STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Metal Structures**		Code **1010102111010113705**
Field of study **Structural Engineering Second-cycle Studies**	Profile of study (general academic, practical) **general academic**	Year /Semester **1 / 1**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **-** Classes: **15** Laboratory: **-** Project/seminars: **15**		No. of credits **2**
Status of the course in the study program (Basic, major, other) **major**	(university-wide, from another field) **from field**	
Education areas and fields of science and art **technical sciences**		ECTS distribution (number and %) **2 100%**

Responsible for subject / lecturer:

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Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Has knowledge of structural mechanics and strength of materials in Structural Engineering area of study. Student is familiar with design methods for the steel structural members in compression, tension and bending with the structural solution of joint and connections and knows design principles of trusses and roof bracing systems.
2	**Skills**	Is able to used basic formulas in the field of structural mechanics and strength of materials. He can take the appropriate design and technological solutions in the field of corrosion protection and prevention of steel structures. He can propose a design solution and an appropriate computing procedure according the building standards of loads acting on building structures, as well as in the static calculation and dimensioning of steel structures
3	**Social competencies**	Understand the need for lifelong learning and knows how to interact and work in a group, taking the different roles.

Assumptions and objectives of the course:

Gaining of knowledge and skills in the design and dimensioning of framework and bracing systems single storey buildings, design of columns and beams eccentrically compressed, trusses, portal frame and space trusses.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Knows the basic design method main components of industrial halls, bracing systems and connections - [K2_W02, K2_W04, K2_W14]
2. Presents the design issues of spatial truss structures - [K2_W04, K2_W14]
3. Discusses examples of failure of steel structures and methods of prevention - [K2_W16]

Skills:

1. Uses the building standards of loads on building structures, as well as in the static calculation and dimensioning of steel structures - [K2_U01, K2_U02, K2_U03, K2_U04, K2_U05, K2_U07]
2. Able to design structural components of industrial halls and space trusses including solutions of main structural connections. - [K2_U09, K2_U13]
3. Identifies the reasons of failure of steel structures and related methods of their prevention - [K2_U12]

Social competencies:

1. Understand the need for lifelong learning; able to inspire and organize the learning process of others - [K2_K02, K2_K03]
2. Able to interact and work in a group, taking the different roles - [K2_K01, K2_K06]
3. Correctly identifies and resolves dilemmas associated to his profession - [K2_K07]

Assessment methods of study outcomes

-evaluation of individual student projects combined with an oral defense of the thesis, final test. (1 per semester - 1.5 hours)
Grading Scale:
Number of evaluation
more than 100 excellent
91-100 very good (A)
81 - 90 good plus (B)
71 - 80 Good (C)
61 - 70 is sufficient plus (D)
51 - 60 satisfactory (E)
insufficient under 50 (F)

Course description

Form of teaching:
- exercise classes

Methods for designing and dimensioning framework systems (static diagrams, load dimensioning of columns and beams eccentrically compressed frame members, connection details). Principle of design and dimensioning of bracing systems. Types of transport in industrial halls (overhead and actions). Basic knowledge of fire protection of steel structures.

- projects

Design industrial hall made of steel structure with a bracing system.

Basic bibliography:

1. Unified Design of Steel Structures, 1st Edition, Louis F. Geschwindner, John Wiley & Sons , 2008
2. Structural Stability of Steel: Concepts and Applications for Structural Engineers, Theodore V. Galambos, Andrea E. Surovek, John Wiley & Sons , 2008
3. The Behaviour and Design of Steel Structures to EC3.S, Trahair, M.A. Bradford, D.A. Nethercot, L. Gardner , Balkema, 2007
4. Structural Design of Steelwork to EN 1993 and EN 1994, , Lawrence Martin, Elsevier, 2007

Additional bibliography:

1. Steel Buildings: Analysis and Design, 4th Edition, Stanley W. Crawley, Robert M. Dillon, John Wiley & Sons , 2008

Result of average student's workload

Activity	Time (working hours)
1. Participation in exercise classes	15
2. Participation in design classes	15
3. Complete (at home) works involved in the project	15
4. Participation in the consultations associated with the exercises and design classes	5
5. Preparation to the final test of classes content	10

Student's workload

Source of workload	hours	ECTS
Total workload	50	2
Contact hours	35	1
Practical activities	30	1