0	19/20	2 nd	Gen. Course

TOPICS SCHEDULE

Educ. week	Date	Tuesdays 12.15-14.00 K255	Date	Thursdays 15.15-17.00 K255
1.	11.02.	FS1. Introduction The Central Building of the TUB	13.02.	B1. Dimensions. Functions: slope of a function, area under a function. 1D Kinematics.
2.	18.02.	FS2. Building design requirements . 1 st site visit The Central Building of the TUB	20.02.	B2. Scalars - vectors. Scalar product, vector product, trigonometry
3.	25.02.	FS3. Fundamental characteristics of structural materials .	27.02.	B3. 2D Kinematics of point masses, circular motion
4.	03.03.	FS4. 2nd visit: laboratory testing of structural materials (timber, steel, concrete).	05.03.	B4. Newtonian principles of mechanics. Gravity. Mass and weight. Forces in 2D (acting on a point mass).
5.	10.03.	FS5. Forces, loads and effects	12.03.	B5. 2D Statics of point masses, friction, pulleys
6.	17.03.	FS6. Discussion of experiences of the 2nd visit. Responses of structural materials: stresses and deformations . Test data evaluation: material strength . The notion of safety.	19.03.	B6. Pendulum, harmonic oscillation
7.	24.03.	Preliminary project week (no lessons)	26.03.	Preliminary project week (no lessons)
8.	31.03.	Consultation, (practice problems)	02.04.	MP1 Geometry, kinematics and statics of point masses
	07.04.	Test 1: Geometry, kinematics and statics of point masses	09.04.	B7. Kinematics of planar bodies
9..	14.04.	Spring holiday	16.04.	Spring holiday
10.	21.04.	FS7. 3rd site visit: a construction site . Load-bearing parts of buildings	23.04.	B8. Statics of planar bodies: resultant and equilibrium of general coplanar force systems
11.	28.04.	FS8. Discussion of experiences of the 3rd site visit. Structural modelling , the static model of load-bearing structures. Functions of structures, requirements	30.04.	B9. Work, energy, power. Variational view of mechanics. Energy conservation laws, collisions
12.	05.05.	FS9. The process of creation in architecture . Parties contributing to design and realization of architectural projects	07.05.	MP2: Kinematics and Statics of planar bodies, work, power, conservation laws
13.	12.05.	Test 2: Kinematics and Statics of planar bodies, work, power, conservation laws	14.05.	Consultation, (practice problems)
14.	19.05.	1st test repetition	20.05.	2nd test repetition

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REQUIREMENTS

Conditions of inscription:	-Registration of the subject Fundamentals of Structures
Character of the lessons:	Lectures and solution of problems in small groups, laboratory and site visits. Types of lessons: B: basic equations of kinetics and statics exemplified by problems solved at the blackboard FS: fundamentals of structural behaviour MP: marked practical, work done by help of the teacher T: test, individual work (no aids can be used, only the calculator)
Prescriptions for presence:	Presence on lessons is obligatory and will regularly be checked.
Mid-semester controls (dates as given in topics schedule):	Two 90 Minutes tests (T), max. 120 points each, 0 point in case of absence. Points given for theory and problem solution of tests will be valuing 33 and 67% respectively. For supplying missing tests or improve the test results one occasion will be given at the end of the semester for both tests. Theme of these tests will range the material of the supplied/improved test. Its points will substitute that of the missed/improved test. There is no other possibility to improve the test results. Two 90 minutes marked practical exercises (MP), valuing 12 points max. each, 0 point in case of absence. There is no possibility for supplying or improving MP-s.
Conditions of signature:	1. Presence on at least 70% of the lessons (max 6 absences) 2. 60 points mean of the test results 3. Achievement of at least 120 points from the total of 240 points that can be given as maximum for the term work, determined as given below: $0,9 \times \Sigma \text{Two test results} + \Sigma \text{MP results}$
Mid-semester mark:	Min. 50% of the total of. 240 points should be achieved. Final mark: 0-119 points fail (1) 120-144 points pass (2) 145-169 points satisfactory (3) 170-194 points good (4) 195-240 points excellent (5)

Recommended literature (copies available at the copying room of the Department K261):

A.J. Francis: Introducing structures pp. 1-28, pp221-259, pp278-285

Daniel L. Schodeck: Structures pp3-120, pp472-534

H.S. Howard: Structure, an architects' approach, Mc Graw Hill Co. 1966 pp3-43, pp204-233, pp275-286

Information available on the homepage of the Department of Mechanics and Structures:
[www.szt.bme.hu/Downloads/English courses/Fundamentals of Structures/2020](http://www.szt.bme.hu/Downloads/English%20courses/Fundamentals%20of%20Structures/2020)

- Topics schedule and requirements of the subject
- Lecture notes
- Solution of some selected problems
- Actual messages