

## **C O N T E N T S**

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## **RAIL TRANSPORT TRAINING IN INDIA**

Training is the most commonly used mechanism in human resource development. It is the process, which attempts to fill the gap by way of what employee has to offer by way of skills, experience and knowledge and that which is required by the job. The objective of the training is to help people to acquire the knowledge, skills and capacities necessary to do their job while to prepare them for transfer to other jobs and capability to be fitted into the working group.

Indian Railways has the best training facilities in entire Asia & Africa to train people in rail transport. These facilities have come up over the years due to its gigantic system & level of operation as shall be evident from the following facts:

The Indian Railways system is today, the second largest Railways system in the world under a single management. It has its own facilities for production of locomotives and other rolling stock besides Research Design and Standard wing to carry out research work in railway technology, standardization and application to attain self sufficiency. It occupies a place of pride not only because of its size but also because of its assets utilization statistics are comparable with those of the most advanced Railways system of the developed countries. To highlight its vastness, it is worth to mention that Indian Railways has 109996 track kilometers (64015 route kms), over 9000 locomotives, and 21993 units of freight cars, 51030 passenger cars, 7083 stations and 1361520 staff. It operates 8984 passenger trains everyday.

To meet the continuously growing demand of its consumers both quantitatively as well as qualitatively, the Indian Railways have been upgrading its system by adopting the latest technological developments, enabling its officers and staffs in acquiring knowledge and new set of technical and managerial skills. Therefore, training of its personnel has been a major concern to the Management of Indian Railways. More than 3,00,000 staff is imparted training every year.

To impart training to such a vast number of employees, Indian Railways has following training facilities.

To train executives responsible for maintenance, operation, planning, development of infrastructure & assets there are following training institutes:

1. Railway Staff College, Vadodara
2. Indian Railways Institute of Civil Engineering, Pune
3. Indian Railways Institute of Signal Engineering and Telecommunications, Secunderabad
4. Indian Railways Institute of Mechanical and Electrical Engineering, Jamalpur
5. Indian Railways Institute of Electrical Engineering, Nasik
6. Indian Railways Institute of Transport Management, Lucknow

Besides the above, there are 170 more training schools located over various Zonal Railways to provide training to supervisors and staff engaged in operations and maintenance.

To impart specific skills to categories of staff such as tradesmen, basic training centers and divisional area schools are run on Zonal Railways. The basic training centers are attached to major workshops to make the training practical. On the job training is also given to staff engaged in operations and maintenance.

All the training institutes are well equipped with laboratories, model rooms, outdoor demonstration yards, computer centers, library, hostel facilities etc. The institutes also provide various sports facilities at their campuses to ensure trainee fitness.

### **TRAINING OF RAILWAY PERSONNEL FROM OTHER COUNTRIES**

In furtherance of the concept of the Technical Cooperation amongst Developing Countries, RITES Limited, Government of India Enterprise, under the aegis of Indian Railways undertake training of personnel in Indian Railways Training institutes from other countries. More than 2000 railway personnel have been trained so far from Africa, Middle East, South East Asia and the Far East. These training programmes are being organized under various funding e.g. World Bank, Asian Development Bank, sponsored under special Common Wealth Plan, ITEC/ SCAAP programme of Government of India etc. and funding by the country themselves.

## ABOUT RITES

### 1. INTRODUCTION

RITES Ltd. (RITES) Government of India Enterprise was established in 1974, under the aegis of Indian Railways. RITES is incorporated in India as a Public Limited Company under the Companies Act, 1956 and is governed by a Board of Directors which includes men of eminence from various sectors of infrastructure and management.

RITES specialises in providing comprehensive consultancy services under a single roof and believes in sharing its experience with client organizations. In overseas projects, RITES actively pursues and develops meaningful relationships with local consultants/firms both as a means of maximum utilization of local expertise and as an effective instrument of transfer of technology.

RITES is internationally recognized as a leading consultant with operational experience of 51 countries in Africa, Asia, Middle East and Central America.

RITES employs nearly 2500 staff including over 1500 specialists of high professional standing in the fields of engineering, management and planning. Besides full time professionals, RITES has on its panel a large number of experts, whose services can be drawn upon at short notice. This provides the company an unmatched strength in meeting the needs of clients.

### 2. SERVICE PROFILE

**RITES services include:**

✚ Airport Engineering	✚ Inland Water Transport
✚ Architecture & Design	✚ Materials Management
✚ Bridge Engineering	✚ Operation & Maintenance
✚ Computer Services	✚ Ports and Harbors
✚ Container Traffic	✚ Project Management
✚ Energy Management	✚ Quality Management
✚ Engineering Surveys	✚ Railways
✚ Environmental Engineering	✚ Ropeways
✚ Export Packages	✚ Telecommunication & Signaling
✚ Financial Management	✚ Transport Planning & Economics
✚ Geo-technology	✚ Urban Development
✚ Highway Engineering	✚ Urban Transport
✚ Human Resource Development and Training	✚ Workshop Management

### 3. RITES TRAINING DIVISION

RITES Training Division provides comprehensive services including:

<ul style="list-style-type: none"> <li>✚ Assessment of Training Needs</li> <li>✚ Curriculum Development</li> <li>✚ Development of Training Infrastructure</li> <li>✚ Direct Training</li> <li>✚ Enhancing Operational Efficiency</li> <li>✚ Improving Quality of Training</li> </ul>	<ul style="list-style-type: none"> <li>✚ Manpower Planning</li> <li>✚ Monitoring and Evaluating Training Schemes</li> <li>✚ Setting up &amp; Management of Training Institute</li> <li>✚ Training Facilitation &amp; Logistics</li> <li>✚ Training of Trainers/ Resource Persons</li> </ul>
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### 4. INSTITUTIONAL TIE-UPS

RITES has institutional tie-ups with prestigious institutions in India and overseas. It has access to over 160 training establishments of the Indian Railways alone. Regular support from most other institutes of national importance is also available. The available training facilities include transport simulators, laboratories, model rooms, audio-visual equipment, workshops, libraries etc.

**Training Division is regularly organizing special training covering:**

<ul style="list-style-type: none"> <li>✚ Attachment training involving association with field establishments for on-the-job access to working areas and handling of practical problems.</li> <li>✚ Hands on training in the different disciplines for acquisition of operational skills at functional levels under actual working conditions. This is combined with theoretical instructions to improve asset, reliability and availability.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Management Development Training aiming at development of highly specific skills through appropriate knowledge and attitude to cope with the tasks in the changing environment. Training institutions for this purpose include Indian Institute of Management, Ahmedabad (Harvard affiliation) and Birla Institute of Technology (Massachusetts Institute of Technology affiliation).</li> </ul>
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In fact, RITES has the capability to design and organize any training programme to meet with specific client needs.

## 5. TRAINING IN RAILWAY SECTOR

RITES has recognized that the availability of the most technologically advanced permanent way, rolling stock and other assets by themselves do not ensure success of a railway system. The critical resource is the human resource, a resource which has to be nurtured with care and provided with the necessary skills to meet and understand the challenges of new technologies.

Having trained over 2500 railway-men from countries in Africa, Asia and Latin America, the HRD and Training Division understands the needs of these railway systems and regularly organizes training programmes tailor-made to their requirements.

## 6. RITES TRAINING PROGRAMMES HAVE THE FOLLOWING ADVANTAGES:

<ul style="list-style-type: none"> <li>✚ Accent is on practical and field work including hands-on training</li> <li>✚ Level of technology is appropriate to clients requirements</li> <li>✚ Training can be arranged in India or in the host country</li> </ul>	<ul style="list-style-type: none"> <li>✚ Training can be geared to the exact level and nature required by the client. Above all, technologies are applied in an environment of a developing economy</li> </ul>
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## 7. BACK-UP SUPPORT

RITES Training Division has close association with a number of well-established training institutions at the national level. These institutions offer large opportunities in appropriate training programmes to various levels of personnel including top executives, senior level managers, and other personnel of all railway disciplines.

RITES has ready access to over 200 Training Institutions of the Indian Railways, which train all levels and categories of personnel from Craftsmen to Engineers to Junior Managers to top executives. These institutes offer a wide range of training programmes, which are specifically designed to meet, identified training needs.

This Guide to Railway Training brings out information on the important training programmes organized by RITES in the Railway Sector. RITES organizes a variety of training programmes for various levels of personnel in other sectors of transportation too.

RITES will be pleased to supply information on the other training programmes relevant to the specific requirements of sponsoring organizations.

These courses are conducted in the English language. Translator/ Interpreter services can be provided on request.

## 8. ACCOMMODATION

RITES ensure fully furnished single room accommodation to all participants in Hostels/Hotels near the place of training on reasonable payment.

## 9. TRAINING FEE

The training fee is determined depending upon the number of participants in each course/special training requirements, etc. This fee would normally include cost of training, training material, medical assistance, monitoring and evaluation. If the client so desires, these costs can be given separately also. The fee excludes the cost of international & local travel, board, lodging, out-of-pocket allowance, excess baggage, embarkation fee etc.

## 10. FELLOWSHIP /NOMINATIONS FOR CANDIDATES

Sponsoring organizations may seek fellowships from international funding agencies like World Bank, UNDP, CFTC, CIDA, Kuwait Fund, AFDB, ADB, ITEC etc. Direct nominations may be sent to RITES.

It may, however, be ensured that the nominee has the pre-requisite skill/knowledge/aptitude.

## 11. TIMINGS

<p>✚ The Training Centers normally work between 09.00 - 1600 hrs. - 5 days a week.</p>	<p>✚ The working period is normally divided into five sessions, consisting of lectures, tutorials, attachment training/practical, and group discussions, seminars and project work.</p>
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## 12. REGULATIONS

**During the period of stay in India, the participants would be required to follow:**

<p>✚ Instructions as may be stipulated by both the nominating Government and the Government of India.</p>	<p>✚ Programme of training. ✚ Rules and regulations of the training institutions.</p>
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**13. PARTICIPANTS ARE ADVISED TO:**

<ul style="list-style-type: none"><li>✦ Bring 2 (two) copies of recent photograph (Passport size).</li><li>✦ Obtain Visa for entering India prior to departure for India.</li></ul>	<ul style="list-style-type: none"><li>✦ Refrain from engaging in any political activities or any form of employment for profit or gain.</li></ul>
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**14. NOMINATIONS**

Please make your enquiries and nominations to:

**GENERAL MANAGER (TRAINING)  
RITES LIMITED, RITES BHAWAN,  
Plot No. 1, Sector 29, Gurgaon 122 001 Haryana (India)  
Tel: 091 (0124) 257 1630, 2818 170, Fax: 091 (0124) 2571660,  
e-mail: gmtrg@rites.com**



**Please visit us at website  
<http://www.rites.co.in>**

## MANAGEMENT COURSES FOR RAILWAY MANAGERS & ENGINEERS

Some of the courses are given below. However detailed position with regard to all the courses proposed during the year, their contents and schedules can be viewed at <http://www.rscbr.ac.in> directly or through <http://www.rites.co.in>

### 1. Foundation Course - 11 week ( June & December 2011)

**For Whom:** Managers/Engineers freshly inducted in Railroads.

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Civil Engineering</li> <li>✚ Elect. Engineering</li> <li>✚ Finance &amp; Railway Accounts</li> <li>✚ Materials Management</li> <li>✚ Medical</li> <li>✚ MIS, etc.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Personnel Management</li> <li>✚ Railway History and Organization</li> <li>✚ Railway Operation</li> <li>✚ Signaling &amp; Telecommunication Engineering</li> <li>✚ Statistics</li> <li>✚ Traffic Transportation</li> </ul>
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### 2. Induction Course – 5 week (November 2011)

**For Whom:** Engineers/ Managers with 2 – 3 years experience in rail-roads and who have undergone Initial Course.

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Civil Engineering</li> <li>✚ Computer Applications</li> <li>✚ Elect. Engineering</li> <li>✚ Financial Management</li> <li>✚ Human Resource Management</li> <li>✚ Law</li> </ul>	<ul style="list-style-type: none"> <li>✚ Material Management</li> <li>✚ Mechanical Engineering</li> <li>✚ Operation &amp; Commercial</li> <li>✚ Qualitative Techniques</li> <li>✚ S&amp;T Engineering</li> </ul>
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### 3. Management Development Programme - 5 week (September 2011 & March, 2012)

**For Whom:** Engineers/Managers with 4-7 years experience in executive cadres for helping them to solve problems faced by them and seek opportunities offered by technological and managerial innovations to enable them to hold independent charge

### Course Contents

<ul style="list-style-type: none"> <li>✚ Alternate Finance, Budgeting</li> <li>✚ Communication</li> <li>✚ Corporate Business Economy</li> <li>✚ Customer Orientation</li> <li>✚ Decision making negotiations</li> <li>✚ Ethics, Values &amp; Factory Act</li> <li>✚ Human Resource Development</li> <li>✚ Introduction to Computers</li> <li>✚ Legal aspects such as CPA</li> </ul>	<ul style="list-style-type: none"> <li>✚ Motivation, Vigilance</li> <li>✚ MS office, E-mail and Internet</li> <li>✚ Personal Effectiveness</li> <li>✚ Practical Training</li> <li>✚ Railway Act, Works Program</li> <li>✚ Rolling Stock Program (RSP) and Machinery and Plant Program (M&amp;P)</li> <li>✚ Safety Management ,Strikes</li> <li>✚ Transport Environment</li> </ul>
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#### 4. Advance Management Development Programme - 3 week ( April, May, August, September & October 2011)

**For Whom:** Engineers/Managers with 10-15 years experience in Executive and Administrative level to acquaint officers with areas of strategic management and to improve organizational effectiveness through its senior administrative grade.

### Course Contents

<ul style="list-style-type: none"> <li>✚ Alternate Finance</li> <li>✚ Budgeting &amp; capital investment appraisal</li> <li>✚ Communication</li> <li>✚ Customer Orientation</li> <li>✚ E-mail &amp; Internet</li> <li>✚ Human Resource Management</li> <li>✚ Introduction to Computers</li> <li>✚ Learning Organisation</li> <li>✚ Legal aspects such as CPA</li> </ul>	<ul style="list-style-type: none"> <li>✚ Liaison with Civil Authorities</li> <li>✚ Mission &amp; Vision</li> <li>✚ Personal effectiveness.</li> <li>✚ Quality</li> <li>✚ RSP &amp; M&amp;P</li> <li>✚ Safety Management</li> <li>✚ Strategic Management &amp; Corporate Business Economy</li> <li>✚ Strikes</li> <li>✚ Vigilance</li> <li>✚ Works programme</li> </ul>
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#### 5. Information Technology Introductory - 3 Week (April, May, June & October 2011)

**For Whom:** Engineers/Managers with 1-2 years experience in executive cadres to acquaint them to independently work on PC with Microsoft Office.

### Course Contents

✚ E-mail and its use	✚ Introduction to personal computers
✚ Internet and web browsing	✚ Introduction to Windows
✚ Introduction to Office 98	

## 6. Railway Safety - 2 Week ( April, May, June, September & October 2011)

**For Whom:** Engineers/Managers with 2-3 years of experience to develop a holistic insight into safety management to identify areas of human failures and assess the measures to enhance accountability and efficiency for avoiding accidents.

### Course Contents

✚ Accident enquiries	✚ Safety environment
✚ Accident prevention	✚ Safety in railways
✚ Breakdown trains	✚ Safety Management
✚ Computer aided investigation	✚ Safety organisation and inspection
✚ Crisis communication	✚ Strategic planning & Technical up gradations
✚ Disaster Management	✚ Track parameters & Training of drivers
✚ Human aspects	✚ World vision
✚ Perception presentation	
✚ Psychological aspects	
✚ Rail wheel interaction	

## EXECUTIVE LEVEL COURSES – MECHANICAL ENGINEERING

Some of the courses are given below. However detailed position with regard to all the courses proposed during the year, their contents and schedules can be viewed at <http://www.irimee.ac.in> directly or through <http://www.rites.co.in>

### 1. Integrated course on Workshop, Loco & C&W – 11 weeks( July, October 2011 and January 2012)

**For Whom:** Directly recruited Mechanical Engineers in the Executive Cadre with 2-3 years of experience

#### Course contents – Diesel Module

✚ AAR classification of locomotives & working principle of diesel engine.	✚ Electrical control components
✚ Transmission types with merits and demerits	✚ Electrical systems
✚ Locomotive layout	✚ Starting circuit
✚ Diesel engine assembly, components, inspection and maintenance	✚ Safety devices
✚ Combustion and valve timing	✚ Expresor
✚ Bi-metal and Tri-metal bearings.	✚ Brake systems
✚ Diesel engine systems:	✚ Bogie and suspension
✚ Fuel oil	✚ Load test & fault diagnosis
✚ Lube oil	✚ Trouble shooting
✚ Cooling water	✚ ALCO Modification
✚ Charge air	✚ <b>Microprocessor controlled locomotives</b>
✚ Engine governor	✚ EMD Loco introduction & system & component wise merit analysis
✚ Woodward	✚ <b>EMD locomotive system (Mech)</b>
✚ Principle of Electrical Transmission	✚ <b>EMD Loco layout &amp; introduction to electrical systems</b>
✚ DC machines	✚ EMD Loco Electricals & AC-AC transmission.

#### General C&W management

✚ Organization structure	✚ Standard infrastructure facilites
✚ Control room working	✚ Divisional depot store inventory management.

### Coaching technology

<ul style="list-style-type: none"> <li>✚ Nomenclature &amp; codification</li> <li>✚ Design &amp; Construction of –</li> <li>✚ ICF &amp;LHB bogie</li> <li>✚ ICF &amp;LHB Sheel</li> <li>✚ Draw &amp; Buffering gear ICF &amp;LHB Sheel.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Spherical roller bearing &amp; cartridges taper roller bearing.</li> <li>✚ Wheel &amp; axle</li> <li>✚ Control discharge toilet system in LHB Coach.</li> <li>✚ Coach housekeeping</li> <li>✚ Latest development: Crashworthiness, GPRS.</li> </ul>
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### Course Contents – Coaching maintenance

<ul style="list-style-type: none"> <li>✚ Maintenance instruction &amp; activities of coaching stock in Division</li> </ul>	<ul style="list-style-type: none"> <li>✚ Maintenance instruction &amp; activities of coaching stock in workshop.</li> </ul>
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### Brake system

<ul style="list-style-type: none"> <li>✚ Introduction of brake system in coach and wagon.</li> <li>✚ Brake rigging arrangement in Coach and Wagon</li> <li>✚ Working of distributor valve.</li> <li>✚ Working of SAB brake regulator (Limited class)</li> <li>✚ Working of JSL brake cylinder.</li> <li>✚ Working of wheel side protection in FIAT bogie.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Analytical approach to evaluate braking force and distance.</li> <li>✚ Brake binding in C &amp; W stock</li> <li>✚ Single car test</li> <li>✚ Rake test</li> <li>✚ DV test bench</li> <li>✚ SAB test bench</li> <li>✚ Maintenance costing</li> </ul>
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### Electrical Technology in coaches

<ul style="list-style-type: none"> <li>✚ Train Lighting</li> <li>✚ Working of distributor valve.</li> <li>✚ Working of SAB brake regulator (Limited class)</li> <li>✚ Working of JSL brake cylinder.</li> <li>✚ Rake test</li> </ul>	<ul style="list-style-type: none"> <li>✚ Working of wheel slide protection in FIAT bogie.</li> <li>✚ Analytical approach to evaluate braking force and distance.</li> <li>✚ Brake binding in C &amp; W stock</li> <li>✚ Single car test</li> </ul>
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## Wagon Technology

<ul style="list-style-type: none"> <li>✚ Nomenclature &amp; codification</li> <li>✚ Design &amp; construction features of CASNUB bogie.</li> <li>✚ Design &amp; construction features of Center Buffer Coupler</li> </ul>	<ul style="list-style-type: none"> <li>✚ Precaution in handling tank wagons</li> <li>✚ Introduction BOBR wagon &amp; its Door operating arrangements</li> <li>✚ Latest development</li> </ul>
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## 2. Welding Technology – 2 weeks ( July 2011 & March 2012 )

**For Whom:** Executive/ Engineers with 1-2 years experience to enhance knowledge about welding.

### Course Contents

<ul style="list-style-type: none"> <li>✚ Fundamental of welding – Process, weld ability, Fluxes, Selection of Electrodes</li> <li>✚ Electrical aspects</li> <li>✚ Welding defects – causes &amp; remedies</li> <li>✚ Problems and solution faced in Shed (yard)</li> <li>✚ Welding of Safety components – knuckle, draw bar components etc.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Problems faced during welding</li> <li>✚ Coach manufacturing &amp; corrosion repairs</li> <li>✚ Wagon – manufacturing &amp; Corrosion repairs</li> <li>✚ Locos</li> <li>✚ LHB coach</li> <li>✚ Ease of welding – Selection, Manufacture &amp; other application</li> <li>✚ Cost &amp; economy in welding</li> </ul>
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## 3. Special Course on Accident , Disaster Management – 2 Weeks ( February, 2011)

**For Whom:** Mechanical Engineers and senior supervisors with 2-7 years experience for enhancing knowledge for proper analysis of derailments, prevention of accidents and rescue operation at site

### Course Contents

<p><b>General Disaster Management</b></p> <ul style="list-style-type: none"> <li>✚ National Disaster management plan.</li> <li>✚ Disaster management plan in railways</li> <li>✚ IR Safety Performance</li> <li>✚ Safe Driving technique</li> <li>✚ Corporate Safety Plan</li> <li>✚ RSRC Recommendations</li> <li>✚ High level committee recommendations on disaster management over IR.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Medical relief</li> <li>✚ Concept of golden hour rule &amp; its practices</li> <li>✚ Management at accident sites</li> </ul> <p><b>Accident Investigation</b></p> <ul style="list-style-type: none"> <li>✚ Rail wheel interaction</li> <li>✚ Derailment investigations with case studies.</li> <li>✚ Permanent way defects causing derailment</li> <li>✚ Loco defects causing derailment</li> </ul>
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<p><b>Accident site management</b></p> <ul style="list-style-type: none"><li>✚ ART &amp; Accident Classification</li><li>✚ MFD &amp; HRE</li><li>✚ Accident Inquiry</li><li>✚ Safety in Crane operations</li><li>✚ Crane operation at accident sites</li></ul>	<ul style="list-style-type: none"><li>✚ Coaching defects causing defects</li><li>✚ Wagon defects causing derailment</li></ul> <p><b>Practical demonstrations.</b></p> <ul style="list-style-type: none"><li>✚ Demonstration of ART Cranes at site</li></ul>
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## EXECUTIVE LEVEL COURSES – CIVIL ENGINEERING

Some of the courses are given below. However detailed position with regard to all the courses proposed during the year, their contents and schedules can be viewed at <http://www.ircen.gov.in> directly or through <http://www.rites.co.in>

### 1. Integrated Initial Course - 10 Weeks (June, August & December 2011)

**For Whom:** Engineers/Managers of Civil Engineering discipline promoted from Supervisory position to Executive grade.

#### Course Contents - Permanent Way

<ul style="list-style-type: none"> <li>✚ Formation, Ballast</li> <li>✚ Sleepers and fastenings, Rails and fastenings</li> <li>✚ Welding Techniques, SWR, LWR (Incl. New SEJ)</li> <li>✚ Points &amp; Crossing simple layouts</li> <li>✚ Curves - Theory &amp; Design, Realignment</li> <li>✚ Inspection &amp; Maintenance of Track including Concrete Sleeper.</li> <li>✚ Track machines, 3-Tier Mechanized maintenance.</li> <li>✚ Working Principles of track machines.</li> <li>✚ Rail &amp; Weld failures, USFD, track stresses</li> </ul>	<ul style="list-style-type: none"> <li>✚ Testing of Glued Joints</li> <li>✚ Track standards &amp; policy and renewals</li> <li>✚ Track monitoring, tolerance &amp; classification</li> <li>✚ Rail Wheel interaction, Derailment Investigation</li> <li>✚ Breaches &amp; Diversion, Schedule of Dimension, CRS sanction, rail affecting works.</li> <li>✚ Monsoon patrolling, Safety, Gang strength</li> <li>✚ 1 week at IRTMTC regarding working systems and maintenance of track machines.</li> <li>✚ Safety at worksite.</li> </ul>
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#### Bridges

<ul style="list-style-type: none"> <li>✚ Type of bridges, components &amp; functions, FRP Sleeper.</li> <li>✚ River training &amp; protection works</li> <li>✚ Foundation of bridges - Shallow and deep</li> <li>✚ Superstructure Steel fabrication &amp; launching</li> <li>✚ RCC &amp; PSC Track structure on girder bridges</li> </ul>	<ul style="list-style-type: none"> <li>✚ Inspection of PSC girders, inspection of bridges, Masonry and Concrete, Steel, NDT underwater inspection of substructure.</li> <li>✚ Temporary arrangements</li> <li>✚ Repairs and rehabilitation of bridges, treatment of corrosion.</li> <li>✚ Action before and during monsoon</li> </ul>
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#### Works

<ul style="list-style-type: none"> <li>✚ Planning of Works, Works Programme</li> </ul>	<ul style="list-style-type: none"> <li>✚ Land Management, Construction equipment</li> </ul>
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<ul style="list-style-type: none"> <li># Drawing and Estimates, Measurement</li> <li># Contracts &amp; Arbitration</li> <li># Concrete technology</li> <li># Basics of Soil Mechanics, Earth work</li> <li># Foundations - Types and design considerations</li> <li># Construction, Inspection &amp; maintenance of building &amp; structures</li> <li># Surveying, Water Supply Engineering</li> <li># Sanitary Engineering</li> </ul>	<ul style="list-style-type: none"> <li># Exposure on construction equipment, architectural features.</li> <li># Dismantling of structures particularly arches, canopies &amp; bridges</li> <li># Waterproofing and finishing materials.</li> <li># Horticulture &amp; landscaping, basics of architecture for simple layouts of buildings</li> <li># Stores account</li> <li># Roof treatment.</li> <li># Safety during dismantling of old structures.</li> </ul>
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## 2. Senior Professional Course (P. Way) - 3 Week (November 2011)

**For Whom:** Engineers/Managers of Civil Engineering discipline with 2-3 years experience in P. Way (Track Technology)

### Course Contents

<ul style="list-style-type: none"> <li># Ballast and sub-ballast, formation treatment, Ballast less track</li> <li># Concrete sleepers for plain track and points &amp; crossings</li> <li># Curves, Use of computer programme for realignment</li> <li># Elastic Fastenings</li> <li># Glued and Insulated joints</li> <li># Maintenance of concrete sleeper track</li> <li># Points and crossings, Layouts</li> </ul>	<ul style="list-style-type: none"> <li># Rail, rail welding, welded track, LWR on bridges</li> <li># Rail-Wheel Interaction &amp; Derailment Investigation</li> <li># Track Monitoring, track tolerances, TMS, High speeds</li> <li># Track stresses, track standards and criteria for track renewals</li> <li># USFD, Rail &amp; weld failures and remedial measures</li> <li># Yard layouts, Ballast less track</li> </ul>
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## 3. Senior Course for Project Planning Management Consultants - 2 Week (July, 2011)

**For Whom:** Engineers/ Managers of Civil Discipline with 5-6 years experience in executive cadres

### Course Contents - Track

<ul style="list-style-type: none"> <li># Basics of Railway Engineering</li> <li># Specifications of Rails</li> <li># Specifications of PSC sleepers &amp; fastenings including manufacturing of PSC sleeper</li> </ul>	<ul style="list-style-type: none"> <li># Welding of Rails including demo of thermit weld &amp; Flast Butt welding.</li> <li># Ultrasonic Flaw Detection of rail &amp; Weld including Demo</li> </ul>
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<ul style="list-style-type: none"> <li>✚ Handling of rails &amp; sleepers</li> <li>✚ Specifications and Testing of Ballast</li> <li>✚ Specifications of Railway formation</li> <li>✚ Butt welding</li> </ul>	<ul style="list-style-type: none"> <li>✚ Pts &amp; Crossings and layouts</li> <li>✚ Short/ long welded rails.</li> <li>✚ Mechanized track linking</li> <li>✚ Mechanized track maintenance</li> <li>✚ Quality control of track &amp; Track Tolerances</li> </ul>
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### **Bridges**

<ul style="list-style-type: none"> <li>✚ Components of Bridges</li> <li>✚ Bridge bearings</li> <li>✚ Provision of Railway Bridge Codes as regards Construction.</li> <li>✚ Construction &amp; Maintenance of Steel Bridges including FOB.</li> <li>✚ FOB.</li> <li>✚ Practical aspects of PSC Construction of Concrete Bridges</li> </ul>	<ul style="list-style-type: none"> <li>✚ Substructure &amp; Foundation of Bridges including piling &amp; well foundations.</li> <li>✚ Launching of girders</li> <li>✚ Concrete technology</li> <li>✚ Quality control and durability of concrete structures including formwork &amp; enabling structures.</li> </ul>
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### **Miscellaneous**

<ul style="list-style-type: none"> <li>✚ Worksite Safety (Protection of track)</li> <li>✚ Safety during construction</li> </ul>	<ul style="list-style-type: none"> <li>✚ CRS Sanction.</li> </ul>
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## EXECUTIVE LEVEL COURSES – ELECTRICAL ENGINEERING

Some of the courses are given below. However detailed position with regard to all the courses proposed during the year, their contents and schedules can be viewed at <http://www.irieven.com.in> directly or through <http://www.rites.co.in>

### 1. Course on Power Electronics - 3 Weeks (July 2011)

**For Whom:** Directly recruited Electrical Engineers/Supervisors with 2 – 3 years experience.

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Power Semi-conductor devices, Power Diodes, SCR, GTO, IGBT's.</li> <li>✚ Converter, inverter and chopper circuits.</li> <li>✚ VVVF control of induction motor, Direct torque control of induction motor.</li> <li>✚ Microprocessors (Software and hardware).</li> <li>✚ Microprocessor based propulsion and control for traction vehicles.</li> <li>✚ 25 KVA AC Coach Inverter, Train Lighting Regulators.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Three phase locomotive power circuits, auxiliary circuit, control circuit, hardware &amp; software details, MICAS – S@ control system, pneumatic system, trouble shooting, diagnostic system.</li> <li>✚ Digital electronics – Labs for Logic gates, coding circuit, decoders, MUX, DeMUX, Flip flops, Counters, Memories.</li> <li>✚ SCADA system for 25 KV AC traction.</li> </ul>
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### 2. Special Course on Train Lighting and Air conditioning - 3 week (June, August & December 2011).

#### For Whom:

Engineers/ Managers of Electrical Engineering discipline with 5-10 years experience.

#### Course Contents - Train lighting & Air-conditioning of Railway Coaches & Stationary plants

<ul style="list-style-type: none"> <li>✚ System of TL.</li> <li>✚ Maintenance and Problem.</li> <li>✚ Alternators and Regulators for TL/AC with wiring arrangement. Fire prevention in coaches.</li> <li>✚ Conventional, VRLA batteries, Charging, Problems, Maintenance and Testing.</li> <li>✚ Inverters in RMPU AC units in SG Coaches.</li> <li>✚ EOG System of TL&amp;AC.</li> <li>✚ MSG Meeting ITEMS.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Reliability in TL/AC.</li> <li>✚ LHB Coaches.</li> <li>✚ Performance of AC coaches and directives of MSG meeting.</li> <li>✚ Comparison of Air-conditioning in LHB and conventional coaches.</li> <li>✚ Heat load and tonnage capacity of Air-conditioning system.</li> <li>✚ Maintenance of equipment in centralized air-conditioning plant.</li> </ul>
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### General power supply & Distribution

<ul style="list-style-type: none"> <li>✚ Power supply system in General services. Sub-Station and its protection.</li> </ul>	<ul style="list-style-type: none"> <li>✚ I.E. Rules involving safety in General Service.</li> </ul>
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### Lighting

<ul style="list-style-type: none"> <li>✚ Lighting terminology.</li> <li>✚ Light sources and Indoor lighting design.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Illumination system control.</li> <li>✚ Essentials of good lighting and energy effectiveness.</li> </ul>
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### Water supply pumping installation

<ul style="list-style-type: none"> <li>✚ Types of pumps and characteristics of Centrifugal Pumps.</li> <li>✚ Considerations for design of water supply pumping installation.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Selection of centrifugal pumps.</li> <li>✚ Maintenance, Operation of Pumps with an aim to energy conservation.</li> </ul>
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### Condition monitoring in General service

<ul style="list-style-type: none"> <li>✚ Transformer and Oil.</li> <li>✚ Cables and it's testing.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Mechanical components.</li> <li>✚ Lead Acid Batteries.</li> </ul>
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## EXECUTIVE LEVEL COURSES - SIGNAL ENGINEERING & TELECOMMUNICATIONS

Some of the courses are given below. However detailed position with regard to all the courses proposed during the year, their contents and schedules can be viewed at <http://www.iriset.ac.in> directly or through <http://www.rites.co.in>

### 1. Initial Course - (Phase – I) - 14 Week ( March 2011)

**For Whom:** Fresh Entrants (Graduate Engineers)

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Basic concepts of Signaling and principles of Interlocking</li> <li>✚ Block Signaling - Part I</li> <li>✚ Electrical Signaling including relays</li> <li>✚ Line plant practice</li> <li>✚ Locking Table and dog charts</li> </ul>	<ul style="list-style-type: none"> <li>✚ Orthodox and double wire Signaling</li> <li>✚ Signaling general and safety</li> <li>✚ Telephone exchanges</li> <li>✚ Telephone exchanges (Strowger).</li> <li>✚ Track circuits and power supply arrangements</li> <li>✚ Train traffic control</li> </ul>
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### 2. Initial Course - (Phase – II) - 14 Week (June 2011)

**For Whom:** Fresh Entrants (Graduate Engineers) who have undergone Phase I programme.

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Axle counters</li> <li>✚ Block Signaling - Part II</li> <li>✚ Computer Applications</li> <li>✚ Data communication</li> <li>✚ Electrical Signaling circuit practices</li> <li>✚ Electronic exchanges</li> <li>✚ Locking Table practices</li> <li>✚ Microwave communication including digital microwave</li> </ul>	<ul style="list-style-type: none"> <li>✚ Modern Signaling</li> <li>✚ Multiplexing &amp; PCM, VHF and mobile communication</li> <li>✚ Relay interlocking - British system</li> <li>✚ Relay Interlocking - Siemens's system</li> <li>✚ Signaling in 25 KB AC electrified area</li> <li>✚ Stores, Accounts</li> <li>✚ Tenders estimates</li> </ul>
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### 3. Integration Course (Telecom to Signaling) Phase I & II - 15 Week (January 2012)

**For Whom:** Engineers/Managers of Telecommunications promoted from Supervisory Cadres of Telecommunications with 2-3 years experience/fresh Graduate Engineers with 1-2 years experience.

### Course Contents

<ul style="list-style-type: none"> <li>✚ Automatic Signaling and Axle Counters</li> <li>✚ Basic concepts in Signaling and principles of interlocking</li> <li>✚ Block Signaling and Axle counter</li> <li>✚ Block Signaling including Intermediate</li> <li>✚ Block working Signaling general and Safety rules.</li> <li>✚ Electrical Signaling – Relays</li> </ul>	<ul style="list-style-type: none"> <li>✚ Equipment and their controls</li> <li>✚ Mechanical Signaling - Orthodox and double wire Signaling</li> <li>✚ Modern Signaling</li> <li>✚ Relay interlocking systems - British &amp; Siemens type</li> <li>✚ Selection Circuits</li> <li>✚ Track Circuits</li> </ul>
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#### 4. Integration Course (Signaling to Telecom.) Phase I & II - 11 Week (June 2011)

**For Whom:** Engineers/Managers of signaling discipline promoted from Supervisory Cadres of Signaling discipline with 2-3 years experience/fresh Graduate Engineers with 1-2 years experience.

### Course Contents

<ul style="list-style-type: none"> <li>✚ Carrier communication</li> <li>✚ Control communication:</li> <li>✚ Under ground cable, over head cables</li> <li>✚ Digital electronics</li> <li>✚ Electronic Exchanges</li> <li>✚ Fundamentals in electronics and applied electronic circuits</li> </ul>	<ul style="list-style-type: none"> <li>✚ Introduction to modern telecom techniques.</li> <li>✚ Multiplexing and microwave</li> <li>✚ Optic fiber.</li> <li>✚ Propagation and antennas</li> <li>✚ Public communication system</li> <li>✚ Train traffic control</li> </ul>
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#### 5. Sr. Professional Course for Sr. Engineers – 3 Week ( July 2011)

**For Whom:** Working S&T Engineers with 5-15 years experience for upgrading technical skills and expose them to technological developments in modern Signaling and telecommunications systems.

### Course Contents

<ul style="list-style-type: none"> <li>✚ Computer aided CTC, joint less track circuit etc.,</li> <li>✚ Computer applications in railways.</li> <li>✚ Construction management</li> <li>✚ Developments in Signaling – Solid State interlocking, auxiliary warning system</li> </ul>	<ul style="list-style-type: none"> <li>✚ Developments in telecommunication – optical fiber, mobile communications, digital microwave, electronic exchanges</li> <li>✚ Information technology</li> <li>✚ Man power planning</li> <li>✚ Reliability and quality control</li> </ul>
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## SUPERVISORY DEVELOPMENT PROGRAMMES – MECHANICAL ENGINEERING

Some of the courses are given below. However detailed position with regard to all the courses proposed during 2008-09, their contents and schedule can be viewed at <http://www.irimee.ac.in> directly or through <http://www.rites.co.in>

### 1. Diesel Induction Course - 7 Week (December 2011)

**For Whom:** Junior Mechanical Supervisors with 1-2 years experience to enhance knowledge of various systems of diesel locomotives.

#### Course Contents

<ul style="list-style-type: none"> <li>✚ AAR classification of locomotives &amp; working principle of diesel engine</li> <li>✚ Transmission types with merits and demerits</li> <li>✚ Basics of electrical &amp; electronics</li> <li>✚ Locomotive layout</li> <li>✚ Diesel engine assembly, components, inspection and maintenance</li> <li>✚ Combustion, valve timing &amp; timing setting</li> <li>✚ Bi-metal and tri-metal bearings</li> <li>✚ Diesel engine systems</li> <li>✚ Fuel oil</li> <li>✚ Lube oil</li> <li>✚ Cooling water</li> <li>✚ Charge air</li> <li>✚ Testing of lube oil, fuel oil, spectrographic analysis and water treatment</li> <li>✚ Alternate fuel (bio diesel)</li> <li>✚ Engine governor</li> <li>✚ Woodward</li> <li>✚ GE</li> <li>✚ Principle of Electrical Transmission</li> <li>✚ DC machines</li> <li>✚ Electrical control components</li> <li>✚ Electrical systems :</li> <li>✚ Propulsion control</li> <li>✚ Excitation control</li> <li>✚ Transition and automatic regulation</li> </ul>	<ul style="list-style-type: none"> <li>✚ Starting circuit</li> <li>✚ Safety devices</li> <li>✚ Expressor/ compressor</li> <li>✚ Brake systems</li> <li>✚ Bogie and suspension</li> <li>✚ Load test &amp; fault diagnosis</li> <li>✚ Trouble shooting</li> <li>✚ ALSO Modification</li> <li>✚ Microprocesor controlled locomotives</li> <li>✚ GM loco introduction &amp; system &amp; component-wise merit analysis</li> <li>✚ GM locomotive System (Mech)</li> <li>✚ GM loco layout &amp; introduction to electrical systems</li> <li>✚ EMD Electricals &amp; AC-AC transmission</li> <li>✚ HTSC Bogie</li> <li>✚ Project presentation</li> <li>✚ Introduction to Workshop Technology</li> <li>✚ Material testing, failure prevention, alternative engineering material and energy in IR, Environment and pollution.</li> <li>✚ Introduction to C&amp;W technology.</li> <li>✚ Dynamic braking</li> <li>✚ energy in IR, environment and pollution</li> <li>✚ Introduction to C&amp;W technology</li> </ul>
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**2. Welding Technology – 2 weeks (July, November 2011 & March 2012).**

**For Whom:** Supervisors with 1-2 years experience to enhance knowledge about welding.

**Course Contents**

<ul style="list-style-type: none"> <li>✚ Fundamental of welding – Process, weld ability, Fluxes, Selection of Electrodes</li> <li>✚ Electrical aspects</li> <li>✚ Welding defects – causes &amp; remedies</li> <li>✚ Problems and solution faced in Shed (yard)</li> <li>✚ Welding of Safety components – knuckle, draw bar components etc.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Problems faced during welding</li> <li>✚ Coach manufacturing &amp; corrosion repairs</li> <li>✚ Wagon – manufacturing &amp; Corrosion repairs</li> <li>✚ Locos</li> <li>✚ LHB coach</li> <li>✚ Ease of welding – Selection, Manufacture &amp; other application</li> <li>✚ Cost &amp; economy in welding</li> </ul>
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**3. Course for Chemists and Metallurgists - 5 Week ( April, 2011)**

**For Whom:** Chemists & Metallurgists Supervisors.

**Course Contents**

<ul style="list-style-type: none"> <li>✚ Basic Metallurgy</li> <li>✚ Welding</li> <li>✚ Failure prevention</li> <li>✚ Alt. Engg. Mat &amp; Energy in IR</li> <li>✚ Environment &amp; pollution</li> </ul>	<ul style="list-style-type: none"> <li>✚ Material Testing</li> <li>✚ Foundry</li> <li>✚ Inter Department matters</li> <li>✚ General matters, TQM, Computer, Study, Exam</li> </ul>
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## SUPERVISORY DEVELOPMENT PROGRAMMES SIGNAL ENGINEERING & TELECOMMUNICATIONS

Some of the courses are given below. However detailed position with regard to all the courses proposed during the year, their contents and schedules can be viewed at <http://www.iriset.ac.in> directly or through <http://www.rites.co.in>

### 1. Equipment Course in Electronic Exchange - 2 Week (May 2011)

**For Whom:** Telecommunication Supervisors with 2-3 years experience with working knowledge of digital electronic exchange.

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Call processing</li> <li>✚ Computer principles and I/O devices</li> <li>✚ Computer software for exchange</li> <li>✚ Control structure, switching</li> <li>✚ Digital switching</li> <li>✚ O&amp;M organisation of C DOT.</li> <li>✚ Study of C-DOT exchange</li> </ul>	<ul style="list-style-type: none"> <li>✚ Introduction to electronic exchange</li> <li>✚ Introduction to micro-processors (65 C 02) and important ICs used in line and trunk cards</li> <li>✚ Signaling system in exchange</li> <li>✚ SPC exchange basic principles</li> <li>✚ Study of digital exchange (C DOT with hardware details)</li> </ul>
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### 2. Refresher Course for Signaling – 5 weeks (April, May, July, August, September, October & December 2011)

**For Whom:** Refresher course is meant for working supervisor looking after railway signaling. The topics which are covered are as under:

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Electrical Signaling – Train Detecting Devices (Track Circuits, Axle Counters &amp; AFTC)</li> <li>✚ Elect. Signaling Equipment &amp; Misc. Circuits</li> <li>✚ Signaling in 25 KV RE area.</li> <li>✚ Power Supply Arrangements &amp; Relay Interlocking ( British)</li> <li>✚ Relay Interlocking (Siemens)</li> <li>✚ Modern Signaling, Solid State Interlocking</li> </ul>	<ul style="list-style-type: none"> <li>✚ Modern Signaling, Digital Axle Counter, AWS, Data logger, ETCS, etc.,</li> <li>✚ Block Signaling, GSR &amp; aspects related to safety &amp; SEM</li> <li>✚ Locking Table Practice, Lifting Barrier gate &amp; Reliability &amp; Sound Construction Practice</li> <li>✚ Accidents and case study &amp; Microprocessor</li> <li>✚ Computer Basics &amp; Rail net / Internet</li> </ul>
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## SUPERVISORY DEVELOPMENT PROGRAMMES – TRAFFIC OPERATIONS

Some of the courses are given below. However detailed position with regard to all the courses proposed during the year, their contents and schedules can be viewed at <http://www.zrti.webs.com> directly or through <http://www.rites.co.in>

### 1. Trains Operations & Management - 9 Week ( August & December 2011)

**For Whom:** Senior Supervisors of Traffic Discipline cadres (SS/YM/ Controller).

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Booking of materials and claims</li> <li>✚ Commercial passenger and freight traffic</li> <li>✚ Finance and general management.</li> <li>✚ Freight and passenger trains control</li> <li>✚ Marketing and sales</li> <li>✚ Marshalling yards</li> </ul>	<ul style="list-style-type: none"> <li>✚ Operating Transportation Management</li> <li>✚ Pass amenities, Permanent-way</li> <li>✚ Punctuality, Reservations &amp; Revenue</li> <li>✚ Signaling. Ticket less traveling &amp; Time-tabling</li> <li>✚ Traffic projections, Wagon utilization</li> </ul>
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### 2. Commercial Management - 9 Week (May & October 2011).

**For Whom:** Senior supervisors with 3-5 years experience in Commercial Department.

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Accidents records and returns statistics</li> <li>✚ Duties and responsibilities of Railway staff</li> <li>✚ Establishment / General Rules and Pass amenities.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Passenger and freight traffic</li> <li>✚ Platform arrangements</li> <li>✚ Station Account Claims</li> <li>✚ Station working</li> <li>✚ Conduct Rules</li> </ul>
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### 3. Promotion course for Sr. Section Engineer - 7 Week (May & December 2011)

**For Whom:** Senior supervisors with 3-5 years experience in Civil Engineering Department.

#### Course Contents

<ul style="list-style-type: none"> <li>✚ Ballast and sub-ballast, formation treatment, ballast-less track.</li> <li>✚ Concrete sleepers for plain track.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Rail wheel interaction and derailment investigation.</li> <li>✚ Track monitoring, track tolerances.</li> </ul>
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<p>points &amp; crossings.</p> <ul style="list-style-type: none"> <li>✚ Curves, use of computer program for realignment</li> <li>✚ Elastic fastenings.</li> <li>✚ Glued and insulated joints</li> <li>✚ Maintenance of concrete sleeper track.</li> <li>✚ Points and crossings and layout.</li> <li>✚ Rail, rail welding, welded track, LWR on bridges.</li> </ul>	<p>high speeds.</p> <ul style="list-style-type: none"> <li>✚ Track stresses, Track standards and criteria for track renewals.</li> <li>✚ Ultrasonic testing</li> <li>✚ Mechanical maintenance of track.</li> <li>✚ Inspection of track and inspection schedules.</li> <li>✚ Field Visits.</li> </ul>
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**NB:**

**Regular courses for transportation personnel, Assistant Station Masters, Guards, Drivers, Commercial Clerks, Ticket Collectors, Engineering Staff – Permanent Way, Inspectors, Inspector of Works, Storekeeper, Statistic are also organized. Details of specific requirement can be submitted on demand.**

**Practical attachment training in specialized areas for Artisans/ Mechanics/ Technicians/ Fitters is also organized in reputed Railway Workshops, Locomotive & Rolling Stock base depots and Field Training School.**

**INDIAN TECHNICAL AND ECONOMIC COOPERATION (ITEC)  
AND  
SPECIAL COMMONWEALTH ASSISTANCE FOR AFRICA PROGRAMME (SCAAP)**

Training of foreign national in India is an important component of the Indian bilateral cooperation programmes. The training programme covered under the ITEC and SCAAP aim at development of Human resources and Institutional Infrastructure. Both the ITEC and SCAAP programmes are fully funded by the Government of India on a grant basis. Every year more than 4000 foreign nationals from more than 90 countries are trained in leading Indian Institutions under the two programmes.

**1. PROCEDURE:**

1. Officials of the Government, Public Enterprises, Universities and Chamber of commerce and Industries are eligible to apply for scholarships under ITEC & SCAAP. All the applications must be duly filled in and the applicants must be nominated by the authorized officials of the foreign governments who will then send them to the Indian Embassies and High Commissions. Such requests need to be routed through the concerned Indian Mission keeping in mind the period required for designing an appropriate programme.
2. Under this Scholarship scheme to the extent possible, cost of International Travel, Tuition fees, Medical & Health care, Living & Book allowances is borne by the Ministry of External Affairs, Government of India. The ultimate decision for granting scholarships rest with the Ministry of External affairs.

**For further details,**

**please visit me a WEBSITE: <http://itec.nic.in>**

**Rites Ltd., Training Division, 5<sup>th</sup> floor (Right Wing),  
RITES Bhawan, 1, Sector 29  
Gurgaon (Haryana) 122001 (India)**

**Telephone** : 0091 124 257 1630, 2818 170, 2818502

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**Accommodation** : Hostel

**Contact person** : **Mr. Pankaj Agrawal**  
General Manager (Training)

**Website** : [www.rites.co.in](http://www.rites.co.in)

**Name and details of courses proposed**

Sl. No.	Name of the course	Qualification required	Duration (weeks)	Period		Maximum number of seats	Minimum number of seats
				From	To		
1	Management Development Program	University Diploma/ Degree	4 weeks	*	*	25 Nos	20 Nos
2	Railway Track Technology	Degree/ Diploma in Civil Engg	6 weeks	*	*	25 Nos	20 Nos
3	Diesel Locomotive Technology	Degree/ Diploma in Mech. Engg.	6 weeks	*	*	25 Nos	20 Nos
4	Professional Course on Railway Signal Engg & Telecom	Degree/ diploma in Mech/ Elect/ Electronics Engg.	6 weeks	*	*	25 Nos	20 Nos

\*Dates yet to be finalized .

**COURSE CONTENTS FOR ITEC PROGRAMMES**

**1. Management Development Programme**

<ul style="list-style-type: none"> <li>✚ <b>CORPORATE BUSINESS ECONOMY:</b> <ul style="list-style-type: none"> <li>◆ Transport Environment</li> <li>◆ Vision/Mission</li> <li>◆ Organizational Culture and future mapping</li> </ul> </li> <li>✚ <b>FINANCIAL MANAGEMENT ON THE RAILWAYS</b> <ul style="list-style-type: none"> <li>◆ Corporate and Project Finance</li> <li>◆ Budgeting</li> <li>◆ Asset Acquisition</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✚ <b>CUSTOMER RELATION MANAGEMENT</b></li> <li>✚ <b>DECISION MAKING</b></li> <li>✚ <b>COMMUNICATION</b></li> <li>✚ <b>NEGOTIATION</b></li> <li>✚ <b>HUMAN RESOURCE DEVELOPMENT</b></li> <li>✚ <b>PERSONAL EFFECTIVENESS</b></li> </ul>
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**2. TRACK TECHNOLOGY**

<ul style="list-style-type: none"> <li>✚ Rail, rail welding, welded track (including New SEJ) LWR on bridges, FRP sleeper</li> <li>✚ USFD, Rail &amp; weld failures and remedial measures</li> <li>✚ Glued and Insulated joints</li> <li>✚ Ballast and sub-ballast, formation treatment, Ballast less track</li> <li>✚ Track stresses and failure analysis of rail/welds, track standards and criteria for track renewals</li> <li>✚ Points and crossings, new design including fan-shaped layout, Layout calculations</li> </ul>	<ul style="list-style-type: none"> <li>✚ Concrete sleepers for plain track and points &amp; crossings</li> <li>✚ Elastic Fastenings</li> <li>✚ Track Machines</li> <li>✚ Curves, Use of computer program for realignment</li> <li>✚ Track Monitoring and use of results in maintenance planning, track tolerances etc.</li> <li>✚ Yard layouts</li> <li>✚ New rolling stock</li> <li>✚ Higher Axle Loads</li> <li>✚ Safety at Work sites</li> </ul>
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**3. DIESEL LOCOMOTIVE TECHNOLOGY**

<ul style="list-style-type: none"> <li>✚ AAR classification</li> <li>✚ Automatic transition regulation</li> <li>✚ Bimetal and tri-metal bearings – defects, inspection and maintenance</li> <li>✚ Brake rigging</li> <li>✚ Combustion process and value timing diagram</li> </ul>	<ul style="list-style-type: none"> <li>✚ Excitation control, Dynamic brake</li> <li>✚ Expresser and air circuits</li> <li>✚ Inspection and maintenance</li> <li>✚ Locomotive brake systems</li> <li>✚ Locomotive layout</li> <li>✚ Lube oil</li> <li>✚ Manufacture</li> </ul>
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<ul style="list-style-type: none"> <li>✚ Component details</li> <li>✚ Cooling water and charge air including details of important system components</li> <li>✚ DC generators and DC motors</li> <li>✚ Design</li> <li>✚ Diesel engine – Assembly</li> <li>✚ Diesel engine systems – Fuel oil</li> <li>✚ Draw and buffing gear</li> <li>✚ Electrical control components</li> <li>✚ Engine governor – GE and Woodward</li> <li>✚ Engine starting and speed control – circuit analysis</li> </ul>	<ul style="list-style-type: none"> <li>✚ Need for transmission and their types with merits and demerits</li> <li>✚ Principle of electric transmission</li> <li>✚ Properties of fuel and lube oil with testing procedures</li> <li>✚ Safety devices</li> <li>✚ Testing of locomotives</li> <li>✚ Under – frame – bogie, suspension</li> <li>✚ Wheel axle</li> </ul>
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**4. PROFESSIONAL COURSE ON RAILWAY SIGNAL ENGINEERING AND TELECOMMUNICATIONS**

<ul style="list-style-type: none"> <li>✚ Basic concept of signaling</li> <li>✚ Principles of interlocking</li> <li>✚ Orthodox signaling</li> <li>✚ Double wire signaling</li> <li>✚ Electrical signaling – Relays</li> <li>✚ Block signaling – Introduction</li> <li>✚ Train detecting devices – DC Track circuits &amp; AFTC</li> <li>✚ Train detective devices – Axle Counters</li> <li>✚ Electrical Signalling Equipments, colour light signals, misc. equipments and circuits.</li> <li>✚ Relay interlocking – British system</li> <li>✚ Modern Signalling – Electronics Interlocking System</li> </ul>	<ul style="list-style-type: none"> <li>✚ Modern Signalling – Data Logger, AWS etc.</li> <li>✚ Relay interlocking – Siemens System</li> <li>✚ Signalling in General – Safety and Accidents</li> <li>✚ Electrical Signalling – British practices/ Siemens</li> <li>✚ Accidents case studies</li> <li>✚ Passenger Information systems</li> <li>✚ Multiplexing-Digital (SDH) &amp; Equipment</li> <li>✚ Control Communication</li> <li>✚ Mobile Train Radio Communication</li> <li>✚ Optic fibre Cable &amp; Systems, Sources, Detections, laying practices</li> <li>✚ Disaster Management (Communication Support)</li> </ul>
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**LIST OF COUNTRIES COVERED UNDER ITEC.**

S.No.	Country	S.No.	Country
1	Afghanistan	44	Egypt
2	Albania	45	El-Salvador
3	Algeria	46	Equatorial Guinea
4	Angola	47	Eritrea
5	Anguilla	48	Estonia
6	Antigua and Barbuda	49	Ethopia
7	Argentina	50	Fiji
8	Armenia	51	Gabon
9	Azerbaijan	52	Georgia
10	Bahamas	53	Grenada
11	Bahrain	54	Guatemala
12	Bangladesh	55	Guinea
13	Barbados	56	Guinea Bissau
14	Belarus	57	Guyana
15	Belize	58	Haiti
16	Benin	59	Honduras
17	Bhutan	60	Hungary
18	Bolivia	61	Indonesia
19	Bosnia - Herzegovina	62	Iran
20	Brazil	63	Iraq
21	Brunei Darussalam	64	Ivory Coast
22	Bulgaria	65	Jamaica
23	Burkina Faso	66	Jordan
24	Burundi	67	Kazakhstan
25	Cambodia	68	Kiribati
26	Cape Verde Island	69	Korea(DPRK)
27	Cayman Island	70	Kyrgyzstan
28	Central African Republic	71	Laos
29	Chad	72	Latvia
30	Chile	73	Lebanon
31	Colombia	74	Liberia
32	Commonwealth of Dominica	75	Libya
33	Comoros	76	Lithuania
34	Congo	77	Macedonia
35	Costa Rica	78	Madagascar
36	Croatia	79	Malaysia
37	Cuba	80	Maldives
38	Czech Republic	81	Mali
39	Democratic Republic of Congo	82	Marshall Islands
40	Djibouti	83	Mauritania
41	Dominican Republic	84	Mexico
42	East Timor	85	Micronesia
43	Ecuador	86	Moldova

S.No.	Country	S.No.	Country
87	Mongolia	114	Slovak Republic
88	Montenegro	115	Solomon Island
89	Montserrat	116	Sri Lanka
90	Morocco	117	St. Kitts & Nevis
91	Myanmar	118	St. Lucia
92	Nauru	119	St. Vincent & Grenadines
93	Nepal	120	Sudan
94	Nicaragua	121	Suriname
95	Niger	122	Syria
96	Oman	123	Tajikistan
97	Palau	124	Thailand
98	Palestine	125	Togo
99	Panama	126	Tonga
100	Papua New Guinea	127	Trinidad & Tabago
101	Paraguay	128	Tunisia
102	Peru	129	Turkey
103	Philippines	130	Turkmenistan
104	Poland	131	Turks & Caicos Island
105	Qatar	132	Tuvalu
106	Republic Of Sao Tome	133	Ukraine
107	Romania	134	Uruguay
108	Russia	135	Uzbekistan
109	Rwanda	136	Vanuatu
110	Samoa	137	Venezuela
111	Senegal	138	Vietnam
112	Serbia	139	Yemen
113	Singapore		

**LIST OF COUNTRIES COVERED UNDER SCAAP**

1. Botswana
2. Cameroon
3. Gambia
4. Ghana
5. Kenya
6. Lesotho
7. Malawi
8. Mauritius
9. Mozambique
10. Namibia
11. Nigeria
12. Seychelles
13. Sierra Leone
14. South Africa
15. Swaziland
16. Tanzania
17. Uganda
18. Zambia
19. Zimbabwe

New ITEC/ SCAAP Form for the year 2011-12.

**GOVERNMENT OF INDIA  
MINISTRY OF EXTERNAL AFFAIRS  
INDIAN TECHNICAL AND ECONOMIC COOPERATION (ITEC) AND  
SPECIAL COMMONWEALTH ASSISTANCE FOR AFRICA PROGRAMME (SCAAP)  
(Application for the courses fully funded by the Ministry of External Affairs, Government of India)**

Please read instructions carefully before applying

3 x 4

**APPLICATION FORM**

**PART – 1**

Nationality _____  Institute _____  _____	Name of course _____  Commencing: From _____ to _____ dd/mm/yyyy                  dd/mm/yyyy
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**1. Personal Particulars**

Name(s):  Surname:  Sex (tick one)    MALE/ FEMALE  Marital status  Date of Birth _____ Date – Month – Year  Passport No.: _____ Date & place of issue: _____ Valid till _____
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Address:	Office	Res
Tel No.s		
Mobile/ Cell:		
Fax:		
E-mail		
Special dietary needs, if any:		

<b>Person(s) to be notified in case of Emergency</b>		
	Office Contact	Personal/ Family Contact
Name:		
Address:		
Tel. Nos.		
Mobile/ Cell		
Fax:		
E-Mail		

**Educational Qualification(s)**

Degree/ Diploma/ Certificates	Year	Name of Educational Institute
1.		
2.		
3.		
4.		

**Professional Qualification(s), if any:**

Professional Qualification (s)	Year	Name of Institute
1		
2		
3		
4		

**2. Details of Employment/ Profession (current & previous)**

Name of Employer/ Department/ Company	Position	Period	Description of Work

**Are you an employee of: (Mark appropriate box)**

- a. Government       b. Semi-government/ Parastatal   
 c. Private Company       d. Self-employed       e. Others

**Details of present employer:**

Name/ address: \_\_\_\_\_  
 Tel No. \_\_\_\_\_  
 E-mail: \_\_\_\_\_

3. Have you ever attended a course sponsored by the Government of India? (Mark one)

YES	NO
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(i) If answer to 3 is yes, details of the course \_\_\_\_\_

4. Details of course(s) attended, if any, outside your country:

Country	Course details & Duration	Year	Sponsor/ Programme

5. Please describe in your own words (about 100 words):

- (a) qualification/ experience in the related to the course applied for, &  
 (b) reason(s) for applying for this training course.

6. Certification of English language proficiency (by Indian Mission// Designated Authority)

	Good	Basic	Remarks
Spoken			
Written			

Mother tongue/ Native language: \_\_\_\_\_ / Other language(s), if any: \_\_\_\_\_

English Language test administered by \_\_\_\_\_

Name & Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Tel. Number \_\_\_\_\_

E-Mail: \_\_\_\_\_

Signature with date \_\_\_\_\_

### MEDICAL REPORT

**(To be completed by a doctor/ hospital on the panel of the Indian Mission, UN Mission, if any or as designated by Indian Mission )**

(i) Name of Applicant:
(ii) Age:
(iii) Sex: (Male Female)
(iv) Height (cm):
(v) Weight(kg):
(vi) Blood Group:
(vii) Blood Pressure:

1. Is the person examined in good health at present ?	
2. Is the person examined physically and mentally able to carry out intensive training away from home?	
3. Is the person free of infectious diseases (AIDS, tuberculosis, trachoma, skin diseases etc), Yellow fever certificate (in case of people coming from that region or as laid out in WHO Regulations).	
4. Does the person examined have any medical condition or defect which might require treatment during the course ?	
5. List any abnormalities indicated in the chest X ray.	

I certify that the applicant is medically fit to undertake a training course in India.

Name of Physician : \_\_\_\_\_

Registration No. : \_\_\_\_\_

Address of Clinic / Hospital \_\_\_\_\_

and City / Town : \_\_\_\_\_

Telephone : \_\_\_\_\_

E mail : \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Physician \_\_\_\_\_ Seal of Clinic/Hospital: \_\_\_\_\_

### IMPORTANT NOTICE

- Please read the form carefully. The application will be automatically rejected if any column is incomplete / blank.
- Declaration by the candidate and the recommendations from employer, if any, are compulsory pre-requisites.
- Working knowledge of the English language is a pre-requisite. For English language and language related courses, basic knowledge of English is required.
- Candidates who leave the course midway for personal reasons without prior permission of the Ministry of External Affairs or remain absent from the programme without sufficient reasons are expected to refund the cost of training and airfare to Government of India.
- Female candidates are hereby informed that they will not be allowed to join the course if they are in family way before leaving for India.

### UNDERTAKING BY THE APPLICANT

I, \_\_\_\_\_  
(Name, Middle name, Family name)  
of (country) \_\_\_\_\_ certify that information provided by me in this form is true, complete and correct.  
I also certify that:-

- (i) I have read the course brochure and that I am aware of the course contents and living conditions in India \*.
- (ii) I have sufficient knowledge of English to participate in the training programme.
- (iii) I am medically fit to participate in the Course and have submitted a medical certificate from the designated doctor.
- (iv) I have not attended any programme previously sponsored by Government of India.
- (v) I have not applied for or am not required to attend any other training course/ conference/ meeting etc. during the period of the course applied for.

If accepted for the ITEC/ SCAAP training programme, I undertake to:

- (a) Comply with the instructions and abide by Rules, Regulations and guidelines as may be stipulated by both the nominating and sponsoring Governments, in respect of the training;
- (b) follow the full and complete course of study or training and abide by the rules of the University/ Institution/ Establishment in which I undertake to study or gain training;
- (c) submit periodic assessment / tests conducted by the Institute (progress report which may be prescribed);
- (d) refrain from engaging in political activities, or from any form of employment for profit or gain;
- (e) return to my home country at the end of my course of study or training;
- (f) I also fully undertake that if I am granted a training award it may be subsequently withdrawn if I fail to make adequate progress or for any other sufficient cause determined by the host Government.

**For lady participants:- I confirm that I will not travel to India to attend the Course I have applied for if I am in the family way.**

Date:

Place:

(SIGNATURE THE APPLICANT)

Name: \_\_\_\_\_

\* Details of the course are on the website of the Institute or can be obtained from them by e-mail.

**PART – II**

**To be completed by the authorized official of the Nominating Government/ Employer**

I, \_\_\_\_\_ on behalf of the Government of \_\_\_\_\_ certify that:

- (a) I have examined the educational, professional and other certificates quoted by the nominee in Part – I of this form and I am satisfied that they are authentic and relate to the nominee.
- (b) I have gone through the medical certificates and X-ray reports produced by the nominee which state that he is medically fit and free from any infectious disease such as HIV/ AIDS and yellow fever and that having regard to his/ her physical and mental history there is no reason to indicate that the nominee is other than fit to undertake the journey to India and to undergo training in India.
- (c) The nominee has adequate knowledge of spoken and written English to enable him to follow the course of training for which he / she is being nominated.
- (d) The nominee has not availed of ITEC/SCAAP training facilities earlier in India.

I nominate Mr./Mrs./Miss \_\_\_\_\_ on behalf of the Government of \_\_\_\_\_ / as employer.

Name of Nominating Authority:

Designation:

Address:

Date:

Place:

Signature  
(With seal)

Name and Designation  
(in block letters)