UNIVERSITATEA TEHNICĂ
DIN CLUJ-NAPOCA

SYLLABUS

1. Overview : Steel – Concrete Composite Structures (SCCS)

1.1	Institution	Technical University of Cluj-Napoca
1.2	Faculty	Construction
1.3	Department	Engineering Structures
1.4	Specialty area	Civil Engineering
1.5	Degree	BSc
1.6	Specialty /Qualification	Civil Engineering / Design Engineer
1.7	Study form	RSF - Regular Study Form
1.8	Code	SCCS

2. Course details

2.1	Course name				Steel – Concrete Composite Structures			
2.2	Subject area				Civil Engineering			
2.3	Course responsible				conf. dr.ing. Zsolt NAGY			
2.4	Instructor				conf. dr.ing. Zsolt NAGY			
2.5	Year of study	IV	2.6	Semester	2	2.7 Evaluation Exam	2.8 Type of discipline	Optional

3. Total estimated time

Year / Sem	Course name	No. of weeks	Lectures [hour/week]	Applications [hour/week]			Lectures	Applications			Individual study	TOTAL	Credits
				S	L	P		S	L	P			
II	Steel – Concrete Composite Structures	14	2	-	-	2	28			28	74	130	5

3.1	Hours no. per week	4	3.2	Lecture	2	3.3	Applic.	2
3.4	Total hours education plan	130	3.5	Lecture	28	3.6	Applic.	28

Individual study	Hour
Study following manual, lecture support, bibliography and personal notes	20
Supplementary study in library, electronic platforms, site visit	8
Preparing seminars/labs, tasks, reports, portfolio, essay	28
Tutorial	14
Examination	4
Other activities	-

3.7	Total hours individual study	74
3.8	Total hours per semester	130
3.9	Credits	5

4. Prerequisites (if there is the case)

4.1	Of curriculum	N/A
4.2	Of competences	Exam of Steel Structures II.

5. Conditions (if there is the case)

5.1	Lecture development	N/A
5.2	Application development	N/A

6. Specific skills accumulated

Professional skills	**Theoretical background, (What need to know)**	The student shall be familiar with steel and concrete structural systems for buildings: columns, beams, floors, for single story (SS) and multi story (MS) buildings; The student shall be able to use /shall be familiar with design software's for steel and/or concrete structures.
	Accumulated skills: (What will know)	Performing the lectures and applications students will be able: − to set up composite structural solutions (steel and concrete) for columns, beams, floors, for single story (SS) and multi story (MS) buildings − to perform rational and economic design of composite beams, composite floors, composite columns, − to design composite structures, using a number of available specific products, being able to define list of materials, execution details, − to manage and check the designed construction works
	Accumulated abilities: (What kind of tools will be able to handle)	Performing the lectures and applications students will be able to handle: − design software's for composite column, composite beam and composite floor assemblies, − design software's for complex structural applications which involves composite structures, − BIM modelling technology to prepare design documentation for composite structures
Further skills		To apply accumulated skills in order to improve the performance in team working, on site or in a design office; To develop own and responsible strategy following the principles, codes and professional ethics.

7. Course objectives (resulting from accumulated skills)

7.1	General objective	Design of steel-concrete composite structures for SS and MS structures for different applications
7.2	Specific goals	1. Set up of structural solutions for SS and MS structures using composite columns, beams and floors; 2. Quick and efficient design of composite columns, composite beams and composite floors; 3. To prepare design documentation for composite structures; 4. To familiarize with existing composite technologies provided by specific companies in the construction market.

8. Topics

8.1. Courses (program)	Methods	Notes
1	Introduction to composite construction of buildings	Presentation and discussions	Video projector, internet for industrial examples
2	Introduction to EC4		
3	Structural modeling and design		
4	Composite Slabs with Profiled Steel Sheeting		
5	Case studies – solution suppliers from the industry		
6	Shear Connectors and Structural Analysis		
7	Simply supported beams		
8	Continuous Beams		
9	Composite Columns		
10	Composite joints		
11	Advanced composite floor systems		
12	Introduction to Structural Fire Engineering		
13	Fire Engineering Design of Composite Structures		
14	Site visit		

8.2. Applications (seminar/jobs/project)	Methods	Notes
1	Task launch: design of composite beam	Presentation and practice	Computer, software , video projector
2	Configuration, evaluation, shuttering selection		
3	Design calculations of composite beam		
4	Design calculations of composite beam, sketches beam		
5	Stage 1: deadline for composite beam design		
6	Start of the project: design of composite beam		
7	Configuration, evaluation, Design calculations of composite column		
8	Design calculations of composite column, sketches column		
9	Stage 2: deadline for composite column design		
10	Start of the project: design of composite floor		
11	Design calculations of composite floor		
12	Design calculations of composite floor, sketches floor		
13	Stage 3: deadline for composite floor design		
14	Presentations, Evaluation		

References

1. EN 1994: Eurocode 4: Design of composite steel and concrete structures - Part 1-1: General rules and rules for buildings
2. Composite beams and columns to Eurocode 4 Publication no. 72-ECCS
3. Structural Steelwork Eurocodes Development of a Trans-national Approach

9. Topics set-up according to targeted groups (community, professional associations, employer companies) according to course subject area:

Accumulated skills will be necessary for those employees who will be involved in private or public institutions activities dealing with construction works, project management or quality assurance for residential or industrial constructions.

10. Evaluation

Activity	10.1	Evaluation criteria	10.2	Evaluation method	10.3	Final marking
Course		Essay, responding for 3 theoretical question		Written testing – 1,5-2 hour evaluation		60%
Application		Design application using personal computer		Practical testing – 1 hour evaluation		40%
10.4 Required minimum standard performance						
Solving the design application and responding for 2 theoretical questions						

Date   Course responsible   Instructor
  01.10.2019   conf. dr. ing. Zsolt Nagy   conf. dr. ing. Zsolt Nagy

Acceptance date:	Head of Department :
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