**3.2. Course description**

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| **Generic information** |
| Head of Course | Prof. Goran Vukelić |
| Course | Vibration and Noise |
| Study Programme | Marine Engineering |
| Level | Undergraduate |
| Type of Course | Elective |
| Year of Study | 3 |  |
| Estimated Student Workload and Methods of Instruction | ECTS coefficient of Student Workload | 4 |
| Number of Hours (L+E+S) | 2+1 |

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| **1. GENERAL COURSE DESCRIPTION** |
| *1.1. Course Objectives*  |
|  Acquiring theoretical and practical knowledge of vibration and noise analysis. Understanding the effect of vibrations and noise on constructions, engines and people. |
| *1.2. Prerequisites for Course Registration*  |
| Completed “Engineering Mechanics I” and “Engineering Mechanics II”. |
| *1.3. Expected Learning Outcomes*  |
| 1. Applying the laws of mechanics to solve the problems of vibrations and noise.2. Understanding the effect of vibrations and noise on constructions, engines and people.3. Measurement of vibrations and noise.4. Analyzing the results of calculation and measurement. |
| *1.4. Course Outline*  |
| Introduction to vibration and noise. Basics of one-degree and two-degree freedom systems vibrations. Free and force vibrations, damped and undamped vibrations. Source, transmission and isolation of vibrations. Axial, flexural and torsional vibrations. Source and spreading of sound. Noise and noise protection. Legislation and standards concerned with noise and vibration. Measurement of vibration and noise. Vibration and noise on ships. Vibration and noise modelling. |
| *1.5. Modes of* *Instruction*  | [x] Lectures[x]  Seminars and workshops [x]  Exercises [ ]  E-learning[ ]  Field work | [x]  Practical work [ ]  Multimedia and Network [x]  Laboratory[ ]  Mentorship[ ]  Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| *1.6. Comments*  | - |
| *1.7. Student Obligations*  |
| Attending the lectures and exercises (min. 70%), attending the assessment and exams, submitting results of assignments. |
| *1.8. Assessment1 of Learning Outcomes*  |
| Course attendance |  | Class participation |  | Seminar paper | 1 | Experiment | 1 |
| Written exam | 1 | Oral exam |     | Essay |     | Research |     |
| Project |     | Continuous Assessment | 1 | Presentation |     | Practical work |  |
| Portfolio |     |  |     |  |     |  |     |

1 **NOTE:** Name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course. Use empty fields for additional activities.

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| *1.9. Assessment of Learning Outcomes and Examples of Evaluation during Classes and on the Final Exam*  |
| According to the study rulebooks of University of Rijeka and Faculty of Maritime Studies, 70% of learning outcomes will be assessed through continuous assessment during the semester (colloquium, seminars, laboratory exercises), 30% of learning outcomes through final exam with passing rate set at min. 50% of final exam points.Examples of evaluation in correlation to learning outcomes:1. Determine dynamic equilibrium of oscillating body and systems.
2. Positive and negative effect of vibration and noise.
3. Measure displacement, speed and acceleration of oscillating body.
4. Compare experimental and calculated results.
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| *1.10. Main Reading*  |  |  |
| Inman, D.J.: Engineering vibration, Prentice Hall, New Jersey, SAD, 2001. |
| *1.11. Recommended Reading*  |  |  |
| Brüel & Kjaer: Measuring vibrations, Naerum, Danska, 1982.Brüel & Kjaer: Mesuring sound, Naerum, Danska, 1984. |
| *1.12. Number of Main Reading Examples*  |  |  |
| *Title*  | *Number of examples*  | *Number of students*  |
| Inman, D.J.: Engineering vibration | 1 | 5 |
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| *1.13. Quality Assurance*  |
| According to ISO 9001 system set at Faculty of Maritime Studies, Rijeka. Once a year analysis of passing exam rate. Once a semester anonymous students online survey. |