

Course code: .....

Plan position: .....

### A. INFORMATION ABOUT THE COURSE

#### B. Basic information

Name of course	Wind Engineering
Field of studies	Civil engineering
Level of studies	Second
Profile of studies	Academic
Form of studies	Full-time
Specialty	Civil Engineering Structures
Unit responsible for the field of studies	Faculty of Civil and Environmental Engineering and Architecture, Bydgoszcz University of Science and Technology
Name and academic degree of teacher(s)	Dr hab. inż. Maciej Dutkiewicz, PhD, Dsc, Professor
Introductory courses	Structural mechanics
Introductory requirements	Basic construction mechanics

#### C. Semester/week schedule of classes

Semester	Lectures (W)	Auditorium classes (Ć)	Laboratory classes (L)	Project classes (P)	Seminar (S)	Field classes (T)	Number of ECTS points
II	30	-	-	-	-	-	6

### 2. LEARNING OUTCOME

No.	Learning outcomes description	The reference to the learning outcomes of specific field of study	The reference to the learning outcomes for the area
<b>KNOWLEDGE</b>			
W1	Student has broadened and deep knowledge in design of complex and specialized structures	K_W14 KBI_W04	P7S_WG
<b>SKILLS</b>			
U1	Student prepares a short presentation on the implementation of a project or research task	KBI_U04	P7S_UW
<b>SOCIAL COMPETENCES</b>			
K1	Student is prepared to take up work in construction and design offices, institutes and research centers, institutions dealing with counseling and dissemination of knowledge in the field of broadly understood construction, local government institutions	K_K05	P7S_KK, P7S_KR

### 3. TEACHING METHODS

#### A. Traditional methods used \*\*\*

lecture, presentation, discussion, case study

#### B. Distance learning methods used \*\*\*

**Synchronous method** (classes conducted in a way that ensures direct interaction between the student and the teacher in real time, enabling immediate flow of information, the method can be used only if it is provided for in the study plan for a given cycle of education):  
 e.g. remote lecture in the form of videoconference, remote discussion, etc.

**Asynchronous method** used as an auxiliary (a method that does not ensure direct interaction between the student and the teacher in real time, used only as an auxiliary / complementary method):  
 e.g. online educational videos, online multimedia presentations, etc.

### 4. METHODS OF EXAMINATION

Oral and written exam, written report

### 5. SCOPE

Lectures	Models describing the movement of air. Circulation of the Earth's atmosphere. Phenomena of flow around bodies with different geometrical characteristics. The use of CFD in wind engineering. Wind structure in the ground layer. Wind influences on objects and people. Models of wind effects on buildings. The specificity of wind influence on buildings and structures (towers, masts, cooling towers, suspension bridges and suspended bridges, light roofing of sports stadiums, wind power stations). Reduction of vibrations caused by wind. Strong winds, wind scales, vortex models, principles of wind measurements. Wind comfort. Selected issues of wind energy. Design of a building under the influence of strong wind.
----------	---

### 6. METHODS OF VERIFICATION OF LEARNING OUTCOMES

LEARNING OUTCOME	Form of assessment					
	Oral examination	Written exam	Colloquium	Project	Presentation	.....
W1	-	x	x	x	-	
U1	-	x	x	x	-	
K1	-	x	x	x	-	

### 7. LITERATURE

Basic literature	<ol style="list-style-type: none"> <li>1.Eurocode 2, 1992-1-1, Design of concrete structure part 1-1, General rules and rules for buildings</li> <li>2.Dyrbye C., Hansen S.O., 1997, Wind loads on structures, John Wiley &amp; Sons, Baffins Lane, Chichester.</li> <li>3.Holmes J.D., 2015. Wind Loading of Structures, Taylor &amp; Francis Group, New York.</li> <li>4.Simiu E., Scanlan R.H., 1996. Wind effects on structures: fundamentals and applications to design, John Wiley &amp; Sons, New York</li> </ol>
------------------	--

Supplementary literature	1.Tamura Y., Kareem A.,2013, Advanced Structural Wind Engineering
--------------------------	---

**8. TOTAL STUDENT WORKLOAD REQUIRED TO ACHIEVE EXPECTED LEARNING OUTCOMES EXPRESSED IN TIME AND ECTS CREDITS**

Student's activity		Student workload– number of hours
Classes conducted under a direct supervision of an academic teacher or other persons responsible for classes	Participation in classes indicated in point 1B	30
	Supervision hours	10
Student's own work	Preparation for classes	40
	Reading assignments	50
	Other (preparation for exams, tests, carrying out a project etc)	50
Total student workload		180
Number of ECTS points		6