Dear Readers,

The SKF story began with a problem: the need for machines to work better, run smoother and live longer. SKF has been at the heart of industry and in the brains of machinery for more than a century. Whether it's in the comfort of your kitchen or in the harsh conditions at the steel mill, you'll find our products and solutions at work.

Our training courses have been developed with over 100 years of experience and knowledge of rotating equipment reliability that is unmatched in the world. Our close working relationships with equipment owners and designers have given us an intimate understanding of the processes and challenges specific to every major industry within the continuously evolving global community.

We have a variety of assessment programs available to help you generate an effective training development plan for your team. Our skilled instructors can come to your facility to provide on-site training that is customized to your team's operation and needs.

SKF Training Solutions, SKF Canada Limited is recognized by the Society for Maintenance & Reliability Professionals (SMRP) as an approved provider of continuing education and training aligned with key subject areas related to reliability and physical asset management.

For 2017, we are continuing to tour the country, offering our most popular courses at several new locations. If your location is not listed, please contact SKF so we can add your location to 2018 or possibly make arrangements for 2017.

Lubhani Sharma
SKF Training Solutions

SKF Training Solutions:
Lubhani Sharma
928 72nd Avenue NE
Calgary, Alberta T2E 8V9
Tel: 403-519-1655
Fax: 403-232-9255
Email: training.canada@skf.com
**Table of contents**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKF Training Solutions intro letter</td>
<td>2</td>
</tr>
<tr>
<td>Public training locations &amp; certifications</td>
<td>4</td>
</tr>
<tr>
<td>SKF Training Solutions overview</td>
<td>6</td>
</tr>
<tr>
<td>Client needs analysis for training</td>
<td>7</td>
</tr>
<tr>
<td>Best practice classes</td>
<td>8</td>
</tr>
<tr>
<td>Bearing specialist program</td>
<td>9</td>
</tr>
<tr>
<td>E-learning web-based training</td>
<td>10</td>
</tr>
<tr>
<td>Training courses</td>
<td>12-43</td>
</tr>
<tr>
<td>Courses by Life Cycle Management stages</td>
<td>45</td>
</tr>
<tr>
<td>Courses by role</td>
<td>46</td>
</tr>
<tr>
<td>Course registration form</td>
<td>47</td>
</tr>
<tr>
<td>Maintain and repair</td>
<td>12</td>
</tr>
<tr>
<td>WC200 Maintenance planning and scheduling</td>
<td>13</td>
</tr>
<tr>
<td>WE201 Bearing maintenance and technology</td>
<td>14</td>
</tr>
<tr>
<td>WE202 Reliability in rotating equipment</td>
<td>15</td>
</tr>
<tr>
<td>WE203 Lubrication of rolling element bearings</td>
<td>16</td>
</tr>
<tr>
<td>WE241 Precision maintenance skills</td>
<td>17</td>
</tr>
<tr>
<td>WE242 Precision maintenance skills</td>
<td>18</td>
</tr>
<tr>
<td>WE250 Dynamic field balancing</td>
<td>19</td>
</tr>
<tr>
<td>WC230 Spare parts management &amp; inventory control</td>
<td>20</td>
</tr>
<tr>
<td>Design and develop</td>
<td>21</td>
</tr>
<tr>
<td>BSD301 Bearing system design</td>
<td>22</td>
</tr>
<tr>
<td>WE204 Root cause bearing system failure analysis</td>
<td>23</td>
</tr>
<tr>
<td>RCA302 Root cause analysis</td>
<td>24</td>
</tr>
<tr>
<td>IPM303 Introduction to project management</td>
<td>25</td>
</tr>
<tr>
<td>Install and commission</td>
<td>26</td>
</tr>
<tr>
<td>SmartStart – product start up training</td>
<td>27</td>
</tr>
<tr>
<td>SiteMentor – advanced product training</td>
<td>27</td>
</tr>
<tr>
<td>WICM233 SKF Microlog Inspector</td>
<td>28</td>
</tr>
<tr>
<td>WICM255 SKF Microlog Analyzers</td>
<td>29</td>
</tr>
<tr>
<td>WICM270 SKF On-line systems</td>
<td>30</td>
</tr>
<tr>
<td>WICM350 Advanced SKF Microlog and @ptitude Analyst applications</td>
<td>31</td>
</tr>
<tr>
<td>Operate and monitor</td>
<td>33</td>
</tr>
<tr>
<td>WI202 Vibration analysis level 1 - data collection</td>
<td>34</td>
</tr>
<tr>
<td>WI203 Vibration analysis level 2 – data analysis</td>
<td>35</td>
</tr>
<tr>
<td>WI205 Vibration analysis – advanced results</td>
<td>36</td>
</tr>
<tr>
<td>WI220 Airborne ultrasound - level 1</td>
<td>37</td>
</tr>
<tr>
<td>WI241 Machine lubrication technician/analyst - level 1</td>
<td>38</td>
</tr>
<tr>
<td>WI261 Introduction to static and dynamic motor testing</td>
<td>39</td>
</tr>
<tr>
<td>AMS334 Operational excellence</td>
<td>40</td>
</tr>
<tr>
<td>Specification</td>
<td>41</td>
</tr>
<tr>
<td>AMS330 Asset management overview</td>
<td>42</td>
</tr>
<tr>
<td>AMS331 Applied physical asset management</td>
<td>43</td>
</tr>
<tr>
<td>AMS332 Reliability centred maintenance (RCM/SRCM)</td>
<td>44</td>
</tr>
</tbody>
</table>
Public training locations

Vancouver, BC
Calgary, AB
Sarnia, ON
Timmins, ON
Val D’Or, QC
Sept-Iles, QC
Edmonton, AB
Regina, SK
Winnipeg, MB
Montreal, QC
Toronto, ON
Kingston, ON
Saint John, NB
Quebec City, QC
Winnipeg, MB
Sudbury, ON
Sarnia, ON

We can come to you, contact us at: training.canada@skf.com to setup a training in your city.

Certifications

Society for Maintenance & Reliability Professionals is a nonprofit professional society formed by practitioners to develop and promote excellence in maintenance, reliability and physical asset management while creating leaders in the profession.

International Council for Machinery Lubrication is a non-profit organization dedicated to helping lubrication practitioners succeed in their professional careers.

SKF Canada is a training organization accredited by the "Commission des partenaires du marché du travail (Emploi-Quebec)" for the purpose of applying the law favouring the development and recognition of competencies of the workforce. Agreement certificate number: 0056417

CMVA is a non-profit association whose fields of interest include machinery dynamics and all aspects of condition monitoring and predictive maintenance of machinery, especially vibration monitoring and analysis.
The SKF Group is a leading global supplier of products, solutions and services within rolling bearings, seals, mechatronics, services and lubrication systems.

### Vision
To equip the world with SKF knowledge

### Mission
To strengthen SKF’s global leadership and sustain profitable growth by being the preferred company:
- for our customers, distributors and suppliers
- for our employees
- for our shareholders

### Drivers
- Profitability
- Quality
- Innovation
- Speed
- Sustainability

### Values
- Empowerment
- High ethics
- Openness
- Teamwork
SKF Training Solutions overview

SKF Training Solutions portfolio

SKF Training Solutions offers training in a variety of formats covering topics in Maintenance & repair, Design & engineering, Condition monitoring and Asset Management.

- **E-learning**
  - Introductory classes held online covering a variety of topics

- **Best practices classes**
  - Introductory or refresher classes held at your facility

- **Correspondance courses**
  - Intermediate topics hosted through online classes and correspondence with instructor

- **Private courses**
  - Intermediate multi-day courses held at your facility

- **Public courses**
  - Intermediate to advanced topics hosted at SKF facilities or other regional locations.
  - These classes are associated with a certification program or SKF qualification testing.

SKF takes a blended learning approach to enhance intermediate and advanced learning experience. Our established classroom courses are complemented with a package of self study materials. These materials are accessed upon registration via the Knowledge Centre at [www.skf.ca](http://www.skf.ca) and may include: on-line learning modules, technical papers or application reports.

Benefits of training

- Achieve higher levels of personnel and machine efficiency
- Eliminate machinery problems and increase reliability and productivity
- Enhance plant safety
- Reduce unplanned downtime and under-utilization of equipment
- Develop skills of less experienced personnel to handle the departure of “expert” personnel
- Stop problems before they happen by addressing the root causes
Training needs analysis

Highest skills improvement opportunity for staff

If you don’t know where to start, we can help. SKF has developed programs to assess the maintenance skills of your team and identify individual strengths and weaknesses. Together we then create a program that fits your needs and gives the best return on your investment in your people.

The SKF Client Needs Analysis – Training enables this crucial understanding, combining our experience in training and knowledge of maintenance and reliability. The goal is to provide useful and meaningful information to help you focus on improvements for plant performance.

These assessments are conducted with individuals or a group of your staff from the following work areas:

- Mechanical maintenance
- Reliability & Condition monitoring
- Engineering
- Planning & scheduling

Targeting eight critical areas of competency for improvement

Opportunities for improvement are determined when the Client Needs Analysis – Training data is analysed. Typical improvements fall in the following areas:

- Bearing & seal technology
- Power transmission
- Lubrication
- Oil analysis
- Maintenance strategy
- RCA/RCFA
- Vibration analysis
- Thermography

Competency & skills gap analysis

The Client Needs Analysis – Training will give you a clearer perspective on your team’s competency and skill level.

The results are analysed and presented highlighting opportunities for improvement as well as areas of exceptional performance.
Best practice classes

Introductory or refresher classes held at your facility

These single day demonstration sessions are designed as introductory or refresher classes addressing important topics covering reliability of bearing systems and rotating equipment. Suitable for anyone working with, interested in or responsible for improving the reliability of rotating equipment.

Maximum group size per day is 10. Tuition is $2,500 per day.

Plan your year!
Book all 6 courses for 2017 at a special rate.
Call today to organize.

BP101 Bearing fundamentals
- Bearing history, design and function
- Bearing lubrication basics
- Associated components
- Bearing fits
- Mechanical, hydraulic and thermal mounting techniques

BP102 Bearing lubrication basics
- Function of a lubricant
- Composition and definitions
- Grease lubrication
- Oil lubrication
- Maintenance & planning of lubrication

BP103 Bearing damage analysis
- Key factors affecting bearing performance
- Normal & abnormal load zones
- Identifying visual bearing damage characteristics
- ISO failure mode definitions

BP104 Shaft alignment basics
- Consequences of poor alignment
- Definitions & identification procedures
- Soft foot
- Rough and precision alignment methods
- Problem solving

BP105 Fundamentals of condition based monitoring
- Condition based monitoring
- Vibration basics
- Measurement techniques
- Spectrum analysis
- Establishing measurements & alarms

BP106 Fundamentals of thermography
- Introduction to basic infrared theory
- Testing considerations
- Technical application of thermography
- Limit standards review
- Interpreting results
Get the complete package

**Bearing specialist program**

Here's a package of training programs designed to develop you into a highly knowledgable bearing system maintenance specialist.

**Step 1 - Introduction to bearing system components**
- GRB001 Bearing basics
- GRL001 Lubrication basics
- WE170 Basics of industrial seals for rotating motion

**Step 2 - Intermediate bearing maintenance courses**
- WE201 Bearing maintenance & technology
- WI241 Machine lubrication technician analyst - Level 1

**Step 3 - Bearing system maintenance classes**
- WE140 Shaft alignment basics
- WI130 Thermography basics
- WE150 Balancing basics

**Step 4 - Advanced bearing system courses**
- WE204 Root cause bearing failure analysis
- WE241 Precision maintenance skills
  - Laser shaft alignment and rotor balancing

Total Program Cost: $4,995 per person.
E-learning web-based training

Learn at your own place and pace

The on-line area of SKF Training Solutions offers a wide range of e-learning courses. Self-paced learning can be accessed by the student at any time and place that best suits their learning needs.

Certificate

On completion of a course, the participant is offered an exam. Upon successful completion of the exam, the participant will receive an electronic certificate which can be printed out locally.

Structured learning path

These e-learning courses are an integral part of the SKF Training Solutions' comprehensive training portfolio. The courses are designed to complement the higher level classroom courses that are delivered by our specialist training staff.

SKF Training Solutions e-learning can be found at www.skf.com/ca/en/knowledge-centre

<table>
<thead>
<tr>
<th>Maintenance strategy courses</th>
<th>Work identification courses</th>
<th>General reference courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS 100 AEO basics</td>
<td>WI 100 Vibration basics</td>
<td>GRB 001 Bearing basics</td>
</tr>
<tr>
<td>MS 101 Assessment basics</td>
<td>WI 130 Thermography basics</td>
<td>GRB 002 Spherical roller bearings</td>
</tr>
<tr>
<td>MS 113 Proactive reliability maintenance</td>
<td>WI 140 Lubrication analysis basics</td>
<td>GRB 003 Angular contact ball bearings</td>
</tr>
<tr>
<td>MS 120 Operator driven reliability</td>
<td>Work control course</td>
<td>GRB 004 CARB® toroidal roller bearings</td>
</tr>
<tr>
<td>MS 130 Maintenance strategy review</td>
<td>WC 130 Spare parts management</td>
<td>GRB 005 Tapered roller bearings</td>
</tr>
<tr>
<td></td>
<td>Work execution courses</td>
<td>GRB 006 Deep groove ball bearings</td>
</tr>
<tr>
<td></td>
<td>WE 104 Bearing damage analysis</td>
<td>GRL 001 Lubrication basics</td>
</tr>
<tr>
<td></td>
<td>WE 140 Shaft alignment basics</td>
<td>Product course</td>
</tr>
<tr>
<td></td>
<td>WE 150 Balancing basics</td>
<td>PT01 MCA SKF Machine condition advisor</td>
</tr>
<tr>
<td></td>
<td>WE 170 Basics of industrial seals for rotating motion</td>
<td>An SKF Training Solutions on-line subscription includes access to all listed courses for one year per person.</td>
</tr>
</tbody>
</table>

(Part # KC 201)

Tuition $395
Closing the asset life cycle loop
We close the SKF Life Cycle Management loop when we channel our ‘end user’ knowledge back into the specification phase of next generation equipment. Technologies, such as condition monitoring, can be designed into new OEM assets or retrofitted, constantly improving and providing differentiation in competitive markets, adding value, and extending the possibilities for aftermarket services and enhanced machinery maintenance.

Delivering benefits to our customers
At every stage of the asset life cycle, SKF products, advanced services and solutions help our customers improve productivity, reduce maintenance costs, improve energy and resource efficiency, and optimize designs for long service life and reliability. Ultimately this helps to make them more successful, sustainable, and profitable.

SKF Life Cycle Management
Industrial operations everywhere understand that effective management of assets throughout their lifecycle can deliver significant value and reduce total cost of ownership. No single company is better prepared to help you achieve this than SKF.

SKF - at the heart of OEM assets
SKF has been at the heart of machinery since 1907. Our history of providing bearings, seals, lubrication, linear motion, actuation and mechatronics solutions for OEMs in every major industry gives us a unique depth and breadth of knowledge of industrial assets. From specification, design and development, to manufacturing and testing, SKF has worked with OEMs to solve application challenges and deliver world-class solutions globally.

Supporting assets in the aftermarket
Building on this knowledge, SKF has developed advanced services and technologies to maintain, monitor, repair and optimise your assets throughout their operating life. Providing the optimum replacement parts at the right time which helps our customers to optimize their asset efficiency.
**Maintain and repair**

Supporting machinery maintenance and operations with a range of tools and service

We offer training in the latest precision maintenance and condition monitoring practices.

SKF specialists can even supplement your workforce with expert, hands-on services.

SKF remanufacturing services can restore bearings, housings and spindles to full working specifications, avoiding costly replacement.

Our spare parts optimization and management services can help provide for the availability of replacement parts while minimizing the cost of stock.

Our offers include:

- Maintenance and alignment tools and services
- Electric motor testing and certified repair shops
- Spindle reconditioning
- Remanufacturing services
- Root cause failure analysis
- Spare parts optimization and management
- On-line and on-site training
- Global supply of replacement bearings, housings, seals and lubricants
WC200 - Maintenance planning and scheduling

Recommended for
All planners and maintenance staff involved in planning and scheduling.

Course objective
With this course, students will learn how to leverage labor resources (increase efficiency and productivity with fewer resources), how to reduce reactive maintenance and how to minimize efficiency losses resulting from disconnects with the productions schedule, priority changes, emergency work, and outages. An effective planning and scheduling system will enable your maintenance personnel to increase productivity.

Specific topics include

<table>
<thead>
<tr>
<th>Planning fundamentals and principles</th>
<th>Scheduling fundamentals and principles</th>
<th>Schedule compliance and metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>Theory</td>
<td>Wrench time</td>
</tr>
<tr>
<td>Process</td>
<td>Process</td>
<td>Error notification</td>
</tr>
<tr>
<td>Standard work</td>
<td>Handling backlog</td>
<td>Shutdown process</td>
</tr>
<tr>
<td>Planning and reserving material</td>
<td>Scheduling effective meetings</td>
<td>Work administration tools</td>
</tr>
</tbody>
</table>

Work closeout
- Follow up and key performance indicators
- Continuous improvement projects

Public course 2017 schedule
- Calgary       December 4-5

Public course: 2 days, $995 per participant
Private course: please inquire
Correspondance course: please inquire
WE201 - Bearing maintenance and technology

Recommended for
Millwrights, mechanics, service technicians, engineering technicians, maintenance or repair personnel working with rotating equipment.

Course objective
The course will teach the attendee to improve the service life of rolling bearings and thereby reliability of rotating machinery. Focus is on fundamental bearing technology, importance of proper handling, appropriate methods of mounting and dismounting as well as bearing system maintenance and care. This is done through a combination of hands-on training, audio-visuals, lectures and discussion opportunities.

Specific topics include

**Bearing basics**
- Types
- Components
- Terminology
- Designation system
- Materials
- Quality
- Housings and associated components

**Bearing maintenance**
- Review of maintenance styles
- Selection of shaft and housing fits
- Proper bearing mounting and dismounting tools and techniques (mechanical, thermal and hydraulic)
- Bearing system assembly and installation
- Maintenance mistakes
- Laser shaft alignment basics

**Factors affecting bearing performance**
- Bearing loads
- Bearing capacities
- Design life versus service life
- Seal designs
- Environmental considerations

**Fundamentals of bearing lubrication**
- Primary function of a lubricant
- How bearing lubrication works
- Grease lubrication
- Oil lubrication
- Relubrication practices

Public course 2017 schedule

- **Toronto**: January 18-19
- **Calgary**: January 23-24
- **Edmonton**: January 25-26
- **Winnipeg**: March 1-2
- **Kingston**: March 15-16
- **Vancouver**: April 3-4
- **Calgary**: April 10-11
- **Edmonton**: April 12-13
- **Saint John**: June 7-8
- **Sarnia**: July 10-11
- **Regina**: September 6-7
- **Sept-Îles**: September 12-13 (F)
- **Montreal**: November 1-2 (F)
- **Toronto**: November 27-28

PUBLIC COURSE:
2 days, $995 per participant

PRIVATE COURSE:
2 days, $6,995 for 10 people
WE202 - Reliability in rotating equipment

Recommended for
Reliability and maintenance personnel responsible for the successful installation, operation, maintenance and monitoring of existing rotating equipment.

Course objective
The course focuses on the four most common types of rotating equipment: pumps, motors, fans and gearboxes. The students learn world class techniques for installation, maintenance, troubleshooting and repair that can be translated to all types of rotating equipment.

Specific topics include

**Industrial pumps**
- Bearing system design overview
- Pump operation and terminology
- Controlling thrust loads
- ANSI versus API design standards
- Troubleshooting

**Industrial motors**
- Bearing system design overview
- Factors affecting bearing performance
- Installation
- Troubleshooting
- Condition monitoring

**Industrial fans**
- Bearing system design overview
- Fan performance
- Installation of pillow block mounted bearings
- Lubrication and relubrication of open bearings
- Detecting and correcting imbalance

**Industrial gearboxes**
- Bearing system design overview
- Coupling machinery: alignment overview
- Proper oil lubrication
- Monitoring and inspection

Public course 2017 schedule

Please inquire for course dates | training.canada@skf.com
WE203 - Lubrication of Rolling Element Bearings

Recommended for
Maintenance personnel and engineers responsible for bearing lubrication, lubricant specification and lubrication system planning and design.

Course objective
Upon completion, students should be able to evaluate and select appropriate lubricants for a wide variety of rolling element bearing applications.

Specific topics include

**Lubrication fundamentals**
- Functions of lubrication
- Basic expressions
- Lubricant additives and their effects

**Grease lubrication**
- Grease functions and properties
- Grease delivery and metering systems
- Selection of grease type: choosing the right grade, base, stiffness, and oil for your application
- Compute grease intervals and relubrication amounts

**Oil lubrication**
- Choosing the right lubricant: oil and grease quality standards and testing
- Effects of cleanliness and contamination
- Using the new life theory to predict the effects of contamination on bearings
- Effects of water ingress
- Effective use of filtration and choosing the right filter
- Change-out intervals
- Bearing housing design concepts
- Comparison of oil delivery methods
- Determining oil flow rates

**Applying lubricants**
- Determining lubrication quantities and intervals
- Hands-on lubrication and relubrication procedures for pillow blocks, ball bearings, roller bearings, sealed and shielded bearings
- Electric motor relubrication

**Common errors/troubleshooting**
- Over-greasing, under-greasing, and mixing greases
- Corrective actions

Public course 2017 schedule

- Please inquire for course dates | training.canada@skf.com
WE241 - Precision maintenance skills
Laser shaft alignment and rotor balancing

Recommended for
Maintenance personnel responsible for machine installations and troubleshooting.

Course objective
This hands-on course aims to teach maintenance personnel the fundamentals of laser shaft alignment techniques and rotor balancing techniques and given the time to practice these skills under the guidance of a SKF Service Engineer.

Specific topics include

Proactive shaft alignment
- Machinery alignment and misalignment
- Alignment tolerances
- Soft foot
- Laser alignment techniques

Hands-on workshop rotor balancing
Understanding imbalance
- Identifying imbalance
- Single plane (static) balancing
- Single plane (dynamic) balancing

Public course 2017 schedule
Please inquire for course dates | training.canada@skf.com

Public course: 2 days, $995 per person
WE242 - Precision maintenance skills
Rotor components and power transmission

Recommended for
Maintenance personnel responsible for machinery installations and troubleshooting.

Course objective
This advanced course aims to teach the maintenance personnel an understanding of the precision and proactive practices necessary to install and maintain a machine to the highest possible level.

Specific topics include

Machinery mechanical troubleshooting
- Machine history
- Maintenance history
- Machine details
- Disassembly
- Identifying resonance

Achieving precision in belt driven machinery
- V-belts
- Sheaves
- Sprockets
- Installation and troubleshooting
- Belt tensioning

Proactive shaft alignment
- Machinery alignment and misalignment
- Alignment tolerances
- Soft foot
- Alignment methods
- Proactive steps

Graphing techniques
- Fundamentals
- Thermal growth

Rotor balance and precision assembly
- Understanding imbalance
- Improving rotor balance through precision assembly
- Techniques to make any machine run more smoothly

Seal reliability
- Mechanical seals
- Pressure balance
- Troubleshooting
- Precision seal installation

Private course: 2 days, $6,995 for 10 people

On-site courses only
WE250 - Dynamic field balancing

Recommended for
Condition monitoring and maintenance personnel seeking strong practical skills in balancing rotating equipment to precision level in the field and in the shop.

Course objective
This course teaches proper diagnosis of imbalance, assessment of balancing requirements/methods, data acquisition and balancing procedures.

Specific topics include

Vibration analysis – the first step in field balancing
- Confirming imbalance
- Other "look alike" problems
- Trial weights and rotor response

Single plane (static balancing)
- Vector diagrams
- Balancing without phase
- Instrument solutions

Two plane (dynamic) balancing
- Splitting weights
- Cross effect
- Two plane solutions

Static and couple balancing
- When to use
- Techniques

Balancing machines
- Hard bearing versus soft bearing
- Troubleshooting
- Balancing tolerances
- Traverse test

Hands-on
- Day 2 is devoted to hands-on skill practices using training kits and existing machinery

On-site courses only

Private course: 2 days, $6,995 for 10 people
WC230 - Spare parts management & inventory control

Recommended for
Plant personnel involved with industrial maintenance inventory control, planning, scheduling and purchasing.

Course objective
This course provides participants with a sound knowledge and understanding of spares and inventory management in the maintenance, repair and operations environment.

Specific topics include

Spare parts and inventory management processes and principles
- Terminology
- Relationship to business goals

Identifying, structuring and classifying criticality
- Order and reorder parameters
- Optimizing availability
- Handling obsolete parts

Spare parts management
Maintenance and spare parts strategy
MRO inventory management
- Basics
- Work processes
- CMMS

Case studies

Public course 2017 schedule
- Calgary: March 21-22
- Edmonton: August 28-29
- Calgary: November 13-14

Public course: 2 days, $995 per participant
Private course: please inquire
Correspondance course: please inquire
**Design and develop**

**Solving application challenges with a systems approach to designs**

Our proprietary 3-D modelling software simulates the interaction of machine components. Customers can explore alternate materials and geometries to optimize and verify designs virtually, before actual prototyping.

We can help you choose the right products and solutions to extend operating life, reduce maintenance needs, improve energy efficiency, reduce Total Cost of Ownership, and more. We can also help you in designing sensors to monitor position, load, temperature and vibration.

When it’s time to redesign, we can apply a range of knowledge about how that machinery was operated, maintained, repaired and improved over the course of its service life.

**Our offers include:**
- Application engineering and validation
- Design for Six Sigma
- Custom instrumentation design
- Project management
- Life cycle costing
- Testing
- System failure analysis
BSD301 - Bearing system design

Recommended for

Design engineers directly responsible for rolling element bearing system design. Reliability and maintenance engineers responsible for optimizing the performance and improving the reliability of existing machinery.

Course objective

Students will gain a thorough understanding of bearing system designs used in typical industrial applications. Includes bearing life, lubrication life, seal life and other factors affecting performance and reliability of rotating equipment. This course uses a combination of lectures, open discussions and guided exercises.

Specific topics include

Selection of bearing type
- Available space
- Loads
- Misalignment
- Precision
- Speed
- Stiffness
- Axial displacement
- Mounting & dismounting
- Integral seals

Lubrication of bearings
- Grease lubrication
- Relubrication
- Oil lubrication

Selection of bearing size
- Bearing reliability – system life
- Dynamic load ratings and life
- Dynamic and static bearing loads
- Static load ratings and capacity

Calculation tools
Friction, speed and vibration
- Friction models
- Reference speeds
- Limiting speeds
- Influence of vibration

Bearing data
- Dimensions
- Tolerances
- Internal clearance
- Materials
- Cages
- Designations

Application of bearings
- Bearing arrangements
- Radial location of bearings
- Axial location of bearings
- Designing associated components
- Bearing preload
- Sealing arrangements

Public course 2017 schedule

- Toronto May 9-11
- Toronto September 19-21
WE204 - Root cause bearing failure analysis

Recommended for
Reliability and maintenance personnel responsible for optimizing the performance and improving the reliability of existing rotating equipment.

Course objective
The course provides the background information and methodologies for analysing damaged or failed bearings and their associated components. Students will learn to uncover the true root causes of reduced bearing life.

Specific topics include

<table>
<thead>
<tr>
<th>Bearing fundamentals</th>
<th>Key factors affecting bearing performance</th>
<th>Bearing performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Terminology</td>
<td>- Bearing loads</td>
<td>- Normal and abnormal load zones</td>
</tr>
<tr>
<td>- Design and function</td>
<td>- Clearance</td>
<td>- Bearing failure progression</td>
</tr>
<tr>
<td>- Lubrication</td>
<td>- Speed &amp; vibration</td>
<td>- Temperature effects</td>
</tr>
<tr>
<td>- Design of associated components</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Root Cause Analysis
- Investigation methodologies
- Service expectations versus service realities
- Primary, secondary and tertiary damage levels
- Case studies and workshops

Visual damage characteristics
- ISO failure mode definitions
- Mechanisms of failure

Public course 2017 schedule
- Montreal: January 30-31 (F)
- Toronto: February 1-2
- Quebec City: March 21-22 (F)
- Edmonton: April 25-26
- Regina: May 2-3
- Timmins: June 13-14
- Val D’Or: June 20-21 (F)
- Calgary: September 18-19
- Winnipeg: October 2-3
- Vancouver: October 10-11
- Calgary: October 17-18
- Saint John: November 7-8
- Edmonton: November 14-15
- Toronto: December 4-5

Public course: 2 days, $1,195 per participant
Private course: please inquire

SKF Life Cycle Management
RCA302 - Root cause analysis

Recommended for
Reliability engineers and technologists.

Course objective
This course will showcase how to identify the predominant root cause to critical failures, creating and executing cost effective solutions as well as tracking the results.

**Specific topics include**

**Root cause failure analysis theory**
- What, when and why to do an RCA
- Life cycle of failure management
- Failure modes

**RCFA team**
- Facilitator
- Sponsor
- Supporting team members

**RCFA in practice**
- Needs determination
- Incident response
- Preservation of evidence
- Failure analysis and root cause verification
  - Event sequencing
  - Building a Why Tree
  - Fishbone diagrams

**RCFA processes**
- Defining the problem
  - One time versus chronic failures
- FMECA
- Cause and effect
- 5 why’s
- The Why Tree

Public course 2017 schedule

- Please inquire for course dates | training.canada@skf.com

Public course: 2 days, $1,195 per participant
Private course: please inquire
IPM303 - Introduction to project management

Recommended for
Reliability engineers and technologists, planners, schedulers and those in leadership roles.

Course objective
Students will learn how to integrate the project planning and control systems and apply various project management tactics. They will also be able to define the scope of work to ensure success.

Specific topics include
- Project management principles and concepts
- Triad tradeoff
- Measuring project success
- Project management, leadership and managerial skills
- Critical project roles
- Planning and control integration
- Effective teams and teamwork
- Continuous improvement
- Strategic thinking in project management
- Project phase
- Estimating and managing time, cost, quality and risk

On-site courses only
SKF Life Cycle Management

Install and commission

Providing expert on-site services, training and auditable procedures

Improper installation can reduce machine service life, affect product quality and drive up maintenance costs. SKF Life Cycle Management features a range of expert services, training and products to provide timely, accurate commissioning of new and replacement machinery.

Along with assisting proper mechanical setup for optimal operation, SKF can validate machine condition after installation using check-to-conformance technology. For equipment manufacturers, this validation provides a valuable record of machine operation at the point of commission. Operators can also reference this baseline throughout the service life of the machine.

Our offers include:

- Bearing mounting
- Machine installation
- Precision alignment and balancing
- Lubrication management
- Check to conformance
- Factory acceptance testing
- On-line and on-site training
- Start-up monitoring
SmartStart – product start up training

Need help with your newly purchased SKF equipment?  

SmartStart is an on-site product start up training service that focuses on a specific product or system. It is designed to get that product up and running, your employees trained and your program implemented quickly and effectively.

This training is intended to be one-on-one or one-on-small group to maximize the time of the students with the instructor. Since it is held at your facility, your tools and equipment are used for field exercises. This mentoring approach allows the instructor to offer insightful, pragmatic information that will provide your team with powerful tools for SKF Maintenance and Condition Monitoring Products.

Maximum group size per day is 5. 
Tuition is $1,500 per day.

Available for the following products:

- WICM255 - SKF Microlog Analyzers
- WICM270 - SKF on-line systems
- WICM271 - SKF Copperhead systems
- WICM272 - SKF Imx on-line system
- WE235 - SKF TKTI Thermal imaging systems
- WE245 - SKF TKSA Laser shaft alignment systems
- WE255 - SKF PHL Belt frequency meter
- WE265 - SKF Belt Alignment systems

SiteMentor – advanced product training

Want to go even further with your SKF equipment?  SiteMentor is an advanced instructional series specific to a variety of SKF Condition Monitoring equipment. This training is intended to help your continuous improvement and reliability projects through skill advancement of your maintenance and/or reliability group.

Available for the following products

- WICM255a - SKF Microlog Analyzers and SKF @ptitude Analyst
- WICM270a - SKF on-line systems
- WICM350a - Advanced SKF Microlog @ptitude Analyst applications

Plan ahead! Allow your team to get comfortable with their tools for a few months; book advanced training for them at a reduced rate (6 months lead time required).

Course duration: 2 days
Tuition is $6,995 for 10 people
Recommended for
Plant personnel using the SKF Microlog Inspector System.

Course objective
This course thoroughly covers the features and fault detection capabilities of the SKF @ptitude Inspector device including database management, data display and data reporting features.

The course is conducted in a one-on-one or one-on-small group format to maximize the individual learning experience. Hosted at your facility on your equipment allowing for complete personalization of the time.

Specific topics include

- Review setup and utilization of the Wireless Machine Condition Detector
- Review installation and use of quick connect studs
- Review selection of measurement locations
- Building a database
- Transferring data between SKF @ptitude Inspector and the Microlog Inspector
- Display and generate trends and reports in SKF @ptitude Inspector
- Hardware and software platforms

Private course: 2 days, $6,995 for 10 people

On-site courses only
WICM255 - SKF Microlog Analyzers

Recommended for

Plant personnel using any of the SKF Microlog analyzers.

Course objective

This course thoroughly covers the features and fault detection capabilities of any of the SKF Microlog devices including database management, data display and data reporting features. The course is conducted in a one-on-one or one-on-small group format to maximize the individual learning experience. Hosted at your facility on your equipment allowing for complete personalization of the time.

Specific topics include

**Condition monitoring basics**

- Condition based maintenance program overview
- Guideline for implementing a portable condition monitoring program
- Advantages of various vibration signal processing techniques
- Techniques to isolate and detect specific machinery faults

**SKF specific training**

- Set up default properties on the SKF @ptitude Analyst software
- Navigating the software
- Creating databases
- Download and upload measurements
- Setting up default properties in the SKF Microlog
- Collecting route and off route measurements
- Generate graphic plots and reports

**Advanced analyzer application modules**

- Multi channel measurements
- FRF measurements
- Balancing

On-site courses only

Private course: 2 days, $6,995 for 10 people
WICM270 - SKF On-line systems

Recommended for
Plant personnel using SKF on-line monitoring systems.

Course objective
This course provides a detailed explanation of the operation of the SKF Microlog Consultant system and provides start up assistance on associated support software.

The course is conducted in a one-on-one or one-on-small group format to maximize the individual learning experience. Hosted at your facility on your equipment allowing for complete personalization of the time.

Specific topics include

SKF @ptitude Analyst On-line System concept
- Product structure
- Applications

Hardware and software installation and requirements
- Software installation and setup
- System checkout
- Windows system setting and installation options
- Installing SKF @ptitude Analyst and the CMU/TMU/MIM driver
- Troubleshooting
- CMU/TMU operation and theory

Database configuration

Application and best practices
Parametric gating and control points
On-line data collection process
Measurement process and Heartbeat concept
DAD communication and live data collection process
Reporting
- Displaying on-line data plots
- Generating and printing data reports

On-site courses only

Private course: 2 days, $6,995 for 10 people
WICM350 - Advanced SKF Microlog and @ptitude Analyst applications

Recommended for
Any user of the SKF Condition Monitoring @ptitude Analyst software and Microlog data collector requiring proficiency in the setup and use of the equipment.

Course objective
This course aims to advance the users’ skill level in operating the SKF hardware and software for accurate condition detection, efficient program operation and root cause failure analysis.

Public course: 3 days, $1,395

Specific topics include

Microlog modules
- Bump test
- Run up/coast down
- FRF module
- Recorder module
- Balancing module
- ARM software

Phase collection and analysis
- Phase with a tachometer for route and non-route collection
- Cross channel phase for machine investigations
- Phase from FRF transmissibility data
- The use of strobe lights for phase analysis and machinery troubleshooting

Time waveform analysis
- Microlog and Analyst setting based on rotor rotation and fault frequency content
- Impulses/impacting and fault frequency identification
- Synchronous time averaging to isolate machinery from other external vibrations

Bearing fault detection and analysis
- Acceleration enveloping
- HFD readings
- Ultrasonic technologies
- Spectrum and time waveform fault identification

@ptitude Analyst optimization
- Filters, workspaces and editing for improvement
- Improved measurement parameters
- Taking full advantages of hierarchies, sharing and storing data

Effective condition monitoring alarms
- Overall alarms – manual and statistical
- Spectrum alarming techniques
- Using derived points

Report generation
- Creating and scheduling reports
- Importing reports into MS Office

Microlog setup
- Route and non-route configurations
- Memory and setup considerations
- Cable and transducer configurations

Please inquire for course dates | training.canada@skf.com
Operator driven reliability
Remote monitoring and diagnosis
Predictive maintenance

Deploying the right solutions at the right time to improve productivity

By collecting and analyzing the right operating data, SKF can help you identify the need for machinery maintenance activities. Using a proven methodology we call Asset Efficiency Optimization (AEO), we help you identify and implement the right maintenance approach for you: reactive, preventative, predictive, or proactive. AEO combines a range of strategic and tactical tools to help you answer these questions to achieve maximum effectiveness and reduce your Total Cost of Ownership.

Our offers include:
- Asset Efficiency Optimization
- SKF @ptitude suite
- Operator driven reliability
- Remote monitoring and diagnosis
- Predictive maintenance
WI202 - Vibration analysis level 1 - data collection

Recommended for
Condition monitoring and maintenance personnel seeking a general understanding of condition monitoring techniques, equipment and best practices in data collection.

Course objective
The participant will learn how to select and locate appropriate sensors and how to isolate machinery. As well, participants will understand how to recognize various common problems and make recommendations for continued operation or scheduled repairs.

Specific topics include

Principles of vibration
- Definitions, relationships, relate real-world events to conventional patterns, calculations

Data acquisition
- Safety
- Instruments
- Sensors
- Sensor mounting
- Data collection techniques
- Computer interaction
- Data quality

Signal processing
- FFT representation
- Frequency identification

Condition monitoring
- Trending
- Comparisons
- Exception report

Fault analysis
- Imbalance, misalignment
- Mechanical looseness, soft foot
- Journal and rolling bearing defects

Corrective action
- Safety issues
- Process
- Machine mounting problems
- Further investigations

Acceptance testing
- Test procedures
- Recording results

Hands-on practice
Exam preparation

The CMVA Training and Certification Committee believes that accurate, consistent data collection is absolutely essential to worthwhile route-based condition monitoring programs. CMVA membership is required to write exam.

SKF is an authorized evaluator for the candidates data collection practicum.

Public course 2017 schedule

- Edmonton: February 6-9
- Toronto: March 6-9
- Calgary: May 23-26
- Regina: June 19-22
- Montreal: September 25-28 (F)
- Toronto: October 23-26
- Calgary: November 6-9
- Edmonton: December 11-14
WI203 - Vibration analysis level 2 – data analysis

Recommended for
Condition monitoring and reliability personnel seeking an understanding of data analysis and how to make decisions from the information that stems from a condition monitoring program.

Course objective
The participants will review the fundamentals of vibration analysis and then further their understanding of data analysis of machinery and components as well as advanced testing techniques.

Specific topics include

**Principles of vibration**
- Definitions, usages, relationships, calculations and plots
- Data acquisition: technical aspects, testing, data formats, data quality

**Signal Processing**
- Sampling, windowing, filters
- Lowest resolvable frequency
- Resolution and averaging
- Dynamic range

**Condition Monitoring**
- Preventative and predictive maintenance
- Database management
- Data collection scheduling and compliance

**Fault analysis**
- Imbalance, misalignment, mechanical looseness, impeller or blade problems
- Journal and rolling bearing defects
- Electric motor defects, gearing problems
- Resonance and critical speeds

**Acceptance testing**
- Interpretation of specification and standards
- Instrument setup based on standards

**Equipment testing and diagnostics**
- Frequency response function
- Bump test
- Run up / coast down tests

**Reference standards**
- ISO, IEC, severity chart guidelines and limitations

**Reporting and documentation**
- Condition monitoring reports, documentation
- Vibration diagnostics

**Fault severity determination**
- Severity definition and parameters

**Hands-on practice**

**Exam preparation**

Public course 2017 schedule

- Edmonton: February 21-24
- Toronto: May 18-21
- Montreal: November 6-9 (F)
- Edmonton: November 27-30
- Calgary: December 18-21

Public course: 4 days, $1,395 per participant
Optional CMVA certification exam on 5th day
Private course: please inquire
Exam fee: $350
CVMA membership fee additional
Private course: please inquire
WI205 - Vibration analysis – advanced results

Recommended for
Condition monitoring and reliability specialists, engineers and technicians responsible for interpreting vibration analysis results at an advanced level.

Course objective
This course focuses on troubleshooting strategies that lead to the true sources of the most common maintenance related vibration problems. Elevate your basic condition monitoring program beyond problem detection to provide true corrections and solutions.

Specific topics include

**Review of machinery vibration fundamentals**
- Cause and effect
- Vibration terminology
- Relationships between time, frequency, amplitude and phase

**Optimizing vibration detection and analysis**
- Transducer selection and placement
- Optimising data collection parameters
- Application of advanced detection methods
- Practical approach to vibration alarm limits

**Solving the most common vibration problems**
- Resonance
- Imbalance
- Misalignment

**Extending the life of rolling element bearings**
- Common causes of premature failure
- Detection strategies
- Troubleshooting and prevention
- Proactive installation and lubrication
- Establishing practical acceptance testing limits

**Amplitude, spectrum, time waveform and phase characteristics of machinery**
- Beats, sidebands, harmonics
- Causes and effects of shaft motion
- Understanding bent shaft, gear, electrical and bearing symptoms

Public course 2017 schedule

Please inquire for course dates | training.canada@skf.com

Public course: 2 days, $1,195 per participant
**WI220 - Airborne ultrasound - level 1**

**Recommended for**
Inspectors, energy auditors and service company personnel who perform PdM, audits or leak detection.

**Course objective**
This course aims to provide a better understanding of the theory, principles and practices of airborne ultrasound technology. This course fulfills training and testing requirements of level 1 certification.

---

**Specific topics include**

**Theory of sound**
- Physics of ultrasound
- Wave modes
- Ultrasound wave transmission and effects
- Equipment and instrument overview
- ASTM standard test methods

**Leak detection**
- Fluids defined
- Leak rates
- Acoustic properties of leaks
- Leak types, strategies and detection methods

**Electrical inspection**
- Safety considerations
- Overview of types of electrical equipment
- Voltages defined
- Detection methods
- Confirmation methods
- Substation inspection
- Low voltage inspection techniques
- Inspection of motor control centres

**Mechanical inspection**
- Consideration of ultrasonic generation
- Troubleshooting methods
- Trending methods
- Inspection methods
- Monitoring and recording information

**Overview & certification examination**
- General overview of airborne ultrasound technology
- Review of technology
- Practical experience review
- General, specific and practical examination

---

**Public course 2017 schedule**
- Please inquire for course dates | training.canada@skf.com

---

**Public course: 5 days, $1,495 per participant**
- Certification exam on day 5
- Exam fee - included
WI241 - Machine lubrication technician/analyst - level 1

Recommended for
Plant personnel in any aspect of machinery lubrication including maintenance, reliability and rotating equipment technicians, engineers and supervisors.

Course objective
This course introduces and establishes the role of precision lubrication and analysis for improving machine reliability.

Public course: 4 days, $1,395 per participant
Optional ICML Certification Exam
A certification examination is available during the morning of day 5 for either the International Council of Machinery Lubrication Technician or Analyst Level 1. Exam Fee - $250 per person

Specific topics include

**Applied tribology**
- Surface interaction modes – sliding and rolling
- Friction, wear and corrosion
- Protective films: hydrodynamic and elastohydrodynamic

**Lubricant construction**
- Lubricant categories
- Base oils, additives, thickeners, greases

**Lubricant performance properties**
- Oil, grease and additive performance measurement
- Basic calculations for relubrication intervals

**Lubricant selection practices**
- Bearings, gears, hydraulics, engines

**Lubricant application**
- Grease: dispensing tools, metrics and automatic systems
- Oil: dispensing tools, metrics and automatic systems

**Lubricant storage and handling**
- Lubricant consolidation
- Bulk and packaged product receipt and storage
- Lubricant storage containers
- Storage of grease guns and other lube application devices
- Health and safety

**Lubricant condition and contamination control**
- Types of contaminants and removal
- Filtration and separation technologies
- Sump management
- Lubricant sampling methods: objectives, methods, quality, intervals
- Monitoring chemistry, contamination and wear debris

**Lubricant health monitoring**
- Failure mechanisms: oxidation and thermal degradation
- Additive depletion and degradation
- Mixed lubricants, viscosity and additive discrepancies
- Spectroscopy and atomic measurement

Public course 2017 schedule

- Please inquire for course dates | training.canada@skf.com
WI261 - Introduction to static and dynamic motor testing

Recommended for
Maintenance personnel responsible for electric motor performance, troubleshooting as well as electric motor rebuild facilities.

Course objective
This course aims to deliver a general understanding of AC motor theory, construction and what both static and dynamic motor monitoring involves. Gain a working knowledge of both methods and be able to collect quality data and determine basic motor faults.

Specific topics include

**Basic AC Theory**
- Basic electromagnetic theory
- Basic AC motor construction
- Various types of motors

**Hands on demonstrations**

**Introduction to static motor theory**
- Insulation systems
- Failure mechanisms
- Testing methods and pass/fail criteria
- Recommended test voltages
- Test sequence overview

**Introduction to dynamic motor monitoring**
- Machine system overview
- Properly connecting the EXP4000
- Obtaining quality data
- Power, motor and load assessments

Public course 2017 schedule

- Please inquire for course dates | training.canada@skf.com
AMS334 - Operational excellence

Recommended for
Leaders in reliability: business process reliability and plant/site reliability.

Course objective
This course will standardize the integrated process to improve asset management with effective risk management.

Specific topics include

Integrated asset management
- Cost control and job cost control points
- Principles of operational excellence and culture
- Implementing life cycle operational excellence

Human resources
- Machines and process performance assurance
- Management of change
  - Adopters, bystanders, resisters
- Renewal program

Decision making process
- Basic estimating and budgeting principles
- Estimating correction factors
- Cost variances

Quality management
- Time, cost and quality accountabilities
- Key performance indicators

On-site courses only
**Specification**

*Working with designers to find the right solution, right from the start*

SKF Engineering consultancy services can support your project with expert advice and technology selection assistance. We can help you tap into decades of SKF application knowledge with both equipment manufacturers and aftermarket customers.

As you develop your specification, our research and development programmes and testing facilities can support project conception and feasibility. We can help you choose from thousands of off-the-shelf products, as well as fully customized solutions, to help your project become a reality.

**Our offers include:**
- SKF Asset management consultancy services
- SKF Engineering consultancy services
- Research and development
- Design for Six Sigma
- Reliability training
- Catalogue and customized products
AMS330 - Asset management overview

Recommended for
All employees, technicians, group leaders and above.

Course objective
This five day program will enable employees to see how their role contributes to the bottom line as well as providing them with a general understanding of other roles and their contribution towards making their own job safer and easier. This general training also covers some of the common tools used in asset management systems.

The training can be given in 5 straight days, 5 one day sessions or 10 half day sessions to meet with production requirements.

Specific topics include

Day one
- General introduction
- Asset efficiency optimization

Day two
- Needs analysis
- Key performance indicators
- Reliability centered maintenance

Day three
- Spare part optimization
- Operator driven reliability

Day four
- Planning and scheduling
- Root cause analysis

Day five
- Bad actor management
- Six Sigma
- Failure reporting and corrective action system

On-site courses only
AMS331 - Applied physical asset management

Recommended for
Reliability engineers and technologists.

Course objective
This course will link together performance objectives (what we want to do), execution (what we can do) and what needs to be done to align both to achieve and sustain corporate objectives.

Specific topics include

**Physical asset optimization principles**
- Identifying assets
- Assigning criticality

**Best practices**
- Reducing component failures

**Valued results**
- Increasing economic life
- Life cycle costs
- Implementation success

Public course 2017 schedule

- Please inquire for course dates | training.canada@skf.com

Public course: 2 days, $1,195 per participant
Private course: please inquire
AMS332 - Reliability centred maintenance (RCM/SRCM)

Recommended for
Reliability engineers and technologists.

Course objective
Students will learn to use the analytical tool or RCM/SRCM, to identify cost-effective solutions to critical failure modes. They will also learn to assist the planners and maintainers in understanding the intent of the maintenance tasks and the importance of implementing correctly those same tasks.

Specific topics include

Reliability centred maintenance principles
- Understand the evolution of RCM
- Understand the business context of RCM

RCM Essentials
- Criticality matrix
- How to select which system to analyze
- Failure modes and effects

What should be done?
- FMECA
- Functions and functional failures
- Criticality of failures
- Failure patterns

Implementation and improvement
- Applying maintenance tasks
- Task selection and MTBF
- Decision tree

Public course 2017 schedule
- Calgary February 7-8
- Calgary May 16-17
- Edmonton June 26-27

Public course: 2 days, $1,195 per participant
Private course: please inquire
Courses by Life Cycle Management stages

**Specification**
- AMS330 Asset management overview 42
- AMS331 Applied physical asset management 43
- AMS332 Reliability centred maintenance (RCM/SRCM) 44

**Design and develop**
- BSD301 Bearing system design 22
- WE204 Root cause bearing failure analysis 23
- RCA302 Root cause analysis 24
- IPM303 Introduction to project management 25

**Maintain and repair**
- WC200 Maintenance planning and scheduling 13
- WE201 Bearing maintenance and technology 14
- WE202 Reliability of rotating machines 15
- WE203 Lubrication of rolling element bearings 16
- WE241 Precision maintenance skills 17
- WE242 Laser shaft alignment and rotor balancing 18
- WE250 Dynamic field balancing 19

**Install and commission**
- SmartStart – product start up training 27
- SiteMentor – advanced product training 27
- WICM233 SKF Microlog Inspector 28
- WICM255 SKF Microlog Analyzers 29
- WICM270 SKF On-line systems 30
- WICM350 Advanced SKF Microlog and @ptitude Analyst applications 31

**Operate and monitor**
- WI202 Vibration analysis level 1 – data collection 34
- WI203 Vibration analysis level 2 – data analysis 35
- WI205 Vibration analysis – advanced results 36
- WI220 Airborne ultrasound – level 1 37
- WI241 Machine lubrication technician/analyst – level 1 38
- WI261 Introduction to static and dynamic motor testing 39
- AMS334 Operational excellence 40
Courses by role

## Reliability team

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WE202</td>
<td>Reliability of rotating machines</td>
<td>15</td>
</tr>
<tr>
<td>BSD</td>
<td>Bearing system design</td>
<td>22</td>
</tr>
<tr>
<td>WE204</td>
<td>Root cause bearing system failure analysis</td>
<td>23</td>
</tr>
<tr>
<td>RCA302</td>
<td>Root cause analysis</td>
<td>24</td>
</tr>
<tr>
<td>IPM303</td>
<td>Introduction to project management</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>SmartStart – product start up training</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>SiteMentor – advanced product training</td>
<td>27</td>
</tr>
<tr>
<td>WI202</td>
<td>Vibration analysis level 1 - data collection</td>
<td>34</td>
</tr>
<tr>
<td>WI203</td>
<td>Vibration analysis level 2 - data analysis</td>
<td>35</td>
</tr>
<tr>
<td>WI205</td>
<td>Vibration analysis - advanced results</td>
<td>36</td>
</tr>
<tr>
<td>WI220</td>
<td>Airborne ultrasound level 1</td>
<td>37</td>
</tr>
<tr>
<td>AMS334</td>
<td>Operational excellence</td>
<td>40</td>
</tr>
<tr>
<td>AMS330</td>
<td>Asset management overview</td>
<td>42</td>
</tr>
<tr>
<td>AMS331</td>
<td>Applied physical asset management</td>
<td>43</td>
</tr>
<tr>
<td>AMS332</td>
<td>Reliability centred maintenance</td>
<td>44</td>
</tr>
</tbody>
</table>

## Maintenance team

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best practice classes</td>
<td>New</td>
<td>8</td>
</tr>
<tr>
<td>WC200</td>
<td>Maintenance planning and scheduling</td>
<td>13</td>
</tr>
<tr>
<td>WE201</td>
<td>Bearing maintenance and technology</td>
<td>14</td>
</tr>
<tr>
<td>WE202</td>
<td>Reliability of rotating machines</td>
<td>15</td>
</tr>
<tr>
<td>WE203</td>
<td>Lubrication of rolling element bearings</td>
<td>16</td>
</tr>
<tr>
<td>WE241</td>
<td>Precision maintenance skills</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Laser shaft alignment and rotor balancing</td>
<td>17</td>
</tr>
<tr>
<td>WE242</td>
<td>Precision maintenance skills</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Rotor components and power transmission</td>
<td>18</td>
</tr>
<tr>
<td>WE250</td>
<td>Dynamic field balancing</td>
<td>19</td>
</tr>
<tr>
<td>WC230</td>
<td>Spare parts management &amp; inventory control</td>
<td>20</td>
</tr>
<tr>
<td>WICM350</td>
<td>Advanced SKF Microlog and @ptitude Analyst applications</td>
<td>31</td>
</tr>
<tr>
<td>WI241</td>
<td>Machine lubrication technician/analyst - level 1</td>
<td>38</td>
</tr>
<tr>
<td>WI261</td>
<td>Introduction to static and dynamic motor testing</td>
<td>39</td>
</tr>
<tr>
<td>AMS334</td>
<td>Operational excellence</td>
<td>40</td>
</tr>
</tbody>
</table>

## Engineering team

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WE202</td>
<td>Reliability of rotating machines</td>
<td>15</td>
</tr>
<tr>
<td>WE250</td>
<td>Dynamic field balancing</td>
<td>19</td>
</tr>
<tr>
<td>BSD</td>
<td>Bearing system design</td>
<td>22</td>
</tr>
<tr>
<td>WE204</td>
<td>Root cause bearing system failure analysis</td>
<td>23</td>
</tr>
<tr>
<td>RCA302</td>
<td>Root cause analysis</td>
<td>24</td>
</tr>
<tr>
<td>IPM303</td>
<td>Introduction to project management</td>
<td>25</td>
</tr>
<tr>
<td>WI241</td>
<td>Machine lubrication technician/analyst - level 1</td>
<td>38</td>
</tr>
<tr>
<td>AMS334</td>
<td>Operational excellence</td>
<td>40</td>
</tr>
</tbody>
</table>
Course registration form

Registrant Information (please print)

Course Name: ____________________________________
Participants Name: ________________________________
Participants Name: ________________________________
Participants Name: ________________________________

Course Dates: ________________________________
Title: ________________________________________
Title: ________________________________________
Title: ________________________________________

Organization: ____________________________________________________________________________
Billing Address: __________________________________________________________________________
City: ___________________ Province: _________________ Postal Code: ___________________
Tel: ____________________ Fax: ____________________ E-mail: ____________________

Payment Method (please select your payment method of choice)

☐ Cheque Enclosed Cheque # (payable to SKF Canada Ltd.): ________________________________
☐ VISA Credit Card Number: ________________________________
☐ MasterCard Name on Card: __________________________ Expiry Date: __________________________
☐ Electronic Funds Transfer (EFT)

Please mail, e-mail or fax the completed registration form to

Option 1
SKF Training Solutions
Lubhani Sharma
928 72nd Avenue
NE Calgary, Alberta T2E 8V9
Tel: 403-519-1655
Fax: 403-232-9255
Email: training.canada@skf.com

Option 2
Your local SKF Authorized Distributor

Cancellation Policy

Cancellation will only be accepted in writing (email).
Cancellation within two weeks of the course start date will be subject to charges equal to 100% of the course fee. The registrant may send a delegate in their place. The registrant may reschedule their training to the next available course offering with a 20% rebooking fee. Cancellation on the part of SKF will result in full course fee refunds.