

JAIPUR METRO RAIL CORPORATION LTD.

REPORT
on
INDUSTRIAL VISIT

09/07/2018-11/07/2018



Organised by:
Computer Science Department
Jaipur Engineering College & Research Centre
Jaipur

Total No. of Student: 150

Faculty Coordinator:

Mr. Gajendra Sharma

Mr. Ashish Ameria

STAFF INVOLVEMENT GROUP (SIG)

1. Pulkit Mathur (DGM S& T)
2. Arun (Chief Controller OCC)
3. Ashish Yadav (JEN)
4. Munesh Meena (JEN)

ABOUT JMRC

Date of incorporation: - 01.01.2010

Date of Commencement of business: - 20.01.2010

Date of Commencement of Commercial operation (Phase 1A):- 03.06.2015

Ministry/Department: - Urban Development & Housing Department, Government of Rajasthan

FACTS ABOUT JAIPUR METRO:

1. The estimated cost of the Jaipur Metro Rail Project is Rs 2025 crores.
2. Jaipur Metro Rail Project is one of the fastest project implementations in Metro sector that was completed in about four years and a quarter.
3. Jaipur Metro project is totally funded by the state government and its agencies, namely, Rajasthan Housing Board, Jaipur Development Authority, Rajasthan State Industrial Development and Investment Corporation Ltd.

4. When it comes to planning, Jaipur Metro is a good example of multi-modal integration, as it is connecting the Railway Station and the Inter-State Bus Terminal; and Metro feeder services are also launched by Jaipur Metro Rail Corporation.
5. As an effort to reduce energy consumption lead to 30 percent energy saving as procured rolling stock uses regenerative braking system.
6. A rainwater harvesting system has also been built into the design.
7. Free drinking water at all the Metro stations.
8. 30 percent of Jaipur Metro's staff are women including operation and maintenance staff, train operators and station controllers.
9. Up to 15% discount has been offered on Smart Cards to encourage their usage.
10. Tourist Cards like One-day Tour Card and Three-day Tour Card, have been introduced, which can be used for unlimited number of trips during the days of their validity.
11. Latest security equipment's have been provided at all Metro Stations

ROLLING STOCK

The Metro uses 1,435 mm (4 ft 8 ½ in) standard gauge rolling stock. Trains are maintained at Mansarovar Depot for Pink Line. In December 2011 BEML was awarded a 318 crore contract to supply 10 four-car trains for Phase 1. The Jaipur Metro plans to lengthen the trains later to 6 coaches as the traffic increases. BEML expects a follow-on order worth 60 crore.

Thus these rolling stocks are said to be indigenous and are manufactured by BEML at its factory in Bangalore. The trains are four-car consists with a capacity of 1506 commuters per train, accommodating 50 seated and 292 standing passengers in each coach. These trains will have CCTV cameras in and outside the coaches, power supply connections inside coaches to charge mobiles and laptops, better humidity control, microprocessor-controlled disc brakes, and will be capable of maintaining an average speed of (20 mph) over a distance of 1.1 km (0.68 mi).

Trains on the metro operate at a maximum speed of 80 km/h (50 mph), and an average speed of (20 mph). Maximum speed is limited to 42 km/h (26 mph) at curves. During operation gate automatically closes and if an object is encountered in between then door takes 3 attempts to close the door and even after attempting, if the door is still not closed then Train Operator again tries to close the door and after all the unsuccessful attempts the door has to be closed by cutting the switch near door as it is door must be closed properly before operating train.

SIGNALING AND TELECOMMUNICATION

The Jaipur Metro uses cab signaling along with a centralized automatic train control system consisting of Automatic Train Protection and automatic train signaling modules. Jaipur Metro has proposed that it will have automatic train operation also in future. A 380 MHz digital trunked TETRA radio communication system from Cascadian is used on all lines to carry both voice and data information. An integrated system comprising optical fiber cable, on-train radio, CCTV, and a centralized clock and public address system is used for telecommunication during train operations as well as emergencies.

OPERATIONS

Trains operate at a frequency of 10 to 15 minutes between 6:45 and 21:00 depending peak and off-peak time. Trains operating within the network typically travel at speed up to 40 km/h (25 mph), and stop for about 20–40 seconds at each station. Automated station announcements are recorded in Hindi and English. Many stations have services such as Parking lot, ATMs and mobile recharge. Eating, drinking, smoking, and chewing of gum are prohibited in the entire system. The metro also has a sophisticated fire alarm system for advance warning in emergencies, and fire retardant material is used in trains as well as on the premises of stations. Navigation information will sooner be available on Google Transit. The first coach of every train is reserved for women.

SECURITY

The responsibility of security of Jaipur Metro has been entrusted to Rajasthan Police. Strength of 789 police personnel has been sanctioned for security and policing of Jaipur Metro. Latest security equipments have been provided at all Metro Stations. Closed-circuit cameras are used to monitor trains and stations, and feed from these is monitored by Rajasthan Police and Jaipur Metro authorities at their respective control rooms. In addition metal detectors, X-ray baggage inspection systems. Each of the underground stations has about 45 to 50 cameras installed while the elevated stations have about 16 to 20 cameras each. The monitoring of these cameras is done by the Rajasthan Police, which is in charge of security of the Metro, as well as the Jaipur Metro Rail Corporation. Intercoms are provided in each train car for emergency communication between the passengers and the train operator. Periodic security drills are carried out at stations and on trains to ensure preparedness of security agencies in emergency situations.

SCADA FOR OPERATION

Supervisory control and data acquisition (SCADA) is a control system architecture that uses computers, networked data communications and graphical user interfaces for high-level process supervisory management, but uses other peripheral devices such as programmable logic

controllers and discrete PID controllers to interface to the process plant or machinery. The operator interfaces which enable monitoring and the issuing of process commands, such as controller set point changes, are handled through the SCADA supervisory computer system. However, the real-time control logic or controller calculations are performed by networked modules which connect to the field sensors and actuators.

TRAIN INTEGRATED MANAGEMENT SYSTEM (TIMS)

Train Integrated Management System (TIMS) is a train information system that performs continuous monitoring of control information in the driving cab and in instruments for monitoring as well as checks on train status to ease the burden on operators and conductors, to properly provide emergency information to the train crew and to streamline the checking procedure.

With integrated control of train-mounted devices using software logic and serial transmission, the system makes the train car system simpler and more reliable, establishing an optimal train car system.

Integrated train car management function

• Overall train control (optimal control)

Optimal powering and braking depending on the loading conditions of the entire train

Effects: Effective use of regenerative braking equipment, enhanced response to speed control, compensation for the braking strength of the whole train at times of brake failure

• Response confirmation function

Control for initiation/termination of train car operation (with pantographs up/down - SIV on/off - lighting and air conditioning on/off)

Effects: Improved safety of control and easier detection of causes of failure

• Safety interlock

Thorough check on conditions for activation of doors, brake failure, operation of safety brakes in response to powering commands

Effects: Minute safety functions that cannot be provided by hardware can be supported by software logic.

Approval Letter from Organization

To
The Principal
JECRC, Jaipur

Date:04-07-2018

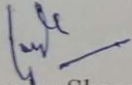
Subject: Approval for three day Industrial Visit to JMRC Jaipur.

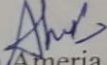
Respected Sir,

As per the undergoing 15 days internship of III semester students, CSE department want to organize a three days industrial visit to the students for industry exposure to JMRC Ltd., Jaipur. Students will visit the JMRC in the batch of 50 on 9th, 10th, 11th of July'18 along with two faculty members.

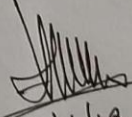
Hereby I am attaching the approval of visit from the concern authority of JMRC. Kindly permit us to visit on scheduled dates and arrange transport facility as required.


Thanks & Regards


Gajendra Sharma


Ashish Ameria
(Coordinator Industrial visit, CSE)
JECRC, Jaipur

*Forwarded to Principal Sir,
for approval.*


4/6/18. (HOD, CSE)


V. K. Sharma 6/7/18



List Of Students

Jaipur Engineering College and Research Centre Industrial visit at Jaipur Metro Rail Corporation (JMRC)

Branch : CSE, Section - D... Attendance Sheet Date of Visit : 10 July 2018...

Sr. No.	Students Name	Contact No.	Signature
1	Piyush Bobra	9461263758	Piyush
2	HRITIK JAIN	9680382171	Hritik Jain
3	Aditya Porwal	9521585890	Aditya
4	Gaurav Singhal	8963842067	Gaurav
5	Priyanshi Khandelwal	6376986229	Pri
6	Kanishka Sharma	909373012	Kanishka
7	Smriti Khanwani	8384934478	Smriti
8	Diya Patel	9001038415	Diya
9	Shruti Jain	7062423789	Shruti
10	Poojabhiman G'ha	9461132353	P. G'ha
11	Lakshya Sharma	9694924836	Lakshya
12	Aditya Suerana	9588838456	Aditya
13	Ashish Asthal	855995339	Ashish
14	Pankh Chakrisa	7597560345	Pankh
15	Rajat Arya	9672953219	Rajat
16	Ayush Jain	8560957014	Ayush
17	PRAMVEER CHOUHAN	8104130701	Pram
18	Keshav Jangid	8829810313	Keshav
19	Ashish Kumar	9166207131	Ashish K.
20	Sarvagya Swarna	8387983578	Sarvagya
21	Girish Garg	8233318391	Girish
22	Shivansh Maheshwari	9462988268	Shivansh
23	Vishal choudhary	7014167661	Vishal
24	Alok Jain	7329973006	Alok
25	Puru Agarwal	7239931514	Puru
26	Gaurav Sharma	9413724653	Gaurav
27	Dharmesh Kochar	9660168385	Dharmesh
28	Harshit K Sharma	8239200828	Harshit
29	Kimanshu Jain	9521852444	Kimanshu
30	Harsh Kumar Tyagi	9672628776	Harsh

Jaipur Engineering College and Research Centre
Industrial visit at Jaipur Metro Rail Corporation (JMRC)

Branch : CSE, Section - D....

Attendance Sheet

Date of Visit : 10/7/18

Sr. No.	Students Name	Contact No.	Signature
31	Shubham Shesra	7688840931	<i>[Signature]</i>
32	Shubham Tiros	9079 713437	<i>[Signature]</i>
33	Arman Matoliya	9024415178	<i>[Signature]</i>
34	Kartik Kataria	9588871215	<i>[Signature]</i>
35	Anuj Parasar	9785516265	<i>[Signature]</i>
36	Abhishek Tiwari	7297006119	<i>[Signature]</i>
37	Prakash Singh Rajawat	7568293633	<i>[Signature]</i>
38	Piyush Mantoi	9116519139	<i>[Signature]</i>
39	Rajan Jha	8233989962	<i>[Signature]</i> (Faculty)
40	B. Umamaheswari	7014199072	<i>[Signature]</i> ("")

Jaipur Engineering College and Research Centre
Industrial visit at Jaipur Metro Rail Corporation (JMRC)

Branch : CSE, Section - B

Attendance Sheet

Date of Visit : 10/7/18

Sr. No.	Students Name	Contact No.	Signature
1.	LAVEENA GANGWANI	7014751520	<i>Laveena</i>
2.	Meenakshi Palaniya	9511551124	Meenakshi
3.	Naini Goyal	9079293189	<i>Naini</i>
4.	Kawal Yaduvanshi	7976603138	<i>Kawal</i>
5.	Malvika Kushwah	9079925211	<i>Malvika</i>
6.	Jishore Singh	911931489	Jishore
7.	Kunal Sharma	9588077318	Kunal
8.	Lalit Yadav	9653788253	Lalit
9.	Ashav Singh	9982761929	Ashav
10.	Prateek Jain	7737451308	Prateek
11.	Kritik Jain	9014409011	Kritik
12.	Kartik Sharma	8302583142	Kartik
13.	Itendra Sharma	8107123435	Itendra
14.	Anuranshu Gupta	7726836066	Anuranshu
15.	Prakhar Bhatia	8824655471	Prakhar
16.	Nish Sharma	7688840462	Nish

Jaipur Engineering College and Research Centre
Industrial visit at Jaipur Metro Rail Corporation (JMRC)

Attendance Sheet

Branch : CSE, Section - ..B...

Date of Visit : 9-07-2018

Sr. No.	Students Name	Contact No.	Signature
①	Nikhil Nagar	9462102575	Nikhil
②	Nikita Rathore	9887506383	Nikita
③	Nipunika Upadhyay	9828390929	Nipunika
④	Kratika Jain	9314502340	Kratika
⑤	Ishita Motiani	9783405622	Ishita
⑥	Manish Raj	8340229351	Manish
⑦	MD Shadam Khan	6200317623	MD Shadam Khan
⑧	Narendra Singh	7023019655	Narendra Singh
⑨	Paveen Godara	8947858543	Paveen
⑩	Dakshya Sharma	7597551115	Dakshya
⑪	Pratham Warg	8824966721	Pratham
⑫	Pradhyumna Palani	9828819351	Pradhyumna
13.	Manish Garg	9694973773	Manish
14.	Keshav Kobra	9782893333	Keshav
15.	Jayesh Joshi	8529586942	Jayesh
16.	Khyati Jha	7742276722	Khyati
17.	Tarun Dhabhai	9079801500	Tarun
18.	Tanmay Kumawat	9057599699	Shah Fuleh Kh

Jaipur Engineering College and Research Centre
Industrial visit at Jaipur Metro Rail Corporation (JMRC)

Attendance Sheet

Branch : CSE, Section - C

Date of Visit : 9/7/18

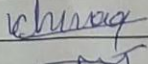
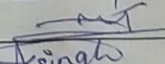
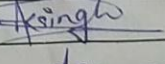
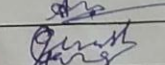
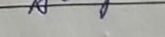
Sr. No.	Students Name	Contact No.	Signature
1	Piyush gupta	9660218108	<i>Piyush</i>
2	Riya Goyal	7073273685	<i>Riya</i>
3	Tara Priya	8340569489	<i>Tara</i>
4	Sounya Kishanandani	2890521344	<i>Sounya</i>
5	Rahul Singh Chauhan	8107738282	<i>Rahul</i>
6	Manna Vaishnav	9588259869	<i>Manna</i>
7	Piyush Gwani	7727829075	<i>Piyush</i>
8	Praseem Vashora	9649918747	<i>Praseem</i>
9	Naman Jain	729798645	<i>Naman</i>
10	Mohit Jain	8561011555	<i>Mohit</i>
11	Pragwal Kethi	9460110707	<i>Pragwal</i>
12	Batyam Sahay	9905032646	<i>Batyam</i>
13	Vinay gupta	7079395649	<i>Vinay</i>
14	Rupesh Kumar	7062835847	<i>Rupesh</i>
15	Raynak goswami	7340619030	<i>Raynak</i>
16	Tanmay parashar	9982996563	<i>Tanmay</i>
17	Saurabh Kumar Rai	9140537044	<i>Saurabh</i>
18	Saurabh sharma	9057877312	<i>Saurabh</i>
19	Sarthak Kothiyani	8764098870	<i>Sarthak</i>
20	Sparsh Jain	7014556452	<i>Sparsh</i>
21	Priyanka Vijay	9587980327	<i>Priyanka</i>
22	Sukhvir Agsawal	9529361561	<i>Sukhvir</i>
23	Swati Maheshwari	9653188927	<i>Swati</i>
24	Yash Agrawal	9950148282	<i>Yash Agrawal</i>
25	Sohi Tothar	8562858562	<i>Sohi</i>
26	Taru Khandelwal	9116074614	<i>Taru</i>
27	Priyanshi Rajoriya	9079865930	<i>Priyanshi</i>
28	Sakshi singhal	9782338966	<i>Sakshi</i>
29	Rajni sharma	9772751151	<i>Rajni</i>
30	Jahanvi singh	7568117008	<i>Jahanvi</i>

Jaipur Engineering College and Research Centre
Industrial visit at Jaipur Metro Rail Corporation (JMRC)

Attendance Sheet

Branch : CSE, Section - A

Date of Visit : 11/07/18

Sr. No.	Students Name	Contact No.	Signature
<u>1</u>	Ushrag Jain	7742125948	
<u>2</u>	Amulya Parashar	9785510205	
<u>3</u>	Ankit Kumar	7903602213	
<u>4</u>	Aman Malhotra	9024415678	
<u>5</u>	Garvit Chaurasia	8233318331	

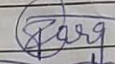
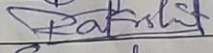
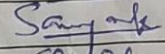
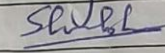
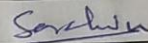
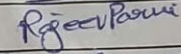
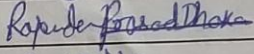
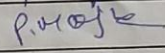

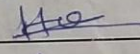
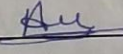
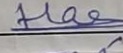
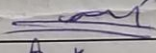

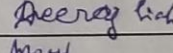

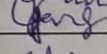
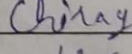

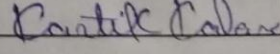
Jaipur Engineering College and Research Centre
Industrial visit at Jaipur Metro Rail Corporation (JMRC)

Attendance Sheet

Branch : CSE, Section - C

Date of Visit :

09/07/18

Sr. No.	Students Name	Contact No.	Signature
1	Punnet Garg	7791992675	
2	Rakshit Porewal	9460330851	
3	Samyak Jain	8003940321	
4	Shubham Kumar	9461292369	
5	Sachin Sharma	9413911622	
6	Rajeev Pasari	9664396166	
7	Rajender Prasad Dhaka	8780026335	
8	Pradhuman Ojha	8949398894	
9	Aditya Swarna	9588838456	
10	Hareh Tyagi	9672628776	
11	Ajeesh Jain	8560957014	
12	Hareesh Mathur	9461587164	
13	Anuj Porewal	9285516265	
14	Chandan Kumar	7979880839	
15	Sheeraj Singh	9588961970	
16	Parth Zachan Chandra	7597560345	
17	Girish Garg	8233318391	
18	Chirag Jain	7742125948	
19	Aashish Chauhan	8400040002	
20	Kanishk Wadhwa	9588891215	

Jaipur Engineering College and Research Centre
Industrial visit at Jaipur Metro Rail Corporation (JMRC)

Attendance Sheet

Branch : CSE, Section - A.....

Date of Visit : 11/07/18.....

Sr. No.	Students Name	Contact No.	Signature
1	Vijay Dhakad	9 660640612	
2	Rupesh Kumar	7062835847	
3	Riya Goyal	7073273885	
4	Vikash Beniwal	8094976365	
5	Rajendra Prasad Dhaka	8780026335	
6	Shubham Kumar	9461292369	
7	Shivraj Swami	9116304579	
8	Puneet Garg	7791992675	
9	Rajeev Paroi	9664396166	
10	Rakshit Porwal	9460330851	
11	Spansh Jain	8769055893	
12	Rannak Sarda	7062835847	
13	Shubham Modi	7231083616	
14	Sumit Gupta	7690048858	
15	Yash Agarwal	9950148282	
16	Yash Yadu	9413742783	
17	Vinay Gupta	9079395649	
18	Tarun Dhatthar	9079801500	
19	Tanmay Parasher	9982996563	
20	Tanu Priya	8340569489	

Visit Pictures





Scanned with
CamScanner









[Handwritten Signature]
Head of the Department
Computer Science & Engineering
JECRC, Jaipur