



February 28, 2006

## **Applied Vibration Analysis - Introduction Category I**

***Follows Category I Guidelines Established by ISO 18436-2, "Condition monitoring and diagnostics of machine – Requirements for training and certification of personnel – Part 2: Vibration condition monitoring and diagnostics"***

<b>Prerequisites:</b>	<b>Secondary Education Diploma is recommended.</b>
<b>ISO Certification</b>	<b>Requires 32 hours of formal training or independent study, 6 months experience, and examination</b>
<b>Course Length</b>	<b>32 Hours</b>
<b>Certification Exam</b>	<b>50 questions, 2 hours time limit, closed book but a summary sheet of formulae is provided, passing score is 75% correct</b>
<b>Maximum # Students:</b>	<b>15</b>

### **Course Objectives**

**Students who successfully complete this course will be able to:**

- **calculate vibration frequency from time domain data**
- **convert vibration units of measure and signal detection**
- **read and interpret basic FFT spectra**
- **recognize various vibration sensors, mounting methods and instrumentation**
- **compare overall or single value vibration measurements against pre-established alert settings**
- **perform basic FFT signature analysis**



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## Syllabus and Seminar Schedule

### Day One

<b>8:00AM – 9:50AM</b>	<b>Principles of Vibration</b> <i>Basic motion, Period, Frequency, Units, Units conversions</i>
<i>9:50AM – 10:10AM</i>	<i>Break</i>
<b>10:10AM – 12:00PM</b>	<b>Practice Problems and Exercises</b>
<i>12:00PM – 1:00PM</i>	<i>Lunch</i>
<b>1:00PM – 2:50PM</b>	<b>Principles of Vibration</b> <i>Time and frequency domains, natural frequency and resonance</i>
<i>2:50PM – 3:10PM</i>	<i>Break</i>
<b>3:10PM – 5:00PM</b>	<b>Practice Problems and Exercises</b>

### Day Two

<b>8:00AM – 9:50AM</b>	<b>Principles of Vibration</b> <i>FFT Application</i>
<i>9:50AM – 10:10AM</i>	<i>Break</i>
<b>10:10AM – 12:00PM</b>	<b>Practice Problems and Exercises</b>
<i>12:00PM – 1:00PM</i>	<i>Lunch</i>
<b>1:00PM – 2:50PM</b>	<b>Data Acquisition</b> <i>Instrumentation, Transducers and Mounting</i>
<i>2:50PM – 3:10PM</i>	<i>Break</i>
<b>3:10PM – 5:00PM</b>	<b>Practice Problems and Exercises</b>



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**Day Three**

<b>8:00AM – 9:50AM</b>	<b>Condition Monitoring and Fault Analysis</b> <i>Determining Severity, Acceptance Testing</i>
<i>9:50AM – 10:10AM</i>	<i>Break</i>
<b>10:10AM – 12:00PM</b>	<b>Practice Problems and Exercises</b>
<i>12:00PM – 1:00PM</i>	<i>Lunch</i>
<b>1:00PM – 2:50PM</b>	<b>Condition Monitoring and Fault Analysis</b> <i>General Forces</i>
<i>2:50PM – 3:10PM</i>	<i>Break</i>
<b>3:10PM – 5:00PM</b>	<b>Practice Problems and Exercises</b>

**Day Four**

<b>8:00AM – 9:50AM</b>	<b>Equipment Knowledge</b> <i>AC Motors, Pumps, Fans, Gearboxes</i>
<i>9:50AM – 10:10AM</i>	<i>Break</i>
<b>10:10AM – 12:00PM</b>	<b>Practice Problems and Exercises</b>
<i>12:00PM – 1:00PM</i>	<i>Lunch</i>
<b>1:00PM – 2:50PM</b>	<b>Review</b>
<i>2:50PM – 3:10PM</i>	<i>Break</i>
<b>3:10PM – 5:00PM</b>	<b>Examination</b>