# Engineering Program

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| **Specialization** | **Technology of remote industrial sensing and controlling** |
| **Course Number** | **20413256** |
| **Course Title** | Machine Condition Monitoring, Machine Health Lab |
| **Credit Hours** | **1** |
| **Theoretical Hours** | **0** |
| **Practical Hours** | **1** |

**Brief Course Description:**

Students will integrate both hardware and software; they will do interfacing to the wide variety of sensors, actuators, and displays needed for their projects. Students can conduct multiple and different projects concentrating on a specific component or device and will learn the processes necessary to successfully integrate the component or device into their system.

**Course Objectives:**

Upon the completion of the course, the student will be able to:

- Introduce student to machine monitoring and conditioning
- Understand various types faults
- Give the necessary background about digital processing and vibration
- Introduce the basic instrumentation used for machine monitoring and noise analyses

**Detailed Course Description:**

| Chapter No. | Content | Time Needed |
|---|---|---|
| 1 | • Introduction to Signal Processing | 1 week |
| 2 | • Acquiring Physical Phenomena | 2 weeks |
| 3 | • Vibrations Fundamentals | 2 weeks |
| 4 | • Shaft Balancing & Bearing Faults | 2 weeks |
| 5 | • Voltage & Current Waveforms | 2 weeks |
| 6 | • Phasor Diagrams | 2 weeks |
| 7 | • Power Fundamentals & Calculations | 2 weeks |
| 8 | • Harmonics | 2 weeks |
| 9 | • Temperature Monitoring | 1 weeks |

**Teaching Methodology:**

- Working with datasheet
- Practical experimental work in small groups
- PowerPoint slides
- Term projects

**Text Books & References:**

Laboratory sheet prepared by instructor

**References**