ROMANIAN ACADEMY
School of Advanced Studies of the Romanian Academy
(SCOSAAR)

SUMMARY OF THE COURSE: „INTRODUCTION TO VIBRATION CONTROL"

1. Program data

1.1 Department	Department Engineering, Mechanical and Computer Sciences
1.2 Instition	Romanian Academy
1.3 Field of study	Mechanical Engineering
1.4 Study cicle	PHD Doctoral study

2. Discipline data

2.1 Name of the discipline			Introduction to vibration control				
2.2 Titular of course activities			CSI dr.hab. Ligia Munteanu				
2.3 Titular of seminar activities			CSI dr.hab. Ligia Munteanu				
2.4 Titular of lab activities			-				
2.5 Year of study	I	**2.6 Semester**	I	**2.7 Type of assessment**	E*	**2.8 Discipline regim**	DS**

3. Estimated total time (hours per semester of teaching activities)

3.1 Number of hours per week	15	**From which:**			
3.2 Course	9	**3.3 seminar**	6	**3.4 laboratory**	0
3.5 Total hours from the curriculum	210	**From which:**			
3.6 Course	126	**3.7 seminar**	84	**3.8 laboratory**	0
3.9 Total hours per semester	210				
3.10 Number of credits	15				

4. Course content

1.Fundamentals of vibration theory analyzed from practical perspectives
2. Overview of depreciation mechanisms
3. Measurement of depreciation.
4. The dynamic behavior of plastic and elastomeric materials
5. Dynamic behavior of viscoelastic materials
6. Dynamic behavior of smart materials
7. Vibration isolation. Transmissibility. Dynamic absorbers
8. Misconceptions regarding depreciation
9. Vibration control
10. Passive, active, semi-active vibration control methods
11. Examples

5. The objectives of the discipline and the specific skills acquired

1. The general objective of the subject: Knowing and understanding the concept of "vibration theory", acquiring the necessary skills to use the theories, methods, mathematical models and tools specific to the study of vibration theory.
2. Specific objectives:

- Acquiring knowledge specific to the study of vibrations: definitions, properties, damping, practical perspectives.
- Study of the dynamic behavior for various materials used for vibration damping.
- Vibration control methods
- Examples

6. References

1. Buzdugan Gh., Măsurarea vibraţiilor, Ed. Academiei, Bucureşti, 1983.
2. Darabont A., Măsurarea zgomotului şi vibraţiilor în tehnică, Ed. Tehnică, Bucureşti, 1983.
3. Philips A.V., Vibration and noise in motor vehicles, Institution of Mechanical Engineers, 1972.
4. Randall R.B., Application of B&K Equipment to frequency analysis, Bruel & Kjaer, Naerum, Danemarca, 1977.
5. Gh. Ene, C. Pavel, Introducere in tehnica izolarii vibratiilor si a zgommotului, Marix Rom, 2012.
6. Grumăzescu M., Stan A., Wegener N., Marinescu V., Combaterea zgomotului şi vibraţiilor, Editura Tehnică, Bucureşti, 1966.
7. Darabont A., Măsurarea zgomotului şi vibraţiilor în tehnică, Editura Tehnică, Bucureşti, 1983.
8. N.D. Stănescu, L.Munteanu, V. Chiroiu, N.Pandrea, Sisteme dinamice. Teorie şi aplicaţii, vol. 1, 2, Editura Academiei, Bucureşti, 2007, 2011.
9. M.Mihailescu, V.Chiroiu, Advanced mechanics on shells and intelligent structures, Editura Academiei, Bucureşti, 2004.
10. V.Chiroiu, P.Stiucă, L.Munteanu, St.Donescu, Introducere în nanomecanică, Editura Academiei, Bucureşti, 2005.
11. Enescu N., Acustică Tehnică, Universitatea Politehnica Bucureşti, 1997.

7. Assessment

Activity Type	5.1 Evaluation criterias	5.2 Evaluation methods	5.3 Weight of the final grade
5.4 Course	Knowledge acquired	Oral examen	60%
5.5 Seminar	Activity	Case studies presented	40%
5.6 Laboratory	-		
5.7 Standard minim de performanţă: Knowing 80% of the information contained in the course			

*E = Examen. C = Colocviu.
**DF = Fundamental Discipline. DS = Specialty Discipline.

Course structure

November 2022 - February 2023 – Didactic activity IMSAR Acoustic Hall

March 2023 – April 2023 – Exam period

Course owner: Dr. Ligia Munteanu