

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
National Aviation University

APPROVED
Vice-Rector for Academics
_____ T. Ivanova
« _____ » _____ 2016



Quality Management System

COMPLEX TEST PACKAGE

Subject «**Structural Mechanics**» _____
(title of the subject)

Field of study 6.060101 «Civil Engineering» _____
(for Bachelor degree - code and title of the field of study)

Index ПБ -5-6.060101-1-a/12, 3.1.4 _____
(curriculum index and number of the subject in the curriculum)

QMS CTP 10.01.02 () – 01 - 2016

Recommended by
the Scientific-Methodological-Editorial Board
of the Educational & Research Institute of
Airports
Record № _____
of « _____ » _____ 2016
Head of the SMEB
_____ A. Byelyatynskyi
(signature, name)

National Aviation University

Institute of Airports

Department Computer Technologies of Construction

(title of the Department in charge the package)

AGREED

Director of the Institute

_____O. Chemakina

(signature)

(name)

“ ____ ” _____ 2016

**Complex Test Package
on the subject**

“Structural Mechanics”

6.060101 “Civil Engineering”

(code and title of the field of study (specialty))

Complex Test Package reviewed by the Department
Computer Technologies of Construction

Field of Study (specialty)

6.060101 «Civil Engineering»

Record № ____ of “ ____ ” _____ 2016

Head of the Graduate Department
for Major

_____O. Lapenko

(signature)

(name)

“ ____ ” _____ 2016

List of the academic staff developing the Complex Test Package

The Complex Test Package on the subject

«Structural Mechanics»

_____ (title of the subject)

for Field of Study

6.060101 «Civil Engineering»

_____ (for Bachelor degree - code and title of the field of study)

was developed by:

O. Rodchenko, PhD, associate professor

_____ (name, position, scientific degree, academic rank)

1-30

_____ (variant №)

_____ (signature)

The Complex Test Package was approved by the Department

Computer Technologies of Construction

_____ (title of the Department in charge the package)

Record № ____ of “ ____ ” _____ 2016

Head of the Department _____

(signature)

O. Lapenko

(name)

Expert Review
of the Complex Test Package
on the subject «Structural Mechanics»

(title of the subject)

Field of Study (Specialty) 6.060101 «Civil Engineering»

Reviewed Complex Test Package contains practical tasks which coincide with the «Structural mechanics» syllabus and it can be used for students residual knowledge checking.

The Complex Test Package questions represent tasks about statically determinate multispan beam, rigid frame and truss analysis.

All tasks of the Complex Test Package have equivalent complexity, laboriousness and require the same time for tasks performance.

Practical tasks have vocational guidance.

The Complex Test Package can be used for student learning curve evaluation that is required for professional oriented subjects learning.

Head of the Department
(position (Head of the Department or Leading Expert))

(signature)

O. Lapenko
(name)

(date)

ASSESSMENT CRITERIA
for the Complex Test
on the subject «Structural Mechanics»

The level of undergraduate (graduate) students' professional knowledge and skills shown in the Complex Test on the subject «Structural Mechanics» is assessed by a 12-grade scale (Table 1).

Table 1

Full and correct answer	Maximum total score	Assignment 1	Assignment 2	Assignment 3
Assignments 1-30	12	4	4	4

Correspondence between Grades for certain assignments of the Complex Test and the National Scale is shown in Table 2.

Table 2

Grades			National Scale
Assignment 1	Assignment 2	Assignment 3	
4	4	4	Excellent
3	3	3	Good
2	2,5	2,5	Satisfactory
Below 2	Below 2,5	Below 2,5	Poor

Correspondence between Total Grades for the Complex Test assignments and the National Scale is shown in Table 3.

Table 3

Correspondence between Grades for the Complex Test assignments and the National Scale

Grades	National Scale	Assessment criteria
11-12	Excellent	EXCELLENT – excellent performance with insignificant shortcomings
10	Good	VERY GOOD – performance above the average standard with a few mistakes
9		GOOD – good performance altogether with a certain number of significant mistakes
8	Satisfactory	SATISFACTORY – fair but with significant shortcomings
7		SUFFICIENT – performance meets the minimum criteria
Below 7	Poor	FAIL – some more work required before the credit can be awarded

associate professor
(position of the staff member who developed the Test)

(signature)

O. Rodchenko
(name)

(date)

**List of reference literature
that may be used during the Complex Test performance**

1. Practical tasks of the Complex Test are performed by using computer.

associate professor
(position of the staff member who developed the Test)

(signature)

O. Rodchenko
(name)

(date)

National Aviation University

Educational & Research Institute of Airports

(title of the Institute (Faculty))

Department Computer Technologies of Construction

(title of the Department)

Field of Study 6.060101 «Civil Engineering»

(for Bachelor degree - code and title of the field of study)

Subject “Structural Mechanics”

(title of the subject)

Complex TEST

VARIANT № _____

- 1.
- 2.
- 3.

Head of the Department

(signature)

O. Lapenko
(name)

“ _____ ” _____ 2016

National Aviation University



COMPLEX TEST

on the subject “Structural Mechanics”

_____ (title of the subject)

Student’s name _____ year of study ____ academic group № _____

Institute (Faculty) of Airports _____
(title of the Institute (Faculty))

Department Computer Technologies of Construction _____
(title of the department)

Field of Study 6.060101 “Civil Engineering” _____
(for Bachelor degree – code and title of the field of study)

Date of the Complex Test « _____ » _____ 20 ____

Variant № _____

Student’s signature _____

Structural mechanics, or solid mechanics, is a field of applied mechanics in which you compute deformations, stresses, and strains in solid materials. Often, the purpose is to determine the strength of a structure, such as a bridge, in order to prevent damage or accidents. Other common goals of structural mechanics analyses include determining the flexibility of a structure and computing dynamic properties, such as natural frequencies and responses to time-dependent loads. Structural mechanics is the body of knowledge describing the relations between external forces, internal forces and deformation of structural materials. It is therefore necessary to clarify the various terms that are commonly used to describe these quantities. In large part, structural mechanics refers to solid mechanics because a solid is the only form of matter that can sustain loads parallel to the surface. However, some considerations of fluid-like behavior (creep) are also part of structural mechanics. The review-and-analytical and scientific-and-technical Journal «Structural Mechanics of Engineering Constructions and Buildings» acquaints the readers with the recent achievements of scientists, researchers, and engineers of the Russia and other countries. «Analysis and design of building structures», «Dynamics of structures and buildings», «Analytical and numerical methods of analysis of structures», «Shell theory»...