

## NAAC

### Criteria I

**1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during last five years**



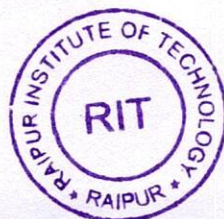
# RAIPUR INSTITUTE OF TECHNOLOGY

(Under the aegis of Mahanadi Education Society)  
Approved by AICTE, New Delhi, Affiliated to CSVTU, Bhilai



## 1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during last five years (10)

2020-2021					
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
BE Biotechnology Engineering	18	Environmental Biotechnology	318653 (18)	2020-21	SHIVANI SHARMA, MUKESH KUMAR, Megha Verma
BE Biotechnology Engineering	18	Stem Cell in Health Care	318733(18)	2020-21	BHUPENDRA SAHU
BE Biotechnology Engineering	18	Tissue Culture	318555(18)	2020-21	KAJAL TIWARI, MANISH KUMAR YADU
BE Biotechnology Engineering	18	Recombinant DNA technology	318454 (18)	2020-21	KAMLESWAR SAHU
BE Biotechnology Engineering	18	Bioprocess Technology	318651 (18)	2020-21	LEKH RAM SAHU
BE Biotechnology Engineering	18	Microbial Technology	318352(18)	2020-21	MANIK LAL SAHU, Shalini Gupta, Garima Dhanawat
BE Biotechnology Engineering	18	Agriculture Technology	318833(18)	2020-21	RAJENDRA KUMAR
BE Biotechnology Engineering	18	Food Processing Technology Lab	318862(18)	2020-21	RAJESHWARI SAHU
BE Biotechnology Engineering	18	Industrial Biotechnology	318831(18)	2020-21	Y SHRAVANI, Roshan Kanouje, Tushar Patel, Narayan Sao
BE Biotechnology Engineering	18	Phytochemistry	318354(11)	2020-21	Sunain Gupta
BE Biotechnology Engineering	18	Biochemistry	318455(18)	2020-21	Samant Sahu, Afreen Qureshi
BE Biotechnology Engineering	18	Instrumentation Techniques	318356(19)	2020-21	Mahima Sahare, Piyush Sinha, Shubham Lodhi, Vikas Kumar
BE Biotechnology Engineering	18	Immunology & Immuno technology	B018412(018)	2020-21	Anoushka Singh
BE Biotechnology Engineering	18	Bioprocess Engineering	B018411(018)	2020-21	Ansh Yadav, Shahin Ansari, Twinkle Sahu, Himanchal Sahu
BE Biotechnology Engineering	18	Genetics	B108313(0 81)	2020-21	Barkha Goswami
BE Biotechnology Engineering	18	Biochemistry	B018311 (018 )	2020-21	N. Lavanya
BE Biotechnology Engineering	18	Environmental Biotechnology	B018415(018)	2020-21	Nandita Bhoyar
BE Biotechnology Engineering	18	Plant and Animal Biotechnology	C018611(018)	2020-21	Yashraj Singh Kaushik
BE Chemical Engineering	19	Separation Processs -II	319733(19)	2020-21	KHUSHBOO YADAV, RAMDAYAL, ARUN KUMAR BARMAN, MD SAIFULLAH, GHANSHYAM SAHU
BE Chemical Engineering	19	Process Equipemnt Design- II	319733(19)	2020-21	AAFREEN KHURSHIED
					SHAILESH KUMAR SAHU



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BE Chemical Engineering	19	Organic Process Technology	319864(19)	2020-21	HARSH SISODIA
					ASHISH KUSHWAHA
BE Chemical Engineering	19	Environment legislation and Impact Assessment	319732(19)	2020-21	BHOLA RAM SAHU
BE Chemical Engineering	19	Systems Analysis and computer programming	319651 (19)	2020-21	MADHU SURANA
BE Chemical Engineering	19	Fuel Technology	B019313(019),	2020-21	Ramesh Yadav, Rupendra singh, Jyoti yadav, SUNIL KUMAR, GANDHI LAL, Kishan Kanhaiya Nishad, Premlal, Prakash chand, Mukesh dhruw, Yashwant Singh Rathore, Vaishali aditya, Renuka kashyap, Khageshwar Prasad, Sachin Soni, Nooruddin Kuwawala , Chhayank Sahu, Vishal Khairwar, Praditya Kumar, Abdul Rauf, M Sai Jagan
		Material and Energy Balance Computations	B019312(019),		
		Heat Transfer	B019412(019),		
		Mass Transfer	C019611(019)		
BE Chemical Engineering	19	Process Stoichiometric Calculations,	319453(19),	2020-21	Anand pandey, Kushal Srivastav, Utkarsh thakur, Vibha verma, Tanupriya Ganguly, Nishtha Lautre, Rahul Yadav, Vishal Patel, Palak soni, Shrutika Dewangan
		Separation Process I	319733(19)		
BE Chemical Engineering	19	Organic Chemistry	319456(11)	2020-21	Parav Surana, Pushpendra Kumar
		Fluid and Paticle Operation	319453(19)		
BE Civil Engineering	20	Building Construction	320455 ( 20)	2020-21	HIMANSHU YADU
					ABHILASH DEWANGAN
					AMBIKA KUNJAM
					AMIT KUMAR DEWANGAN
					ANCHALA SINGH MARKAM
					ANJALI SINHA
BE Civil Engineering	20	Geotech Engineering-I	320552 (20)	2020-21	ANKIT CHANDRAKAR
					ANKIT UPADHYAY
					CHITRANJAN
					DEVENDRA SAHU
					DHANANJAY KUMAR MAHILANGE
					DUGESH KOSHLE
BE Civil Engineering	20	Transportation Engineering-I	320456 ( 20)	2020-21	HARISH KUMAR SAHU
					KESHAR SINGH BHAINSARA
					KEVAL RAJ SAHU
					KHAGESH SHRIWAS
					KHILESH KUMAR SAHU
					KRITIKA SANDEY
BE Civil Engineering	20	Environmental Engineering - II	320733(20)	2020-21	RAHUL YADU
					RAKESH VERMA
					RITU MAHANT
					ROHAN DHEEWAR
					SANDEEP KUMAR BRAMHE
					SARON XALXO
BE Civil Engineering	20	Environmental Engineering - II	320733(20)	2020-21	SONALI KOSHLEY
					SURAJ KUMAR NISHAD
					TARUN CHAKRADHARI
					TRIPTI BAGHEL



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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
BE Civil Engineering	20	Structural Engineering Lab	320661 (20)	2020-21	TUSHAR SAHU VANSHIKA SINGH RAJPUR VIBHAV SAHU YOGESH KUMAR BAGHEL YOGESH KUMAR SAHU PRAVESH KUMAR JOSHI SHUBHAM SAHU
BE Civil Engineering	20	Concrete Technology	320654 (20)	2020-21	YASH KUMAR DESHLAHARA ABDUL KHALID ANSARI DEEPAK DEWANGAN VIMAL YADAV MONENDRA KUMAR PRAKASH JOGI PUSHPENDRA TANDIA
BE Civil Engineering	20	Structural Engineering Design - IV	320831(20)	2020-21	GARIMA RAJPUT NIDHI NANDESHWAR PRIYA GOSWAMI PALAK MESHRAM JOHNSON BAGHEL SUNIL BHANDEKAR ASTHA YADAV DHARMESH TANDON
BE Civil Engineering	20	Building Materials	320355(20)	2020-21	PUSHPENDRA KURREY SHANKAR SINGH KASHYAP SHUBHAM JAISWAL PURUSHOTTAM VERMA YUDHISTHIR SAHU VINAY DEWANGAN YAMINI SAHU TIKESHWARI SAHU
BE Civil Engineering	20	Building Construction	320455 (20)	2020-21	DEVENDRA SINHA ASHISH LAHARE DIGESHWAR PRASAD VASHUNDHARA GUPTA SHAHID DANDIKAR SHUSHANT MINJ CHANDRASHIVAM
BE Civil Engineering	20	Water Resources Engineering - II	320832(20)	2020-21	UMESH POTAI NITISH KUMAR YADAV PARITOSH NANDI ANAND SAHU WILSON KUMAR THAKUR BHEMENDRA KUMAR
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	RAJU SAHU, ONKAR PRASAD SAHU, DHANENDRA KUMAR, YUVRAJ, DIVENDRA KUMAR KAMAL, CHHAYA, NEHA DIWAN
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	ONKAR PRASAD SAHU, DHANENDRA KUMAR, YUVRAJ, DIVENDRA KUMAR KAMAL, CHHAYA, NEHA DIWAN, RITU SAHU
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	DHANENDRA KUMAR, YUVRAJ, DIVENDRA KUMAR KAMAL, CHHAYA, NEHA DIWAN, RITU SAHU, SUSHMA PAIKRA
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	YUVRAJ, DIVENDRA KUMAR KAMAL, CHHAYA, NEHA DIWAN, RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	DIVENDRA KUMAR KAMAL, CHHAYA, NEHA DIWAN, RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR, OMPRAKASH

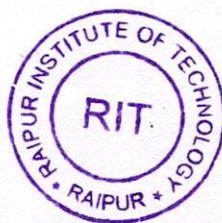


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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	CHHAYA, NEHA DIWAN, RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR, OMPRAKASH, BHASKAR KUMAR
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR, OMPRAKASH, BHASKAR KUMAR, VINOD KUMAR, RUPESH KUMAR
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR, OMPRAKASH, BHASKAR KUMAR, VINOD KUMAR, RUPESH KUMAR
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR, OMPRAKASH, BHASKAR KUMAR, VINOD KUMAR, RUPESH KUMAR
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR, OMPRAKASH, BHASKAR KUMAR, VINOD KUMAR, RUPESH KUMAR
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR, OMPRAKASH, BHASKAR KUMAR, VINOD KUMAR, RUPESH KUMAR
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	RITU SAHU, SUSHMA PAIKRA, HEMANT KUMAR, OMPRAKASH, BHASKAR KUMAR, VINOD KUMAR, RUPESH KUMAR
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	DEVID, JAI KUMAR RATNAKAR, JITENDRA KUMAR SAHU, LUCKY, MANESHWAR SAHU, DULESHWAR PRASAD, HANIF LAHREY, ONKAR, YOGENDRA KUMAR DHURWA, RAHUL SAHU,
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	DEVID, JAI KUMAR RATNAKAR, JITENDRA KUMAR SAHU, LUCKY, MANESHWAR SAHU, DULESHWAR PRASAD, HANIF LAHREY, ONKAR, YOGENDRA KUMAR DHURWA, RAHUL SAHU,
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	DEVID, JAI KUMAR RATNAKAR, JITENDRA KUMAR SAHU, LUCKY, MANESHWAR SAHU, DULESHWAR PRASAD, HANIF LAHREY, ONKAR, YOGENDRA KUMAR DHURWA, RAHUL SAHU,

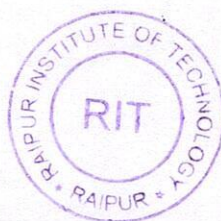


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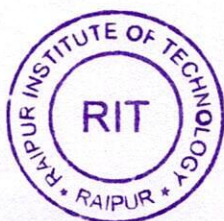
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B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	DEVID, JAI KUMAR RATNAKAR, JITENDRA KUMAR SAHU, LUCKY, MANESHWAR SAHU, DULESHWAR PRASAD, HANIF LAHREY, ONKAR, YOGENDRA KUMAR DHURWA, RAHUL SAHU,
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	DEVID, JAI KUMAR RATNAKAR, JITENDRA KUMAR SAHU, LUCKY, MANESHWAR SAHU, DULESHWAR PRASAD, HANIF LAHREY, ONKAR, YOGENDRA KUMAR DHURWA, RAHUL SAHU,
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	DEVID, JAI KUMAR RATNAKAR, JITENDRA KUMAR SAHU, LUCKY, MANESHWAR SAHU, DULESHWAR PRASAD, HANIF LAHREY, ONKAR, YOGENDRA KUMAR DHURWA, RAHUL SAHU,
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	KHEMRAJ SAHU, SURDEEP KUMAR
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	KHEMRAJ SAHU, SURDEEP KUMAR
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	KHEMRAJ SAHU, SURDEEP KUMAR
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	KHEMRAJ SAHU, SURDEEP KUMAR
B.Tech Civil Engineering	20	Concrete Technology	C020632(020)	2020-21	KHEMRAJ SAHU, SURDEEP KUMAR
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	BIRENDRA KUMAR, PARAKH PAL, TARAKNATH KASHYAP
B.Tech Civil Engineering	20	Engineering economics, estimating and costing	C020613(020)	2020-21	BIRENDRA KUMAR, PARAKH PAL, TARAKNATH KASHYAP
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	BIRENDRA KUMAR, PARAKH PAL, TARAKNATH KASHYAP
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	BIRENDRA KUMAR, PARAKH PAL, TARAKNATH KASHYAP
B.Tech Civil Engineering	20	Concrete Technology	C020632(020)	2020-21	BIRENDRA KUMAR, PARAKH PAL, TARAKNATH KASHYAP
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	YOGESH SINGH, DURGAWATI, MUKESH GAJENDRA
B.Tech Civil Engineering	20	Engineering economics, estimating and costing	C020613(020)	2020-21	YOGESH SINGH, DURGAWATI, MUKESH GAJENDRA
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	YOGESH SINGH, DURGAWATI, MUKESH GAJENDRA
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	YOGESH SINGH, DURGAWATI, MUKESH GAJENDRA
B.Tech Civil Engineering	20	Concrete Technology	C020632(020)	2020-21	YOGESH SINGH, DURGAWATI, MUKESH GAJENDRA
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	MUSKAN YADU
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	MUSKAN YADU
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	MUSKAN YADU
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	MUSKAN YADU
B.Tech Civil Engineering	20	Concrete Technology	C020632(020)	2020-21	MUSKAN YADU




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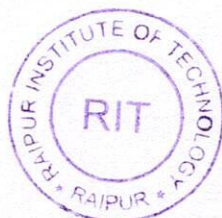
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B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	AKASH KUMAR YADU, LAXMI NARAYAN, AJAY KUMAR BADGAIYA, GHANSHYAM, LALIT SAHU, HITESH AAVDE, AASHUTOSH VERMA, SUSHIL BANJARE, KAJAL, DEEPMALA BHAGAT
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	AKASH KUMAR YADU, LAXMI NARAYAN, AJAY KUMAR BADGAIYA, GHANSHYAM, LALIT SAHU, HITESH AAVDE, AASHUTOSH VERMA, SUSHIL BANJARE, KAJAL, DEEPMALA BHAGAT
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	AKASH KUMAR YADU, LAXMI NARAYAN, AJAY KUMAR BADGAIYA, GHANSHYAM, LALIT SAHU, HITESH AAVDE, AASHUTOSH VERMA, SUSHIL BANJARE, KAJAL, DEEPMALA BHAGAT
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	AKASH KUMAR YADU, LAXMI NARAYAN, AJAY KUMAR BADGAIYA, GHANSHYAM, LALIT SAHU, HITESH AAVDE, AASHUTOSH VERMA, SUSHIL BANJARE, KAJAL, DEEPMALA BHAGAT
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	AKASH KUMAR YADU, LAXMI NARAYAN, AJAY KUMAR BADGAIYA, GHANSHYAM, LALIT SAHU, HITESH AAVDE, AASHUTOSH VERMA, SUSHIL BANJARE, KAJAL, DEEPMALA BHAGAT
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	AKASH KUMAR YADU, LAXMI NARAYAN, AJAY KUMAR BADGAIYA, GHANSHYAM, LALIT SAHU, HITESH AAVDE, AASHUTOSH VERMA, SUSHIL BANJARE, KAJAL, DEEPMALA BHAGAT
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	MRINAL PREETI, SHIVANI VERMA, DHAMANI DHARUW, KU RENUKA MANNADEY, GIRIRAJ NAMDEO, RITIK SAHU, SHIVANSHU NARMADA
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	MRINAL PREETI, SHIVANI VERMA, DHAMANI DHARUW, KU RENUKA MANNADEY, GIRIRAJ NAMDEO, RITIK SAHU, SHIVANSHU NARMADA
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	MRINAL PREETI, SHIVANI VERMA, DHAMANI DHARUW, KU RENUKA MANNADEY, GIRIRAJ NAMDEO, RITIK SAHU, SHIVANSHU NARMADA
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B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	MRINAL PREETI, SHIVANI VERMA, DHAMANI DHURU, KU RENUKA MANNADEY, GIRIRAJ NAMDEO, RITIK SAHU, SHIVANSHU NARMADA
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	MRINAL PREETI, SHIVANI VERMA, DHAMANI DHURU, KU RENUKA MANNADEY, GIRIRAJ NAMDEO, RITIK SAHU, SHIVANSHU NARMADA
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	CHANDAN KUMAR SINGH, RAJEEV RANJAN SINGH, PREMSAGAR, VIKAS SONKAR, MANJUSHA SHRI HATHILE, AJAY GAYAKWAD, BHUPENDRA KUMAR
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	CHANDAN KUMAR SINGH, RAJEEV RANJAN SINGH, PREMSAGAR, VIKAS SONKAR, MANJUSHA SHRI HATHILE, AJAY GAYAKWAD, BHUPENDRA KUMAR
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	CHANDAN KUMAR SINGH, RAJEEV RANJAN SINGH, PREMSAGAR, VIKAS SONKAR, MANJUSHA SHRI HATHILE, AJAY GAYAKWAD, BHUPENDRA KUMAR
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	CHANDAN KUMAR SINGH, RAJEEV RANJAN SINGH, PREMSAGAR, VIKAS SONKAR, MANJUSHA SHRI HATHILE, AJAY GAYAKWAD, BHUPENDRA KUMAR
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	CHANDAN KUMAR SINGH, RAJEEV RANJAN SINGH, PREMSAGAR, VIKAS SONKAR, MANJUSHA SHRI HATHILE, AJAY GAYAKWAD, BHUPENDRA KUMAR
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	CHANDAN KUMAR SINGH, RAJEEV RANJAN SINGH, PREMSAGAR, VIKAS SONKAR, MANJUSHA SHRI HATHILE, AJAY GAYAKWAD, BHUPENDRA KUMAR
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	POORNIMA CHANDRAKAR, CHHAMANIDHI SAHU, TOSHARIKA, KIRTI TIWARI, NILIMA YADU, VIMAL KUMAR, KRISHNA KUMAR, ANIL PAIKARA, FULCHAND, BHASKAR PANDEY
B.Tech Civil Engineering	20	Geotechnical Engineering	C020513(020)	2020-21	POORNIMA CHANDRAKAR, CHHAMANIDHI SAHU, TOSHARIKA, KIRTI TIWARI, NILIMA YADU, VIMAL KUMAR, KRISHNA KUMAR, ANIL PAIKARA, FULCHAND, BHASKAR PANDEY



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B.Tech Civil Engineering	20	Transportation Engineering	C020514(020)	2020-21	POORNIMA CHANDRAKAR, CHHAMANIDHI SAHU, TOSHARIKA, KIRTI TIWARI, NILIMA YADU, VIMAL KUMAR, KRISHNA KUMAR, ANIL PAIKARA, FULCHAND, BHASKAR PANDEY
B.Tech Civil Engineering	20	Traffic Engg	320750(20)	2020-21	POORNIMA CHANDRAKAR, CHHAMANIDHI SAHU, TOSHARIKA, KIRTI TIWARI, NILIMA YADU, VIMAL KUMAR, KRISHNA KUMAR, ANIL PAIKARA, FULCHAND, BHASKAR PANDEY
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	NEHA SHARMA, KESHRI SINHA, NEELIMA KANWAR, DIVYA KUMARI SINGH, TIRITH BAI BHARDWAJ, MANISH, SEKHAVAT PRADHANI, DINESH KASHYAP, TARUN KUMAR PAINKRA, BHUPENDRA KUMAR KURRE
B.Tech Civil Engineering	20	Structural Engineering Design - IV	320831(20)	2020-21	NEHA SHARMA, KESHRI SINHA, NEELIMA KANWAR, DIVYA KUMARI SINGH, TIRITH BAI BHARDWAJ, MANISH, SEKHAVAT PRADHANI, DINESH KASHYAP, TARUN KUMAR PAINKRA, BHUPENDRA KUMAR KURRE
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	NEHA SHARMA, KESHRI SINHA, NEELIMA KANWAR, DIVYA KUMARI SINGH, TIRITH BAI BHARDWAJ, MANISH, SEKHAVAT PRADHANI, DINESH KASHYAP, TARUN KUMAR PAINKRA, BHUPENDRA KUMAR KURRE
B.Tech Civil Engineering	20	Transportation Engineering	C020514(020)	2020-21	NEHA SHARMA, KESHRI SINHA, NEELIMA KANWAR, DIVYA KUMARI SINGH, TIRITH BAI BHARDWAJ, MANISH, SEKHAVAT PRADHANI, DINESH KASHYAP, TARUN KUMAR PAINKRA, BHUPENDRA KUMAR KURRE
B.Tech Civil Engineering	20	Traffic Engg	320750(20)	2020-21	NEHA SHARMA, KESHRI SINHA, NEELIMA KANWAR, DIVYA KUMARI SINGH, TIRITH BAI BHARDWAJ, MANISH, SEKHAVAT PRADHANI, DINESH KASHYAP, TARUN KUMAR PAINKRA, BHUPENDRA KUMAR KURRE
B.Tech Civil Engineering	20	Building Construction	B020413(020)	2020-21	SOUMYA, RAKESH KUMAR, SHEKHAR, LAKSHMI SAHU, RUPESH KUMAR JANGDE, KAJAL PAIKRA



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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech Civil Engineering	20	Hydrology & Water Resources Engineering	C020512(020)	2020-21	SOUMYA, RAKESH KUMAR, SHEKHAR, LAKSHMI SAHU, RUPESH KUMAR JANGDE, KAJAL PAIKRA
B.Tech Civil Engineering	20	Building Materials	C020514(020)	2020-21	SOUMYA, RAKESH KUMAR, SHEKHAR, LAKSHMI SAHU, RUPESH KUMAR JANGDE, KAJAL PAIKRA
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	SOUMYA, RAKESH KUMAR, SHEKHAR, LAKSHMI SAHU, RUPESH KUMAR JANGDE, KAJAL PAIKRA
B.Tech Civil Engineering	20	Advanced Environmental Engg	320842(20)	2020-21	SOUMYA, RAKESH KUMAR, SHEKHAR, LAKSHMI SAHU, RUPESH KUMAR JANGDE, KAJAL PAIKRA
B.Tech Civil Engineering	20	Building Construction	B020413(020)	2020-21	CHANDANI VERMA
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	CHANDANI VERMA
B.Tech Civil Engineering	20	Building Materials	C020514(020)	2020-21	CHANDANI VERMA
B.Tech Civil Engineering	20	Solid Mechanics	B020313(020)	2020-21	CHANDANI VERMA
B.Tech Civil Engineering	20	Basic Civil Engineering	300216(20)	2020-21	CHANDANI VERMA
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	HARSH CHANDRAKAR, MANISH VERMA, NOVITA JANGHEL, AKHILESH JANGADE, PALLAVI, KAJAL VAISHNAV
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	HARSH CHANDRAKAR, MANISH VERMA, NOVITA JANGHEL, AKHILESH JANGADE, PALLAVI, KAJAL VAISHNAV
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	HARSH CHANDRAKAR, MANISH VERMA, NOVITA JANGHEL, AKHILESH JANGADE, PALLAVI, KAJAL VAISHNAV
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	HARSH CHANDRAKAR, MANISH VERMA, NOVITA JANGHEL, AKHILESH JANGADE, PALLAVI, KAJAL VAISHNAV
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	HARSH CHANDRAKAR, MANISH VERMA, NOVITA JANGHEL, AKHILESH JANGADE, PALLAVI, KAJAL VAISHNAV
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	GREES KUMAR, MILIND CHANDRAVANSHI
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	GREES KUMAR, MILIND CHANDRAVANSHI
B.Tech Civil Engineering	20	Computer Aided Civil Engineering Drawing lab	C020623(020)	2020-21	GREES KUMAR, MILIND CHANDRAVANSHI
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	GREES KUMAR, MILIND CHANDRAVANSHI
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	GREES KUMAR, MILIND CHANDRAVANSHI
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	VENUGOPAL KHANDELWAL
B.Tech Civil Engineering	20	Surveying and Geomatics Surveying	B020413(020)	2020-21	VENUGOPAL KHANDELWAL
B.Tech Civil Engineering	20	Computer Aided Civil Engineering Drawing lab	C020623(020)	2020-21	VENUGOPAL KHANDELWAL
B.Tech Civil Engineering	20	Building Materials	B020315(020)	2020-21	VENUGOPAL KHANDELWAL
B.Tech Civil Engineering	20	Structural Engineering Design-I	C020511(020)	2020-21	VENUGOPAL KHANDELWAL



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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech Civil Engineering	20	Building Construction	B020413(020)	2020-21	ANISHA LAKRA, GAGAN VERMA, PAWAN DHARIWAL, RUPANSHU PAINKRA, TASLIM ANSARI, ANAL AGRAWAL
B.Tech Civil Engineering	20	Environmental Engineering	C020612(020)	2020-21	ANISHA LAKRA, GAGAN VERMA, PAWAN DHARIWAL, RUPANSHU PAINKRA, TASLIM ANSARI, ANAL AGRAWAL
B.Tech Civil Engineering	20	Building Materials	C020514(020)	2020-21	ANISHA LAKRA, GAGAN VERMA, PAWAN DHARIWAL, RUPANSHU PAINKRA, TASLIM ANSARI, ANAL AGRAWAL
B.Tech Civil Engineering	20	Solid Mechanics	B020313(020)	2020-21	ANISHA LAKRA, GAGAN VERMA, PAWAN DHARIWAL, RUPANSHU PAINKRA, TASLIM ANSARI, ANAL AGRAWAL
B.Tech Civil Engineering	20	Basic Civil Engineering	300216(20)	2020-21	ANISHA LAKRA, GAGAN VERMA, PAWAN DHARIWAL, RUPANSHU PAINKRA, TASLIM ANSARI, ANAL AGRAWAL
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	MUKESH KUMAR, PUSHPENDRA KUMAR, YASHWANT, KETAN KUMAR SINHA
		Surveying and Geomatics Surveying	B020413(020)		MUKESH KUMAR, PUSHPENDRA KUMAR, YASHWANT, KETAN KUMAR SINHA
		Structural Analysis – I	B020411(020)		MUKESH KUMAR, PUSHPENDRA KUMAR, YASHWANT, KETAN KUMAR SINHA
		Building Materials	B020315(020)		MUKESH KUMAR, PUSHPENDRA KUMAR, YASHWANT, KETAN KUMAR SINHA
		Structural Engineering Design-I	C020511(020)		MUKESH KUMAR, PUSHPENDRA KUMAR, YASHWANT, KETAN KUMAR SINHA
		Environmental Engineering	C020612(020)		MUKESH KUMAR, PUSHPENDRA KUMAR, YASHWANT, KETAN KUMAR SINHA
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	PRITI, KHYATI CHANDRAKAR
		Surveying and Geomatics Surveying	B020413(020)		PRITI, KHYATI CHANDRAKAR
		Structural Analysis – I	B020411(020)		PRITI, KHYATI CHANDRAKAR
		Building Materials	B020315(020)		PRITI, KHYATI CHANDRAKAR
		Structural Engineering Design-I	C020511(020)		PRITI, KHYATI CHANDRAKAR
		Environmental Engineering	C020612(020)		PRITI, KHYATI CHANDRAKAR
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	SHASHIKALA, SHRADDHA YADAV, ROHIT DASARWAR, PUSHPA NETAM, ABHISHEK RATHORE, MANOJ KUMAR
		Surveying and Geomatics Surveying	B020413(020)		SHASHIKALA, SHRADDHA YADAV, ROHIT DASARWAR, PUSHPA NETAM, ABHISHEK RATHORE, MANOJ KUMAR
		Building Materials	B020315(020)		SHASHIKALA, SHRADDHA YADAV, ROHIT DASARWAR, PUSHPA NETAM, ABHISHEK RATHORE, MANOJ KUMAR

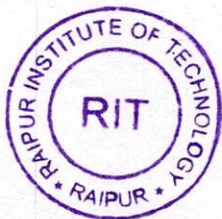


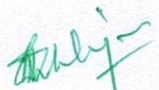
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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
		Structural Engineering Design-I	C020511(020)		SHASHIKALA, SHRADDHA YADAV, ROHIT DASARWAR, PUSHPA NETAM, ABHISHEK RATHORE, MANOJ KUMAR
		Engineering economics, estimating and costing	C020613(020)		SHASHIKALA, SHRADDHA YADAV, ROHIT DASARWAR, PUSHPA NETAM, ABHISHEK RATHORE, MANOJ KUMAR
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	ANSHUL PRADHAN, NIKHIL KUMAR, VIVEK TIWARI, SONU KUMAR, KESHAV ANAND, BHUPESH KUMAR BANJARE
		Surveying and Geomatics Surveying	B020413(020)		ANSHUL PRADHAN, NIKHIL KUMAR, VIVEK TIWARI, SONU KUMAR, KESHAV ANAND, BHUPESH KUMAR BANJARE
		Structural Analysis – I	B020411(020)		ANSHUL PRADHAN, NIKHIL KUMAR, VIVEK TIWARI, SONU KUMAR, KESHAV ANAND, BHUPESH KUMAR BANJARE
		Building Materials	B020315(020)		ANSHUL PRADHAN, NIKHIL KUMAR, VIVEK TIWARI, SONU KUMAR, KESHAV ANAND, BHUPESH KUMAR BANJARE
		Structural Engineering Design-I	C020511(020)		ANSHUL PRADHAN, NIKHIL KUMAR, VIVEK TIWARI, SONU KUMAR, KESHAV ANAND, BHUPESH KUMAR BANJARE
		Environmental Engineering	C020612(020)		ANSHUL PRADHAN, NIKHIL KUMAR, VIVEK TIWARI, SONU KUMAR, KESHAV ANAND, BHUPESH KUMAR BANJARE
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	SANDHYA BANJARE, SHIKHA GADEWAL, SIMRAN JANGDE, TEJ KIRAN, MAYANK DUBEY, MONISHA DHURU, RAHUL YADAV
		Surveying and Geomatics Surveying	B020413(020)		SANDHYA BANJARE, SHIKHA GADEWAL, SIMRAN JANGDE, TEJ KIRAN, MAYANK DUBEY, MONISHA DHURU, RAHUL YADAV
		Structural Analysis – I	B020411(020)		SANDHYA BANJARE, SHIKHA GADEWAL, SIMRAN JANGDE, TEJ KIRAN, MAYANK DUBEY, MONISHA DHURU, RAHUL YADAV
		Building Materials	B020315(020)		SANDHYA BANJARE, SHIKHA GADEWAL, SIMRAN JANGDE, TEJ KIRAN, MAYANK DUBEY, MONISHA DHURU, RAHUL YADAV
		Structural Engineering Design-I	C020511(020)		SANDHYA BANJARE, SHIKHA GADEWAL, SIMRAN JANGDE, TEJ KIRAN, MAYANK DUBEY, MONISHA DHURU, RAHUL YADAV
		Environmental Engineering	C020612(020)		SANDHYA BANJARE, SHIKHA GADEWAL, SIMRAN JANGDE, TEJ KIRAN, MAYANK DUBEY, MONISHA DHURU, RAHUL YADAV



  
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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	VIJAY KUMAR, VIMALKUMAR RATHORE, RUKHMANI, ABHISHEK KUMAR SAHU, PARMANAND, BHAGIRATHI, CHAITANY
		Surveying and Geomatics Surveying	B020413(020)		VIJAY KUMAR, VIMALKUMAR RATHORE, RUKHMANI, ABHISHEK KUMAR SAHU, PARMANAND, BHAGIRATHI, CHAITANY
		Building Materials	B020315(020)		VIJAY KUMAR, VIMALKUMAR RATHORE, RUKHMANI, ABHISHEK KUMAR SAHU, PARMANAND, BHAGIRATHI, CHAITANY
		Structural Engineering Design-I	C020511(020)		VIJAY KUMAR, VIMALKUMAR RATHORE, RUKHMANI, ABHISHEK KUMAR SAHU, PARMANAND, BHAGIRATHI, CHAITANY
		Engineering economics, estimating and costing	C020613(020)		VIJAY KUMAR, VIMALKUMAR RATHORE, RUKHMANI, ABHISHEK KUMAR SAHU, PARMANAND, BHAGIRATHI, CHAITANY
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	GAURI SHANKAR CHAUHAN, HARINANDAN YADAV, KHEMCHAND WATTI, PUNESH PAINKRA, SURAJ, SHRAVAN KUMAR DHOBE
		Surveying and Geomatics Surveying	B020413(020)		GAURI SHANKAR CHAUHAN, HARINANDAN YADAV, KHEMCHAND WATTI, PUNESH PAINKRA, SURAJ, SHRAVAN KUMAR DHOBE
		Structural Analysis – I	B020411(020)		GAURI SHANKAR CHAUHAN, HARINANDAN YADAV, KHEMCHAND WATTI, PUNESH PAINKRA, SURAJ, SHRAVAN KUMAR DHOBE
		Building Materials	B020315(020)		GAURI SHANKAR CHAUHAN, HARINANDAN YADAV, KHEMCHAND WATTI, PUNESH PAINKRA, SURAJ, SHRAVAN KUMAR DHOBE
		Structural Engineering Design-I	C020511(020)		GAURI SHANKAR CHAUHAN, HARINANDAN YADAV, KHEMCHAND WATTI, PUNESH PAINKRA, SURAJ, SHRAVAN KUMAR DHOBE
		Environmental Engineering	C020612(020)		GAURI SHANKAR CHAUHAN, HARINANDAN YADAV, KHEMCHAND WATTI, PUNESH PAINKRA, SURAJ, SHRAVAN KUMAR DHOBE
		Building Construction	B020414(020)		A Z M MAHFUZUL BARI, MAKSUD ALAM BARBHUIYA, DIDARUL ALOM CHOUDHURY, SAMIM AHMED
		Surveying and Geomatics Surveying	B020413(020)		A Z M MAHFUZUL BARI, MAKSUD ALAM BARBHUIYA, DIDARUL ALOM CHOUDHURY, SAMIM AHMED



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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech Civil Engineering	20	Structural Analysis – I	B020411(020)	2020-21	A Z M MAHFUZUL BARI, MAKSUD ALAM BARBHUIYA, DIDARUL ALOM CHOUDHURY, SAMIM AHMED
		Building Materials	B020315(020)		A Z M MAHFUZUL BARI, MAKSUD ALAM BARBHUIYA, DIDARUL ALOM CHOUDHURY, SAMIM AHMED
		Structural Engineering Design-I	C020511(020)		A Z M MAHFUZUL BARI, MAKSUD ALAM BARBHUIYA, DIDARUL ALOM CHOUDHURY, SAMIM AHMED
B.Tech Civil Engineering	20	Building Construction	B020414(020)	2020-21	GOPI, KIRAN KUMAR, PIYUSH TIDKE, LOKESH LAKHE, AKHILESH SAHU, MANOHAR MANDEV, BHAGYAWAN, KAMLESHWARI SAHU, PANKAJ, RISHABH NAGANPURE, SANDHYA JOSHI,
		Surveying and Geomatics Surveying	B020413(020)		GOPI, KIRAN KUMAR, PIYUSH TIDKE, LOKESH LAKHE, AKHILESH SAHU, MANOHAR MANDEV, BHAGYAWAN, KAMLESHWARI SAHU, PANKAJ, RISHABH NAGANPURE, SANDHYA JOSHI,
		Structural Analysis – I	B020411(020)		GOPI, KIRAN KUMAR, PIYUSH TIDKE, LOKESH LAKHE, AKHILESH SAHU, MANOHAR MANDEV, BHAGYAWAN, KAMLESHWARI SAHU, PANKAJ, RISHABH NAGANPURE, SANDHYA JOSHI,
		Building Materials	B020315(020)		GOPI, KIRAN KUMAR, PIYUSH TIDKE, LOKESH LAKHE, AKHILESH SAHU, MANOHAR MANDEV, BHAGYAWAN, KAMLESHWARI SAHU, PANKAJ, RISHABH NAGANPURE, SANDHYA JOSHI,
		Structural Engineering Design-I	C020511(020)		GOPI, KIRAN KUMAR, PIYUSH TIDKE, LOKESH LAKHE, AKHILESH SAHU, MANOHAR MANDEV, BHAGYAWAN, KAMLESHWARI SAHU, PANKAJ, RISHABH NAGANPURE, SANDHYA JOSHI,
		Environmental Engineering	C020612(020)		GOPI, KIRAN KUMAR, PIYUSH TIDKE, LOKESH LAKHE, AKHILESH SAHU, MANOHAR MANDEV, BHAGYAWAN, KAMLESHWARI SAHU, PANKAJ, RISHABH NAGANPURE, SANDHYA JOSHI,
BE Computer Science Engineering	22	Artificial Intelligence & Expert Systems	322831(22)	2020-21	Sonali Dubey Aditya Verma Yankesh Kumar Tushank Verma
BE Computer Science Engineering	22	Mobile Computing &	322731(22)	2020-21	HEMLATA SAHU JYOTI MAHANT

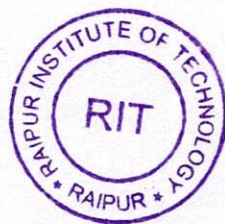


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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
BE Computer Science Engineering	22	Application	322731(22)	2020-21	PRIYANKA MARAVI
					NAMRATA PATEL
BE Computer Science Engineering	22	Computer Networks	322651(22)	2020-21	Yenu Verma
					Shubham Gupta
					Kanchan Sahu
					Pratibha Meshram
BE Computer Science Engineering	22	Mobile Computing & Application	322731(33)	2020-21	Aakash Verma
					Arun Patel
					Bhekraj Parmal
					Khoman Sahu
BE Computer Science Engineering	22	Mobile Computing & Application	322731(33)	2020-21	Amir Sohail
BE Computer Science Engineering	22	Computer Networks	322651(22)	2020-21	Yamunesh Mishra
					Mustafa Raza
					Shubham Dewangan
BE Computer Science Engineering	22	Database Management System	322556(22)	2020-21	Roshan Yadav
					Devendra Dewangan
BE Computer Science Engineering	22	Database Management System	322556(22)	2020-21	SYED SOFIYA ALI
BE Computer Science Engineering	22	Database Management System	322556(22)	2020-21	PRAVEEN KUMAR KAUSHIK
					Akram Mumtaz
					Asif Iqbal
					Zaid Kheran
					Nikhil Mridha
					Prince Prasad
BE Computer Science Engineering	22	Software Engineering & Project Management	322654(22)	2020-21	DAMINI CHANDRAKAR
					HEMANT KUMAR CHANDRA
					NISTALA MURALI KRISHNA
BE Computer Science Engineering	22	Database Management System	322556(22)	2020-21	Shruti Patkar
					Gayatri Yadu
					Amiksha
BE Computer Science Engineering	22	Database Management System	322556(22)	2020-21	Shikha Tiwari
					Kavita Gandle
BE Computer Science Engineering	22	Analysis and Design of Algorithms	322552(22)	2020-21	Rajan Kumar
					Vikas Kumar
BE Computer Science Engineering	22	Enterprise Resource Planning	322653(22)	2020-21	UDAY SHARAN KEWAT
					RITESH KUMAR
BE Computer Science Engineering	22	Database Management System	322556(22)	2020-21	SONU KUMAR RAJWAR
					NISHANT MITTAL
BE Computer Science Engineering	22	Enterprise Resource Planning	322653(22)	2020-21	MANISHA YADU
					Anamika Miri



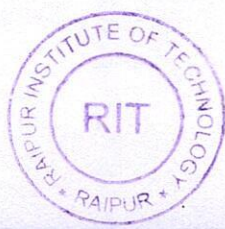
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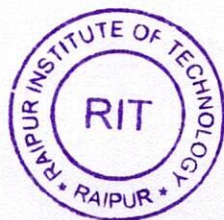
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
BE Computer Science Engineering	22	Mobile Computing & Application	322731(33)	2020-21	Akruti Negi Vijay Raj HEMANT KUMAR CHANDRA
BE Computer Science Engineering	22	Database Management System	322556(22)	2020-21	TARUN KUMAR PATLE SANAT KUMAR SAHU
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Dinesh Kumar Patel
	22	Object Oriented Programming (with Java),	B022414(022)		
	22	Data Structure and algorithms,	B022312(022)		
	22	Database Management Systems,	B022413(022)		
	22	Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Manish Kumar Kariyar
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Md Gulam Makhdoom Ashraf
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Md Imteyaz
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Vijay Kumar
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Neeta Diwan
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		




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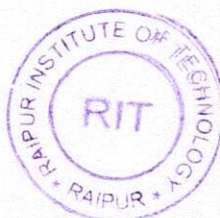
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Kunal Verma
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Toshan Sahu
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Vaibhav Lanjewar
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Sahil Das
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Aayush Das
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Prawin Kumar Patel
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Gautam Verma
		Object Oriented Programming (with Java)	B022414(022)		



  
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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech CSE	22	Data Structure and algorithms	B022312(022)	2020-21	Devendra Verma
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Prakash Maurya
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Sagar Singh Kshatriya
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Diksha Dewangan
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Dev Kumar Verma
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Dimple Dewangan
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		



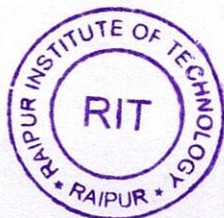
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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Kishan Paswan
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Kaushik Kumar Singh
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Shiv Soni
		Object Oriented Programming (with Java)	B022414(022)		
		Operating System	B022315(022)		
		Problem Solving & Logic Building using C	322354(22)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Ankita Vishwakarma
	22	Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
		Problem Solving & Logic Building using C	322354(22)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Yogesh Kumar
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Kavita Dewangan
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
		Computer Concepts & Web Technology	322355(22)		
		PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)		



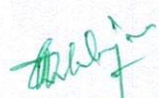
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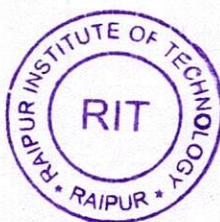
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B. Tech CSE	22	Object Oriented Programming (with Java)	B022414(022)	2020-21	Durga Chandrakar
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Tinku Kumar Shah
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Kalim Ansari
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Ekta Sahu
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
		Object Oriented Concepts & Programming using C++	322455(22)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Nitesh Kumar Tandan
		Object Oriented Programming (with Java)	B022414(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Surendra
		Object Oriented Programming (with Java)	B022414(022)		
		Operating System	B022315(022)		
		Software Engineering & Project Management	C022612(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Sapna Tiwari
		Object Oriented Programming (with Java)	B022414(022)		
		Operating System	B022315(022)		
		Software Engineering & Project Management	C022612(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Harinarayan Sahu
		Object Oriented Programming (with Java)	B022414(022)		



  
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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B. Tech CSE	22	Data Structure and algorithms	B022312(022)	2020-21	Pranmayan Jais
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Abhishek Bhoir
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
		Object Oriented Concepts & Programming using C++	322455(22)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Yogesh Bnjare
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
		Software engineering and project management	C022611(022)		
B.Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Chaitanya Chandrakar
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	G. Sagar
		Object Oriented Programming (with Java)	B022414(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Mahesh Gupta
		Object Oriented Programming (with Java)	B022414(022)		
		Computer Concepts & Web Technology	322355(22)		

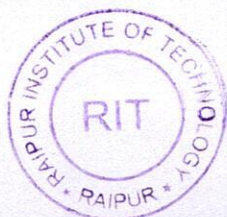


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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B Tech CSE	22	Data Analytics with Python	C022514(022)	2020-21	Thaneshwar Kumar
		Object Oriented Programming Laboratory (Java)	B022422(022)		
		Artificial Intelligence	C000612(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Mohnish Chauhan
		Object Oriented Programming (with Java)	B022414(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Suprna Singh
		Object Oriented Programming (with Java)	B022414(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Nisha Toppo
		Object Oriented Programming (with Java)	B022414(022)		
		Concept and Web Technology	322355(22)		
		Object Oriented Programming (with Java)	B022414(022)		
		B. Tech CSE	322553(22)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Roshan Kumar
		Object Oriented Programming (with Java)	B022414(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Hitesh Sahu
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Software and Engineering project management	322654(22)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Lokendra Kumar
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Software and Engineering project management	322654(22)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Basanti Pradhan
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Web Technologies	C022631(022)	2020-21	
B. Tech CSE	22	Data Analytics with Python	C022514(022)	2020-21	Neeta Diwan
		Object Oriented Programming Laboratory (Java)	B022422(022)	2020-21	
		Software Engineering & Project Management	C022612(022)	2020-21	
		Artificial Intelligence & Expert Systems	C022613(022)	2020-21	
		Data Analytics with python	C022514(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Shreeya Tembulkar
		Object Oriented Programming (with Java)	B022414(022)	2020-21	

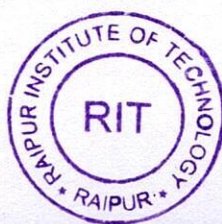



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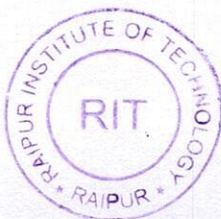
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
		Web Technologies	C022631(022)	2020-21	
		Data Structure	B022312(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Karan Verma
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Web Technologies	C022631(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Aman Sahu
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Data Structure and algorithms	B022312(022)	2020-21	
		Database Management Systems	B022413(022)	2020-21	
		Network Programming	C022634(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Pankaj Singh Thakur
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Khuman Sahu
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	VikasKumar Saw
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Linima
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Dilcharan
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Cyber Security	C000614(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Juhi Kumari
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Web Technologies	C022631(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Yash Sharma
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Web Technologies	C022631(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Vibha Baghel
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Data Structure and algorithms	B022312(022)	2020-21	
		Database Management Systems	B022413(022)	2020-21	



  
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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
		Network Programming	C022634(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Vinayak Shivankar
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Web Technologies	C022631(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Deepesh Sahu
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Data Analytics with Python	C022514(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Himanshu Sonwane
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Data Analytics with Python	C022514(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Saurabh Jaiswal
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
		Data Analytics with Python	C022514(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Vishal Dewangan
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Bhupesh Jangde
		Object Oriented Programming (with Java)	B022414(022)	2020-21	
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Garvit
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Tikam
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Rachit
		Object Oriented Programming (with Java)	B022414(022)		
		Data Structure and algorithms	B022312(022)		



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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
		Database Management Systems	B022413(022)		
		Network Programming	C022634(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Rahul Sahu
		Object Oriented Programming (with Java)	B022414(022)		
B. Tech CSE	22	Data Analytics with Python	C022514(022)	2020-21	Rahul Sahu
		Object Oriented Programming Laboratory (Java)	B022422(022)		
		Multimedia & Virtual Reality	C022534(022)		
B. Tech CSE	22	PRINCIPLE OF PROGRAMMING LANGUAGE	B022313(022)	2020-21	Pramod
		Object Oriented Programming (with Java)	B022414(022)		
		Web Technologies	C022631(022)		
B.E. Electronics and Telecommunication Engineering	28	Microcontroller & Embedded	328653(28)	2020-21	ASHWIN NAMDEO GAUTAM KUMAR MEHTA HEMU SAHU MORCHA RAJAK AHMAD ABBAS
B.E. Electronics and Telecommunication Engineering	28	Automatic Control System	328556(28)	2020-21	DEVENDRA KUMAR VERMA LAXMAN KUMAR JOGVANSHI SURAJ PATEL
B.E. Electronics and Telecommunication Engineering	28	Wireless Communications	328733(28)	2020-21	MANOJ KUMAR YADAV NARAD SINGH SOMESH SINGH TEJASWI SAHU
B.E. Electronics and Telecommunication Engineering	28	Digital Logic Design	328356(28)	2020-21	Ashwin Namdeo, Devendra kumar Verma, Morcha Rajak, Gautam Kumar Mehta, KHILENDRA, CHANDRAKANT JOSHI, SUNNY SAHU, SHUBHAM SARDAR, RAVI YADAV, MOHANLAL, SUKHRANI VERMA, ADARSH KUMAR SAHU, RADHIKA DHURUW, LAKHAN HANSRAJ, ROHIT YADAV, VISHAL DEWANGAN, MAHENDRA KUMAR BHARTI, Ahmed Abbas
B.E. Electronics and Telecommunication Engineering	28	Power Electronics	(328833(28)	2020-21	GAURAV DWIVEDI, RUHANI DESHLAHRE, ANINDYA TIWARI
BE Mechanical Engineering	37	Energy Systems	337652 (37)	2020-21	Bhushan Lal Hitesh Kumar Bareth Mahendra Kumar Sahu Shrikant Parihar Traman Kumar Tandan

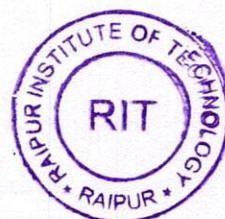


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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
BE Mechanical Engineering	37	Machine Tool Technology	337734(37)	2020-21	Raj kumar Patel
					Rajeev Lukand
					Khushi Kushwaha
					Pokhraj Sahu
					Nikhil Chandravanshi
BE Mechanical Engineering	37	Machine Design – II	337651 (37)	2020-21	Dhanraj Sahu
					Dinesh Kashyap
					Kailash Verma
					Khoman Das Banjare
					Raj Kishor Dewangan
BE Mechanical Engineering	37	Dynamics of Machines	337553 (37)	2020-21	Rupesh Kumar Dhiwar
					Mahendra Lodhi
					Vicky Sahu
					Rajesh Kumar Sahu
					Rajesh Kumar Verma
M.Tech Environmental Engineering	30	Air Pollution Control	530112 (19)	2020-21	Devchand Lodhi
					Sandeep Kumar Singh, Pankaj Tiwari, Rakesh Tekam, Ritesh Singh Kashyap, Anand Shrivastav, Javed Ahmed Khan
M.Tech Environmental Engineering	30	Water Pollution Control	530114 (19)	2020-21	Shashank Pandey, Vishwas Kumar Singh, Abhinav Agrawal, Pragya Sahu, Rahul Diwan, Shalu, Vipin Kumar Nayak, Danashree Mone
M.Tech Environmental Engineering	30	Energy & Environment	530131 (19)	2020-21	Dilip Kumar Patel, Prateek Singh, Garima Goyall
M.Tech Environmental Engineering	30	Environment System Modeling	530211 (19)	2020-21	Mahesh Kumar
M.Tech Environmental Engineering	30	Environmental Measurement & Impact Assessment	530214 (19)	2020-21	Anshul Sunil
M.Tech Computer Science Engineering	22	Digital Signal Processing	522135 (22)	2020-21	Arpit Wany, Suraj Singh, Jyoti Kansari
M.Tech Computer Science Engineering	22	Neural Networks	522231 (22)	2020-21	Yash Baid, Ruchi Jogi
M.Tech Energy Management	83	Solar Energy Utilization	583111(37)	2020-21	Vadavalli V G N Sudhir
M.Tech Energy Management	83	Air & Water pollution control	583232(37)	2020-21	Dayal Sahu
M.Tech Machine Design	48	Advanced Machine Tool Design	548213 (37)	2020-21	Vikas Sahu
M.Tech Machine Design	48	Finite Element Methods	548211 (37)	2020-21	Vaibhav Gautam
M.Tech Thermal	64	Energy Management	564213 (37)	2020-21	Dharmendra Kumar Singh
M.Tech Thermal	64	Experimental Methods in Thermal Engineering	564212 (37)	2020-21	Bhupendra Kumar



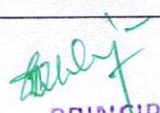
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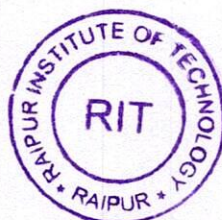
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
Master of Business Administration	76	Project Planning and Analysis (New)	576444(76)	2020-21	Neha Mishra, Muskan Singh Bhadoriya, Md. Imran, Md. Muzammil, Neelam Mirjha, Mansingh Rathore
Master of Business Administration	76	Product and Brand Management (New)	576431(76)	2020-21	Mrityunjay Pandey, Md. Saif Batki, Neeleshwar, Madhuri Banjare, Kanhaiya Lal Sahu, Priyanka Shukla, Priyanshu Rohra, Ramnath Sahu, Pinky Lakhwani, suniti kerketta, Shubheksha sharma, suman chouhan, sunil ku mishra, sudhanshu verma, Ayushi Singh, Biswajeet Jena, Duleshwari Sahu, AAYUSH AGRAWAL, AKASH KUMAR SAHU, ANEMASTU TIWARI, ANJAN BISWAS, ANUKRITI SHARAMA, APRAJITA SINGH, SURAJ TIWARI, SURYAKANT, SUSHANT SAHU, SWATI RAJOTIA, VARTIKA NAYAK, VIKRAM KUMAR SAHU, VIPUL BHONGADE
Master of Business Administration	76	Emerging Issues in HR Management (New)	576455(76)	2020-21	Megha Pawar, Madhu Thakre, Prakash Yadav, Pranjal Mehta, Pushpanjali Sahu, Prerana Yadav, Sonali Dey, shivangi kashyap, sunidhi kerketta, sunit mishra, Shreya rathi, shubhangi tiwari, Avinash Singh Thakur, Chandrakiran Sahu, Devika Sahu, Divya Khurana, Ekta Patil, Harsha Thakur, AKANSHA AGRAWAL, ALI ASGAR KANCHWALA, ANJALI ARYA, SUSHMEET KOUR UPWEJA, SWETA AGARWAL, U.DEEPIKA, VIDUSHI SINGH, VIKAS SEN, YOGITA DUBEY, Mrin Mayee Mandal, YOGITA SAHU
Master of Business Administration	76	Corporate Strategy (New)	576641(76)	2020-21	Kamal Agrawal
Master of Business Administration	76	Supply Chain Management (New)	576471(76)	2020-21	Shivam shrivastav
Master of Business Administration	76	HUMAN RESOURCE MANAGEMENT	576215(76)	2020-21	AMANDEEP BEDI, PINKY LAKHWANI, PRANJAL MEHTA, SHIVSNGI KASHYAP, MD. SAIF BATKI, SAKSHI SHARMA, JAY PATEL, NEHA MISHRA, NAINCY SIHANI,
Master of Business Administration	76	MARKETING MANAGEMENT	576213(76)	2020-21	AKASH KUMAR SAHU, SANISHA LAKHISARANI, APRAJITA SINGH, PRIYANSHU ROHRA, DEVRAJ KASHYAP, MADHURI BANJARE
Master of Business Administration	76	ADVANCED FINANCIAL MANAGEMENT	576214(76)	2020-21	TWINKLE GARG, LOKESH KUMAR, NEHA MANGAL
Master of Business Administration	76	Corporate Risk Management	576342(76)	2020-21	ABHINAV PUROHIT, ABHISHEK SINGH THAKUR, AKASH AGRAWAL, AKASH KUMAR, AMIT KUMAR KHARE, RONAK SINGHAL, SHANIL JAIN, SANGEETA TIGGA, SHRISTI CHANDRAKAR, SHREYA GANGULI
		Security analysis and port folio Management	576341(76)		
		Human Resource Planning and Development	576351(76)		ASHISH PANDEY



  
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Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
Master of Business Administration	76	Performance Management	576355(76)	2020-21	AVIRUP KARMAKAR
					BALJEET KAUR
					BHOJESHWAR SAHU
Master of Business Administration	76	product and brand management Media Management	576497(76)	2020-21	DAMINI SHARMA
					DEEPAM PATEL
					DOGENDRA SAHU
					GAYATRI SINHA
Master of Business Administration	76	Consumer Behavior,	576314(76)	2020-21	SUDHANSHU PATRA
					SUJATA TOPPO
					SUPRIYA ROY
					SURABHI SONI



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# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology** Semester: **VI**  
Subject: **Environmental Biotechnology** Code: **318653 (18)**  
Total Theory Periods: **36** Total Tutorial Periods: **12**  
No. of class Tests to be conducted: **2 (Minimum)** No. of Assignments to be submitted: **2 (Minimum)**  
ESE Duration: **Three Hours** Maximum Marks in ESE: **80** Minimum Marks in ESE: **28**

## Course Objectives:

1. To make the students understand importance of pollution free environment and effects of global warming.
2. To get acquainted with various processes to improve environmental quality, cleaning up contaminated environment and generating valuable resources for human society.

## Course Outcome:

1. The students will be able to use applications of this course in waste management, sewage treatment and bioremediation.
2. Having better knowledge of the environmental resource exhaustion the student will be able to spread awareness about effective conservation of available resources.

**UNIT I** Introduction to environment, Ecology and ecosystem; pollution and its control; pollution indicators; Environmental monitoring: bioreporter, biomarker and biosensor technology.

**UNIT II** Waste management: domestic, industrial, solid and hazardous wastes; biodiversity and its conservation; Clean technologies: biofertilizers, biopesticides, microbial polymer production and bio plastic technology.

**UNIT III** Biotechnology of sewage treatment: Overview of treatment principles: Primary, Secondary, and Tertiary; Theory of aeration, principles, operation and performance evaluation of sewage and wastewater treatment processes: Activated Sludge process, Extended-Aeration, Trickling Filter, Mechanically aerated lagoons; Concepts of Waste stabilization ponds: Aquatic plant systems, Upflow anaerobic sludge blanket(UASB); Common effluent treatment plant: membrane based wastewater treatment processes.

**UNIT IV** **Bioremediation:** recovery of metals from waste water and sludge; Preliminary ideas of xenobiotic; Degradative capabilities of microorganisms with reference to toxicology, pesticides, herbicides, polyaromatic hydrocarbons, Persistent Organic Pollutants (POP); Anaerobic and aerobic composting; Biodegradation of plastics; Vermiculture, Concept of Biodiversity, Diversity indices: Bioremediation of inorganic (metal, radionuclides, petroleum, hydrocarbon dyes, nitrate, phosphate) and organic pollutants; Phytoremediation; biomass for removal and biosorption of heavy metal and other inorganic ions; Removal of volatile organic compounds from waste gas; In situ and ex situ remediation strategies.

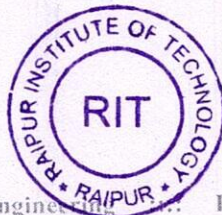
**UNIT V** **Biofuels:** biogas, biohydrogen, bioethanol production; Biotechnology of mineral processing; Ethical issues in environmental biotechnology.

## Text Books:

1. Environmental Biotechnology, PK Mohapatra.
2. Environmental Biotechnology, (2006) 3<sup>rd</sup>ed, S. N. Jogdan Himalaya Publishing House.

## Reference Books:

1. Environmental Microbiology, W.D. Grant & P.E. Long, Blakie, Glasgow and London.
3. Microbial Gene Technology, H. Polasaed South Asian Publishers, New Delhi.
4. Biotreatment Systems, Vol.22, D. L. Wise ed CRC Press, INC.
5. Standard Comprehensive Biotechnology (Vol. 1-4) M.Y. Younged Pergamon Press, Oxford.
6. Methods for the Examination of Water and Waste Water 14<sup>th</sup>ed (1985) American Public health Association.



*[Signature]*  
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**CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)**

Name of the Programme: Bachelor of Engineering

Duration of the P



**“Biofuel & Bio Product from Algae”**

**A major project**

**Submitted to**

**Chhattisgarh Swami Vivekanand Technical University,**

**Bhilai, C.G.**

**In partial fulfillment of the degree of**

**Bachelor of Engineering**

**By**

**Rajendra Dhruv (301201817012)**

**Kajal Tiwari (301201817005)**

**Y Shrawani (301201817017)**

**Mukesh Kumar (301201817011)**

**Under the guidance of**

**Dr. Tanushree Chatterjee**

**Dean & HOD**



**Department of Biotechnology**

**RAIPUR INSTITUTE OF TECHNOLOGY**

**MANDIR HASAUD, CHHATAUNA**

**RAIPUR (CG)**

**SESSION 2020-21**



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Sector 1, Chhatauna, Mandir Hasaud, Raipur, C.G.- 492001, India.

**Tel: 0771-25376344, 09329773012**

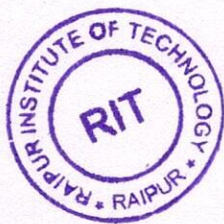
**Email: [info@rit.edu.in](mailto:info@rit.edu.in) Web : [www.rit.edu.in/](http://www.rit.edu.in/)**

**CERTIFICATE BY THE GUIDE**

This to certify that the report of the project submitted is the outcome of the project work entitled **"Biofuel & Bio Product from Algae"** carried out by. Mr. **Rajendra Dhruv**, Ms. **Kajal Tiwari**, Ms. **Y Shrawani**, Mr. **Mukesh Kumar** under my supervision for the partial fulfilment of the requirement of the award of the degree of Bachelor of Engineering in Biotechnology, RITEE, Raipur.

To the best of my knowledge, the report

- i) Embodies the work of the candidate herself.
- ii) Has duly been completed.
- iii) Is upto the desired standard for the purpose of which is submitted.



(Signature of the Supervisor)

**Dr. Tanushree Chatterjee**

Dean & HOD,

Department of Biotechnology

RITEE

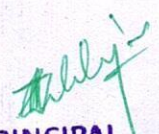
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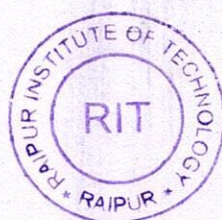


  
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### Abstract

The research described in thesis deals with the production of **biofuels** and fine chemicals from the green alga *Tetraselmis suecica*. Firstly, the identity of the strain received from the culture collection was confirmed using molecular techniques (18S rDNA sequencing) and electron microscopy. Secondly, a fully defined artificial seawater medium was developed to grow *T. suecica* and then the tolerance of this alga to salinity and pH changes was established. The neutral lipid (triacylglycerol) production was measured using Nile Red dye after stressing *T. suecica* cells with high salinity (up to 1 M NaCl) and pH values (pH 7 to 9). It was established that high salinity and high pH values tended to induce higher levels of triacylglycerol in the algal cells. Then fatty acid profiles of *T. suecica* cells were analyzed by gas chromatography-mass spectrometry (GC-MS) after direct transesterification with hydrochloric acid in methanol. Higher salinity grown cells showed higher levels of monounsaturated fatty acids, which are ideal for biodiesel production. The possibility of growing *T. suecica* on a larger scale was investigated using a 2 L airlift photobioreactor and the response to higher levels of CO<sub>2</sub> was assessed in the airlift bioreactor. The effect of re-using the medium on the growth of *T. suecica* was examined with the aim of developing an integrated algal biorefinery process using *T. suecica* as the feedstock.



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# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	Biotechnology	Semester:	VI
Subject:	Bioprocess Technology	Code:	318651 (18)
Total Theory Periods:	36	Total Tutorial Periods:	12
No. of class Tests to be conducted:	2 (Minimum)	No. of Assignments to be submitted:	2 (Minimum)
ESE Duration:	Three Hours	Maximum Marks in ESE:	80
		Minimum Marks in ESE:	28

## Course Objectives:

1. To impart knowledge of Bioprocess Technology for better understanding of its application in Fermentation Technology and Industrial processing.
2. To apply the practical aspects of industrial biotechnology using bioprocessing.

## Course Outcome:

1. At the end of the course, the students would have learnt about fermentation processes, metabolic stoichiometry, Energetics, Kinetics of microbial growth etc.
2. This will serve as an effective course to understand certain specialized electives in Bioprocess related fields.

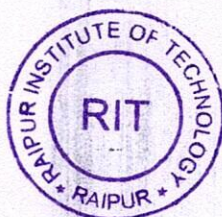
- UNIT I** History and development of fermentation industry: introduction to submerged and solid state Fermentation, production of primary and secondary metabolite.
- UNIT II** Raw material: availability, quality, processing and pretreatment of raw material.
- UNIT III** Induction of microbes and regulatory mechanisms; Nutritional repression, carbon catabolite repression; Feedback inhibition and feedback repression.
- UNIT IV** Protocols for developing mutant strains of microbes with the stable capacity of producing desired metabolites; Isolation and preservation of different types of mutants: induction resistant, feedback inhibition resistant.
- UNIT V** Fermentations of recombinant microbial cells for large-scale production of genetically engineered primary and secondary metabolites; Chromatographic separation of the products.

## Text books:

1. Murray Moo -Young, Comprehensive Biotechnology, Vol. 1 & III-latest ed. 45.
2. Microbes & Fermentation, A. Lel and Kotlers Richard J. Mickey, Oriffin Publication.

## Reference Books:

1. Industrial Fermentations- Leland, N. Y. Chemical Publishers.
2. Prescott and Dunn's- Industrial Microbiology, 4<sup>th</sup> ed.
3. Biotechnology Series, Rehm, Reed & Weinheim, Verlag-Chemie.
4. Biochemical Engineering, Aiba, Humphrey & Miller, Academic Press.
5. Fermentations & Enzyme Technology, Wang & Humphrey, Wiley & Inter Science.



*Abhijit*  
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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



**“Production of Ethanol from Molasses”**

**A major project**

**Submitted to**

**Chhattisgarh Swami Vivekanand Technical University,**

**Bhilai, C.G.**

**In partial fulfillment of the degree of**

**Bachelor of Engineering**

**By**

**Lekhram Sahu (301201817007)**

**Bhupendra Sahu (301201817002)**

**Shivani Sharma (301201817015)**

**Under the guidance of**

**Dr. Tanushree Chatterjee**

**Dean & HOD**



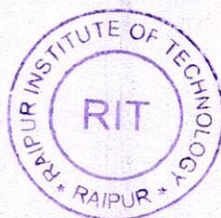
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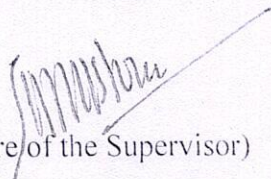
**CERTIFICATE BY THE GUIDE**

This to certify that the report of the project submitted is the outcome of the project work entitled **“Production of Ethanol from Molasses”** carried out by. **Mr. Lekhram Sahu, Mr. Bhupendra Sahu, Ms. Shivani Sharma** under my supervision for the partial fulfilment of the requirement of the award of the degree of **Bachelor of Engineering in Biotechnology, RITEE, Raipur.**

To the best of my knowledge, the report

- i) Embodies the work of the candidate herself.
- ii) Has duly been completed.
- iii) Is upto the desired standard for the purpose of which is submitted.



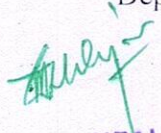
  
(Signature of the Supervisor)

**Dr. Tanushree Chatterjee**

Dean & HOD,

Department of Biotechnology

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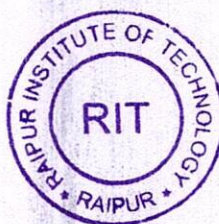
  
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## ABSTRACT

The use of biofuels as an alternative to fossil fuels has expanded in the last few decades. In recent years, growing attention has been devoted to the conversion of biomass into ethanol fuel, which is considered as the cleanest liquid fuel alternative to fossil fuels. Production of ethanol (bioethanol) from biomass is one way to reduce both consumption of crude oil and environmental pollution. An analysis of the current situation and perspective on biomass-to-ethanol is provided in this study. Various conversion pathways are compared from technical, economic, and environmental points of view. This study also deals mainly with the yield of ethanol from molasses with respect to the dilution ratio and the amount of yeast used for fermentation keeping the temperature and fermentation duration constant. Sugarcane molasses is be used for the feedstock in this study. Sugarcane molasses is a viscous by-product of the processing of sugar cane into sugar. Therefore, sugarcane molasses such as agricultural wastes are attractive feedstock for bioethanol production. Agricultural wastes are cost effective, renewable and abundant. In this study, the yeast used is *Saccharomyces cerevisiae*. *Saccharomyces cerevisiae* is the cheapest strain available for the conversion of biomass substrate. As conclusion, it was observed that with an increase in yeast quantity the ethanol yield increases reaching optimum yeast quantity then the ethanol yield start to decrease and the optimum ratio for molasses and water was 1:2. It can be concluded that the yield of ethanol is greatly dependent on the quantity of fermentable sugars present in the biomass.

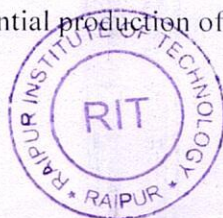



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# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology** Semester: **V**  
Subject: **Biotechnology Tissue Culture** Code: **318555 (18)**  
Total Theory Periods: **36** Total Tutorial Periods: **12**  
No. of class Tests to be conducted: **2 (Minimum)** No. of assignments to be submitted: **2 (Minimum)**  
ESE Duration: **Three Hours** Maximum Marks in ESE: **80** Minimum Marks in ESE: **28**

## Course Objectives:

1. To impart knowledge of basics techniques of tissue culture.
2. To make them understand importance of tissue culture in agriculture, medicine etc.

## Course Outcome:

1. Proficient knowledge of tissue culture can benefit the students in areas of cloning, strain development as well as new plant and animal breed development.
2. With good theoretical knowledge and hands on experience students will have better employment prospects and many industries.

- UNIT I** History, introduction, laboratory organization, medias used, plant growth hormone and aseptic manipulation, totipotency.
- UNIT II** Cell culture, somatic embryogenesis, artificial seeds, somaclonal variations and haploid production, in vitro pollination, zygotic embryo culture, somatic hybridization and cybridization; Transformation Technique: physical methods, chemical methods; Vector mediated Gene transfer: *Agrobacterium* mediated transformation and plant virus vectors, binary vectors.
- UNIT III** History, introduction, laboratory facilities for tissue culture; growth of animal cell in culture media; Culture Media for cell and tissue culture: Natural Media (Coagula, serum, tissue extracts), Defined Media (Media with serum, without serum media), Substrates on which cell grows (Glass, Disposables plastics, palladium and metallic surface), Gas phase for tissue ( $O_2$ ,  $CO_2$ ) culture, preparation of animal materials.
- UNIT IV** Primary Culture, disaggregation of tissue- enzymatic and mechanical disaggregation, separation of viable and non-viable cells, types of cell lines, maintenance of cell lines in suspension and in layered culture, cloning of cell lines, Somatic cell fusion, tissue culture, slide culture, flask culture and test tube culture, Organ culture, whole embryo culture; *In vitro* fertilization in human, embryo transfer in human and cattle.
- UNIT V** Application of tissue culture in horticulture and forestry: production of disease free plants; Industrial application of tissue culture; Germplasm conservation; modification of seed protein quality, suppression of endogenous gene, plant derived vaccines; Transgenic animals; Development of recombinant vaccines, Monoclonal antibody their applications; Introduction to transgenics, gene therapy; Production of secondary metabolites/products: Insulin, growth hormones, interferons etc.

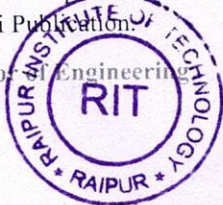
## Text Books:

1. Introduction to plant tissue culture, K.K Day.
2. Animal Cell Culture, John R.W. Masters, Oxford University Press.

## Reference Books:

1. Plant tissue Culture- Application 7 limitations (1990), S.S. Bhojwane Elsevier, Amsterdam.
2. Micro propagation (1990) P.C. Degergh & R. H. Zommeronom Kluwer Academic Publ. Dordrecht.
3. Plants, genes & crop improvement, (2002), Crispeels ASPB.
4. Molecular Biotechnology, Primrose
5. Animal Cell Biotechnology (1998), R.E. Spier & J.B. Griffiths, Academic Press
6. Biotechnology, B. D. Singh, Kalyani Publication.

Name of the Programme: Bachelor of Engineering



Duration of the Programme: Four Years  
RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

PRINCIPAL



**“Biochemical characterization of Dalbergia  
latifolia and development of its tissue protocol”**

**A major project**

**Submitted to**

**Chhattisgarh Swami Vivekanand Technical University,  
Bhilai, C.G.**

**In partial fulfillment of the degree of**

**Bachelor of Engineering**

**By**

**Rajeshwari Sahu (301201817013)**

**Manish Kumar Yadav (301201817009)**

**Manik Lal (301201817008)**

**Kamleshwar Sahu (301201817006)**

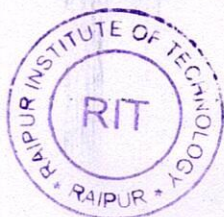
**Under the guidance of**

**Dr. Tanushree Chatterjee**

**Dean & HOD**



**Department of Biotechnology  
RAIPUR INSTITUTE OF TECHNOLOGY  
MANDIR HASAUD, CHHATAUNA  
RAIPUR (CG)  
SESSION 2020-21**



*(Signature)*  
PRINCIPAL

**RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)**





**RAIPUR INSTITUTE OF TECHNOLOGY (RITEE)**

**(An AICTE approved college affiliated to CSVTU)**

Sector 1, Chhatauna, Mandir Hasaud, Raipur, C.G.-492001, India.

Tel: 0771-25376344, 09329773012

Email: [info@rit.edu.in](mailto:info@rit.edu.in) Web : [www.rit.edu.in/](http://www.rit.edu.in/)

**CERTIFICATE BY THE GUIDE**

This to certify that the report of the project submitted is the outcome of the project work entitled **“Biochemical characterization of Dalbergia latifolia and development of its tissue protocol”** carried out by. **Ms. Rajeshwari Sahu, Mr. Manish Kumar Yadav, Mr. Manik Lal, Mr. Kamleshwar Sahu** under my supervision for the partial fulfilment of the requirement of the award of the degree of **Bachelor of Engineering in Biotechnology, RITEE, Raipur.**

To the best of my knowledge, the report

- i) Embodies the work of the candidate herself.
- ii) Has duly been completed.
- iii) Is upto the desired standard for the purpose of which is submitted.

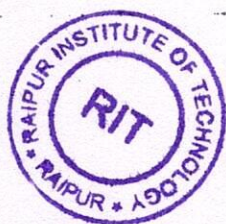
(Signature of the Supervisor)

**Dr. Tanushree Chatterjee**

Dean & HOD,

Department of Biotechnology

RITEE



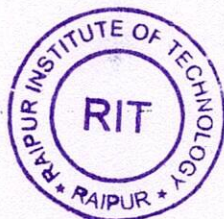
**PRINCIPAL**  
**RAIPUR INSTITUTE OF TECHNOLOGY**  
**CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)**

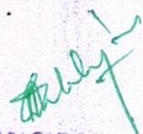


## Abstract

Attempts were made to develop suitable culture condition for micropropagation of *Dalbergia latifolia* from nodal meristem. Callus induction and bud breaking for shoot initiation from nodes of *Dalbergia* was achieved in tissue culture under defined conditions. Callus was initiated from nodal segments and maintained on Murashige & Skoog basal medium supplemented with 4.0mg/l Benzylaminopurine (BAP)+ 2.0mg/l Indole acetic acid(IAA) +20mg adenine sulphate+0.2ml Cobalt chloride + 0.2ml copper sulphate. Callus survived several subcultures. Bud breaking and shoot initiation was effective In Murashige & Skoog medium with 1.0mg/l Benzylaminopurine (BAP)+ 0.5mg/l Zeatin and 1.0mg/l Zeatin+ 0.5mg/l  $\alpha$ - naphthalene acetic acid(NAA) after 20-25 days after inoculation. The results were obtained at  $25\pm 2^{\circ}\text{C}$  at 2000 lux light intensity.

The preliminary phytochemical screening of leaf and root extract of *Dalbergia* revealed that it contains Flavonoid, Tannin and Cardiac glycosides which having the medicinal value.



  
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# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	Bachelor of Engineering	Semester:	III
Branch:	Chemical Engineering	Code:	319352(19)
Subject:	Inorganic Process Technology		
Total Theory Periods:	40	Total Tutorial Periods:	NIL
Class Tests:	Two (Minimum)	Assignments:	Two (Minimum)
ESE Duration:	Three Hours	Maximum Marks: 80	Minimum Marks: 28

## Course Objectives:

1. To study the industries with reference to its available raw materials, manufacturing process and process flow diagrams, Unit operations and Unit process involved.
2. To study economic aspects and general engineering problems associated with present status of the industry.

- UNIT-I** Fundamentals of inorganic process technology, Soda Ash, Caustic Soda, Salt Industries, Chlor - alkali industries,  $\text{Br}_2$  and  $\text{Cl}_2$  from sea water, Glauber Salts, Problems related to industries.
- UNIT-II** Sulfur, Sulfuric Acid Industries, Production of sulfuric acid by contact process, DCDA process and Chamber process, Production of alumina from bauxite ore, electrochemical industries, Use of  $\text{Cl}_2$ ,  $\text{Br}_2$ , and  $\text{I}_2$  in industries.
- UNIT-III** Nitrogen industries and nitrogen related compounds, Production of  $\text{NH}_3$  and  $\text{HNO}_3$ , Production of urea, production of ammonium sulfate, Fertilizer industries, Biofertilizers, Explosive.
- UNIT-IV** Acetylene ( $\text{C}_2\text{H}_2$ ), Hydrogen by steam reforming process. Uses of industrial gases. Phosphoric acid, Single super phosphate, Triple super phosphate, Portland cement production.
- UNIT-V** Carbohydrates and fermentation industry: Cane sugar refining and decolorization, Sucrose from sugarcane, Beet sugar manufacture, production of ethyl alcohol.

## Text Books:

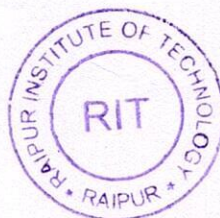
1. Gopal Rao, M, Dryden's Outline of Chemical Technology, EWP publishers, 3<sup>rd</sup> Edition.
2. Austin, G T, Shreve's Chemical Process Industries, Tata McGraw Hill, 5th Edition

## Reference Book:

1. Pandey G.N., A Text Book of Chemical Technology Volume 1, Vikash Publishers, 2nd Edition.

## Course outcomes:

1. After undergoing this course the students will acquire knowledge regarding various technological aspects of chemical industries.
2. After undergoing this course the students will acquire knowledge regarding manufacturing process, aspects and general engineering problems associated with it.
3. Students get the overview of production of acid and fertilizers.



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# EXPERIMENTAL STUDY ON COMPARISON OF CAFFEINE CONTENT BETWEEN GREEN TEA & BLACK TEA

A Major Project submitted to



CHHATTISGARH SWAMI VIVEKANAND  
TECHNICAL UNIVERSITY BHILAI (C.G), India

In partial fulfilment of the award of degree of

BACHELOR OF ENGINEERING  
In  
CHEMICAL ENGINEERING

Submitted by:-

**Harsh Sisodia**

(Roll no. 301201917004) (Enrollment No. BD2572)

**Ashish Kushwaha**

(Roll no. 301201917004) (Enrollment No. BD2544)

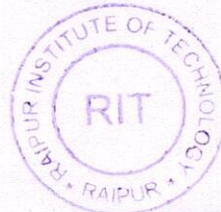
Under the guidance of

**Mr. Jitendra Kumar Verma**  
(Assistant Professor)



DEPARTMENT OF CHEMICAL ENGINEERING  
RAIPUR INSTITUTE OF TECHNOLOGY

Year: 2021



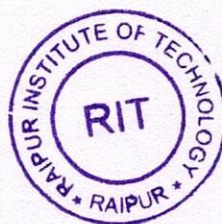
  
**PRINCIPAL**

**RAIPUR INSTITUTE OF TECHNOLOGY**  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



## ABSTRACT

The present study was carried out to study the extract of caffeine from used tea leaves of tea using dichloromethane as solvent and comparison of caffeine content between green tea & black tea. Caffeine is xanthine alkaloid that occurs naturally in seeds, leaves and fruit of several plants and trees that acts as a natural pesticide. Caffeine is a major component of coffee, tea and chocolate and in humans acts as a central nervous system (CNS) stimulant. Products containing caffeine include coffee, tea, soft drinks ("colas"), energy drinks, other beverages, chocolate, caffeine tablets, other oral products, and inhalation products. IUPAC Name is 1,3,7-trimethylpurine-2,6-dione. Caffeine is a substance in wide use. It is predominantly used in the food sector and pharma sector (80% and 16% respectively). A smaller part is used in cosmetics (3%) or in technical applications (1%).



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



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# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	Civil Engineering	Semester:	V
Subject:	Geotech Engineering – I	Code:	320553 (20)
Total Theory Periods:	40	Total Tutorial Periods:	10
No. of class Tests to be conducted:	2 (Minimum)	No. of assignments to be submitted:	2 (Minimum)
ESE Duration:	Three Hours	Maximum Marks in ESE:	80
		Minimum Marks in ESE:	28

## Objective of the Subject:

- To provide basic knowledge about Geotechnical Engineering, soil formation, index properties of soil, physical and engineering properties of soil.
- To know about the types of soil according their classification, classification system, field identification, study of effective stress, capillary seepage force, etc.
- How to measure the compaction and permeability of soil by lab experiments theoretically uses of Darcy law. Two dimensions flow and develop flow net and characteristics.
- To know about stresses due to applied load a soil mass, consolidation and their factor one dimensional consolidation as per Terzaghi theory
- To find shear strength in soil with the help of Mohr circle. How shear strength can be determine in laboratory, soil exploration.

## Outcomes of the Subject:

- Know about soil and development of soil mechanics and soil formation and characteristic of soil.
- Field identification, soil classification system.
- Study the lab experiments and simulations of experiment result with the theoretical characteristic of soil.
- Study of different theory Newmart Charts, Westergaard and Boussinesq equation.
- Able to find at experiment, shear strength of soil and different method of soil exploration.

- UNIT I Introduction:** Introduction to Geotechnical Engineering; Unique nature of soil; Soil formation and soil types, inter relationship of soil, soil mechanics and geotechnical engineering, aim and scope of soil mechanics. Index Properties of Soil Basic definitions; phase relations; physical and engineering properties of soil, soil grain and properties coarse and fine grained soils, Stoke's law, method of fine grained analysis.
- UNIT II Soil Classification and Effective Stress:** Indian standard soil classification system, Purpose of soil Classification, Different System of soil Classification, Field Identification, Principal of Effective Stress and Related Phenomena, Types of soil moisture, principal of effective stress; capillarity; seepage force and quicksand condition;
- UNIT III Compaction, Permeability and Seepage Analysis of Soil:** Clay mineralogy, soil structure, compaction theory, laboratory compaction tests, method of compaction control, permeability, one dimensional flow, permeability of soil, Darcy's law, laboratory methods of determination, pumping out tests for field determination of permeability, seepage through soils, two-dimension flow problems, confined flow and unconfined flow, flow net and their characteristics, exit gradient and failure due to piping, criteria for design of filters.
- UNIT IV Stresses due to Applied Loads and Consolidation:** Stresses due to applied Loads, Boussinesq equation of vertical pressure under concentrated loads, rectangularly loaded area, circular Loaded Area Newmart's Chart, Westergaard's equation, compressibility, effects of soil type, stress history and effective stress on compressibility, consolidation, factors affecting consolidation and compressibility parameters. Normally consolidated and over consolidated soils, different forms of primary consolidation equation – transient flow condition, Terzaghi theory of one-dimensional consolidation and time rate of consolidation.
- UNIT V Shear Strength and Soil Exploration:** Introduction, stress at a point and Mohr's stress circle; Mohr-Columb Failure criterion: Laboratory tests for shear strength determination; shear strength parameters; UU, CU and CD tests and their relevance to field problems; Shear strength characteristics of normally consolidated and reconsolidated clays; Shear strength Characteristics of sands, Soil Exploration, Various Method of field Exploration, Undisturbed Soil Sampling equipments and Field test (Static and Dynamic Penetration Test, PLT), cyclic plate load test and modern electronic test of site characterization.

## Text Books:

- Soil Mechanics and Foundations – B.C. Punmia, A. K. Jain, A. K. Jain (Laxmi Publication)
- Soil Engineering in Theory and Practice (Vol-II) – Alam Singh (Asia Publishing House)

## Name of Reference Books:

- Soil Mechanics and Foundation Engineering – S.N. Murthy (Dhanpat Rai Publications)
- Basic and Applied Soil Mechanics – Gopal Ranjan and Rao A.S.R. (New Age International)
- Design Aids in Soil Mechanics and Foundation Engineering – S.R. Kaniraj (Tata McGraw Hill)
- Geotechnical Engineering Principles and Practice – D. P. Coduto (Prentice Hall of India)
- Soil Mechanics and Foundation Engineering – Garg S.K. (Khanna Publishers)
- Soil Mechanics and Foundation Engineering – Purushothama Raj (Pearson Education)
- Text Book of Geotechnical Engineering – I. H. Khan (PHI Learning)
- Foundation Engineering – R. B. Peck, W. E. Hanson, and T. H. Thornburn (John Wiley)
- Foundation Design and Construction – M. J. Tomlinson (Pearson Education)



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RAIPUR INSTITUTE OF TECHNOLOGY

Name of the Programme: Bachelor of Engineering

Duration of the Programme: 3 Years



A MAJOR PROJECT REPORT  
ON  
SEEPAGE ANALYSIS ON EARTHEN DAM

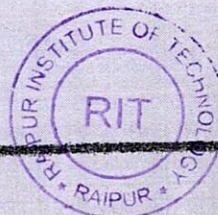


A thesis Submitted to  
**CHHATTISGARH SWAMI VIVEKANANDA TECHNICAL  
UNIVERSITY, BHILAI (C.G.), INDIA**  
For the partial fulfillment of the award of degree  
**BACHELOR OF ENGINEERING**  
In  
**CIVIL ENGINEERING**

By

DEVENDRA SAHU	(301202017010)
KESHAR SINGH BHAINSARA	(301202017014)
CHITRANJAN SAHU	(301202017009)
HARISH KUMAR SAHU	(301202017013)
DUGESH KOSHLE	(301202017012)
ANKIT UPADHYAY	(301202017007)
DHANANJAY KUMAR MAHILANGE	(301202017011)

Under the Guidance of  
Prof. GOPESH DAWDA  
DEPARTMENT OF CIVIL ENGINEERING  
RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR  
CHHATANA, MANDIRHASAUD RAIPUR - 492101 (C.G.) INDIA  
SESSION 2017-2021



  
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## CHAPTER – 1

### **Abstract**

Dams are constructed for various purpose like flood control, navigation, water sources, recreation, power generation and irrigation etc. earth dams have always been associated with seepage as they impound water it. The water seeks paths of least resistance through the dam and its foundation. Seepage will become a problem only if it carries dam material also along with it. Seepage must be controlled to prevent the erosion of embankment or its foundation. Embankment dam are more common than any other type of dams because of various reason like the use of ordinary technology construction method utilizing cheap raw soil material and subsurface materials, no need of a particular valley shape etc. one of the important factor causing failure of embankment dam by seepage and hence seepage analysis of embankment dam is of greater importance.

All earthfill dams have seepage from water percolating slowly through the dam and its foundation. Many seepage problems and failure of earth fill dams have occurred because of inadequate seepage control measures. This study was reviewed the conditions, causes, and effects of seepage and control measures in the earth dam. Types of earth dams such as homogeneous embankment, zoned embankment and diaphragm embankment well were highlighted. Seepage conditions, such as rapid water level decreases or the water falling below the level expected with normal use (sudden drawdown condition), wet spots and aquatic vegetation (like cattails) below the dam; causes, such as poor compaction of environment soil, poor foundation and abutment preparation, Rodent holes, Rooted tree roots and wood and so no and



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# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	<b>Bachelor of Engineering</b>	Semester:	<b>IV</b>
Branch:	<b>Civil Engineering</b>	Code:	<b>320456 ( 20)</b>
Subject:	<b>Transportation Engineering – I</b>	Total Tutorial Periods:	<b>10</b>
Total Theory Periods:	<b>40</b>	Assignments:	<b>Two (Minimum)</b>
Class Tests:	<b>Two (Minimum)</b>	Maximum Marks:	<b>80</b>
ESE Duration:	<b>Three Hours</b>	Minimum Marks:	<b>28</b>

## Course Objectives:

1. Be familiar with principles of Highway planning & Geometric design.
2. Fundamental Concepts of Traffic Engineering.
3. Learning different highway materials & their testing.
4. Learning pavement design & its Construction.
5. Learning different aspect of Airport planning.

- UNIT-I** Principal of Highway Planning- Road development and planning in India Highway alignment, requirements. Engineering Surveys for highway location Maps and Drawing. Elements of Transportation Engineering (Vehicle, Driver, Terminal and Control). Geometric Design: Cross Section elements of horizontal and vertical Alignment. Highway drainage, Surface and subsoil drainage. Geometry of Hill Roads, curve layout.
- UNIT-II** Traffic Engineering- Introduction to Traffic flow theory speed-density, speed-flow and flow-density relation, data collection techniques for traffic parameters and delay studies, parking facilities, etc. and their uses. Traffic control. Devices, Prevention of road accidents, rotary intersection, highway lighting. Highway materials: Behavior of highway materials, properties of Sub grade and pavement component materials. Tests on sub grade soil, Aggregate and bituminous materials.
- UNIT-III** Pavement Design - Study of flexible and rigid pavements, Basic concepts of pavement analysis and design. Stresses in rigid pavements. I.R.C. recommendations.
- UNIT-IV** **Pavement Construction Techniques and Quality Control** -Types of Pavements water bound macadam, bituminous and cement concrete pavements. Joints in cement concrete pavements, pavement failures. Modern materials in pavements.
- UNIT-V** Airport Planning - Definition of terms related to airport engineering, factors affecting site, selection, obstructions, various surveys for site selection, zoning laws. Classification of Obstructions Runways Orientation, Basic runway length and its corrections. Geometric design, runway configuration taxiways layout geometric, Standards, exit taxiways fillets separation.

## Text Books:

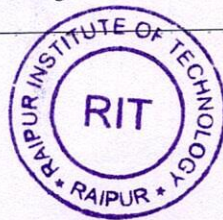
1. Principle and Practices of Highway Engineering – Kadiyali (Khanna Publishers, Delhi)
2. Highway Engineering – S. K. Khanna & C.E.G. Justo (Khanna Publishers, Delhi)

## Reference Books:

1. Air-port planning and Design – Khanna and Arora (Khanna Publishers, Delhi).
2. Highway Engineering – Rangawala S.C. (Charotar Publishers).
3. Specifications for Road and Bridge Works – MOST (IRC Publishers).
4. Manual for Survey, Investigation and Preparation of Road Projects – IRC Publication 2001.

## Course Outcomes:

1. Students are expected to understand highway planning & design .
2. Students are expected to understand traffic Engineering.
3. Students are expected to understand & evaluate highway construction material.
4. Students are expected to develop exposure in pavement design.
5. Students are expected to learn airport planning.



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A

Major Project Report

On

**“STUDY OF CONSTRUCTION OF NH-130 AND NH-30 FROM  
RAIPUR TO BILASPUR (CHHATTISGARH)”**

Submitted to

**CHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,  
BHILAI**



in partial fulfillment of requirements for the Award of Degree of

**Bachelor of Engineering**

In

**CIVIL ENGINEERING**

By

**Keval Raj sahu**

**Ketan Patel**

**Khagesh Shriwas**

**Rahul Yadu**

**Khilesh Sahu**

**Rakesh verma**

**Kritika Sandey**

**Ritu Mahant**

Under the Guidance of

**Mr. Ajeet Singh**

**Asst. Professor, Department of Civil**

**RITEE, Raipur**



**RAIPUR INSTITUTE OF TECHNOLOGY (RITEE),  
RAIPUR Chhatouna, Mandir Hasuad, Raipur (C.G.) India-**

**492101 Ph. No.:- 0771-3250790, Fax:- 91-0771-2537634,**

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**Session: 2020-21**



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**RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATOUNA, MANDIR HASUAD, RAIPUR (C.G.)**



## ABSTRACT

The construction of highways is the responsibility of a CIVIL ENGINEER, so to gain some practical experience with current design practices in the construction of highways or roads; I preferred to work over highway construction. The project where I did my training was the construction of NH-30 and NH-130 from Raipur to Bilaspur in chhattisgarh. some experience over Pavement Construction, Levelling using Auto-level, Road alignment, Laying of GSB and WMM. Also I came across various machineries like Paver, Vibro-Roller, and Grader etc. The proposed road project has a length of about 127 kms. and costs about Rs. 1963.88 crores. I learnt a lot from site, this was my first experience regarding site engineer.



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# Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.)

Name of program: Bachelor of Engineering

Semester: 7<sup>th</sup>

ESE Duration: 3 Hours

Total Theory Periods: 50

Class Tests: 2

Maximum Marks: 80

Branch: Civil Engineering

Subject: Environmental Engineering-II

Subject Code:320733(20)

Total Tutorial Periods: 12

Assignments: 2

Minimum Marks: 28

## Objectives of the Subject:

1. To give an overview of importance of proper sewage disposal and various sewerage systems.
2. To introduce the students the estimation of domestic sewage and other sewer appurtenances.
3. To impart a detailed knowledge in the design of various sewage treatment processes.
4. To impart knowledge about the different industrial waste treatment technique.
5. To provide knowledge about the environmental social and health implications of solid waste and its management.

## Outcomes of the Subject:

1. A student must be capable of designing a sewer system for a city taking into consideration the variations in flow.
2. The student should be capable of managing controlling the sewage treatment plant with complete knowledge of the design values and this functioning.
3. The student must be able to decide upon the quantum of treatment to be given to the wastewater from different sources before they are discharged to open water courses.
4. The student must be able to analyze coming from various processes in an industry and decide upon the techniques of treatment to be given.
5. The student will be socially responsible and aware of the social, environmental and health implications of solid waste and its management.

### Unit-1: Estimation of Sewage

Sewage and Sewerage, definitions and some common terms, object of sewage disposal. System of sanitation: Conservancy systems, Water system, sewage system-combined, separate and partially separate, patterns of collection system.

**Amount of sewage:** Estimation of domestic and storm sewage, variations in the quantity of sewage, Design of sewers (Only circular sewer) Manholes, Pumping stations, Wet well capacity.

### Unit-2: Sewage Treatment

**Characteristics of sewage:** Physical, chemical and biological characteristics, fundamentals of aerobic & anaerobic process.

**Sewage treatment:** Preliminary treatment systems, Racks and screens, comminute Grit chambers.

**Primary treatment systems:** Plain sedimentation, detention time and over-flow rates, types of inlets and outlets, onsite wastewater treatment- septic tank, Imhoff tank, oxidation pond.

### Unit-3: Secondary treatment systems

**Attached growth process:** Trickling filters, standard and high rates, efficiency (NRC) formula, and operational problems of trickling filters. Suspended growth process, principle of suspended growth process, Activated sludge process, Oxidation ditch aeration and mixing techniques, Operational problems of activated sludge systems, stabilisation tools aerobic, anaerobic and facultative lagoon.

### Unit-4: Sewage Sludge Treatment and Sewage Disposal

Importance, amount and characteristics of sludge, sludge digestion, Anaerobic digestion, aerobic digestion, sludge drying beds.

Disposal by dilution, self purification of polluted streams, factors affecting self purification, Sag curve, disposal on land surfaces. Stream standards, Effluent standards, theories of waste treatment (Volume reduction, strength reduction, new Equalization and proportioning) Summary of Industrial waste, its origin, character and treatment.

### Unit-5: Solid Waste Management

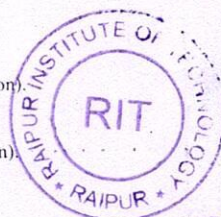
Solid waste management, source and characteristics, environmental and health implications, refuse characteristics, collection methods, disposal of solid waste by land filling, composting and incineration methods. Collection and disposal of refuse, Composting of refuse.

#### Text Books:

1. Environmental Engineering – Peavy & Rowe (Tata McGraw Hill, New Delhi).
2. Waster Water Engineering – S.K. Garg (Khanna Publication).
3. Waste Water Engineering – B.C. Punmia (Laxmi Publication, New Delhi)

#### Reference Books:

1. Environmental Science and Engineering – Henry and Heinke (Pearson Education).
2. Waste Water Engineering – Metcalf Eddy (Tata McGraw Hill, New Delhi).
3. Introduction to Environmental Science – Y Anjaneyulu (B S Publications).
4. Environmental Science and Engineering – henry and heinke (Pearson Education).
5. Waste Water Engineering – Metcalf Eddy (Tata McGraw Hill, New Delhi)



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RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



A  
Minor Project Report

On

**"WATER DISTRIBUTION SYSTEM FOR DIGHARI"**

Submitted to

**CHATTISGARH SWAMI VIVEKANAND TECHNICAL  
UNIVERSITY, BHILAI**



in partial fulfillment of requirements for the Award of Degree of

**Bachelor of Engineering**

In

**CIVIL ENGINEERING**

By

Rohan Dheewar	: 301202017025	Sandeep Bramhe	: 301202017026
Saron Xalxo	: 301202017027	Sonali Koshley	: 301202017028
Suraj Nishad	: 301202017029	Tarun Chakradhari	: 301202017030
Tript Baghel	: 301202017031		

Under the Guidance of

**Mr. Pankaj Chand**

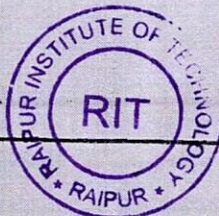
**Asst. Professor, Department of Civil**

**RITEE, Raipur**



**RAIPUR INSTITUTE OF TECHNOLOGY (RITEE),**  
RAIPUR Chhatouna, Mandir Hasuad, Raipur (C.G.) India-  
492101 Ph. No.: 0771-3250790, Fax:- 91-0771-2537634,  
E-mail - [contactus@rit.edu.in](mailto:contactus@rit.edu.in), Website:- [www.rit.edu.in](http://www.rit.edu.in)

**SESSION: 2020-21**



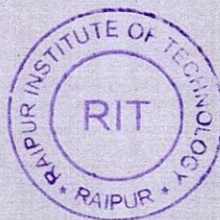
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**RAIPUR INSTITUTE OF TECHNOLOGY**  
CHHATOUNA, MANDIRHASUAD, RAIPUR (C.G.)



Water is the basic need of human being as well as entire live species in the environment. As we know water occupied a major part in the body of human being. Therefore water plays important role in maintaining the health of human being that can be ensured by providing sufficient, regular and safe water to every house in rural as well as in urban area by means of providing water supply system.

**Keywords** Water Supply System, Loop 4, Rural Area, Optimization of WDN, cost estimation



A handwritten signature in green ink, appearing to be "Rajiv", written over the printed name of the Principal.

**PRINCIPAL,**

**RAIPUR INSTITUTE OF TECHNOLOGY**  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	Computer Science & Engineering	Semester:	VI
Subject:	Computer Networks	Code:	322651(22)
Total Theory Periods:	40	Total Tutorial Periods:	10
No. of class Tests to be conducted:	2 (Minimum)	No. of assignments to be submitted:	One per Unit
ESE Duration:	Three Hours	Maximum Marks in ESE:	80
		Minimum Marks in ESE:	28

## COURSE OBJECTIVE:

- Provide students with an enhanced base of knowledge in current and reflective practice necessary to support a career in Computer Networking at advanced professional level.
- Understanding concept of local area networks, their topologies, protocols and applications
- Understanding the different protocols, software, and network architectures.

## COURSE OUTCOME: On completion of this unit the student should be able to:

- describe the basis and structure of an abstract layered Network protocol model
- identify and apply basic theorems and formulae for the information-theoretic basis of communication and the performance of TCP/IP network protocols

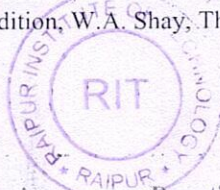
- UNIT I** **Introduction:** OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN.  
**Physical Layer:** Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications; Narrow band, broad band ISDN and ATM.
- UNIT II** **Data link layer :** Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window, Slip, Data link layer in HDLC, Internet, ATM. Multiple Access Protocols – Link Layer Addressing – ARP – DHCP – Ethernet – Hubs, Bridges, and Switches. Ring Topology - Physical Ring – Logical Ring.  
**Medium Access sub layer:** ALOHA, MAC addresses, Carrier sense multiple accesses. IEEE 802.X Standard Ethernet, wireless LANS. Bridges
- UNIT III** **Network Layer :** Forwarding and Routing – Network Service Models – Virtual Circuit and Datagram Networks – Router – Internet Protocol (IP) – IPv4 and IPv6 – ICMP – Link State Routing – Distance Vector Routing – Hierarchical Routing – RIP – OSPF – BGP – Broadcast and Multicast Routing – MPLS – Mobile IP – IPsec.
- UNIT IV** **Transport Layer:** Transport Layer Services – Multiplexing and Demultiplexing – UDP – Reliable Data Transfer – Go-Back-N and Selective Repeat. **Connection-Oriented Transport:** TCP – Segment Structure – RTT estimation – Flow Control – Connection Management – Congestion Control – TCP Delay Modeling – SSL and TLS. **Integrated and Differentiated Services:** Intserv – Diffserv.
- UNIT V** **Application Layer:** Principles of Network Applications – The Web and HTTP – FTP – Electronic Mail – SMTP – Mail Message Formats and MIME – DNS – Socket Programming with TCP and UDP. **Multimedia Networking:** Internet Telephony – RTP – RTCP – RTSP. **Network Security:** Principles of Cryptography – Firewalls – Application Gateway – Attacks and Countermeasures.

## TEXT BOOKS :

1. Data Communications and Networking – Behrouz A. Forouzan. Third Edition TMH.
2. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, Third edition, 2006

## REFERENCE BOOKS :

1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI
2. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education
3. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson



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**RAIPUR INSTITUTE OF TECHNOLOGY**  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

Name of the Programme: Bachelor of Engineering ..... Duration of the Programme: Four Years



Computer Assistant System Providing Efficient Resources

(CASPER)

A Thesis Submitted to

Chhattisgarh Swami Vivekanand Technical University

Bhilai (C.G.) India



For partial fulfillment of the award of degree

BACHELOR OF ENGINEERING

In

COMPUTER SCIENCE AND ENGINEERING

BY

HEMLATA SAHU

Roll no:- 301202217045

JYOTI KUMARI MAHANT

Roll no:- 301202217050

PRIYANKA SINGH MARAVI

Roll no:- 301202217051

NAMRATA PATEL

Roll no:- 301202217061

Under The Guidance of

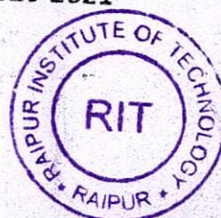
Prof. Devbrat sahu

Assistant Professor, Department of Computer Science & Engineering



RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

SESSION 2020-2021



  
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RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

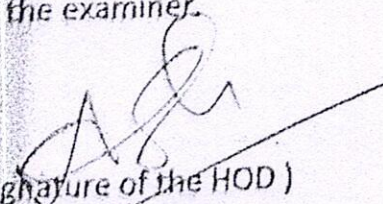


## CERTIFICATE

This is to certify that the project report entitle "COVID-19 TESTING MANAGEMENT SYSTEM" is a record of work carried out by HEMIATA SAHU, JYOTI KUMARI MAHANT, PRIYANKA SINGH MARAVI, NAMRATA PATEL bearing Roll No.- "301202217045", "301202217050", "301202217051", "301202217061". Enrollment No.- "BD1821", "BD2030", "BD1969" "BD1997. Under my guidance and supervision for the award of degree of Bachelor of Engineering in the faculty of Computer Science & Engineering of Chhattisgarh Swami Vivekanand Technical University, Bhilai, CG, India.

To the best of my knowledge and belief the project

- 1) Embodies the work of the candidates themselves
- 2) Has dually been completed
- 3) Fulfils the requirement of the ordinance relating to the BE degree of the university and
- 4) Is up to the desired standard both in respect of contents and language for being referred to the examiner.

  
(Signature of the HOD )  
Prof. Avinash Dhole

Head of the Department,  
Department of CSE, RITEE,  
Raipur (Chhattisgarh)

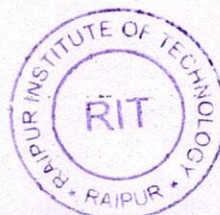


(Signature of the Supervisor)  
Prof. DEVBRAT SAHU

Assistant Professor

RITEE, Raipur

Raipur (Chhattisgarh)



  
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RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



## ABSTRACT

When we were first given this project, we met to determine how we were to carry out the task

assigned to us. We drew up a time-line, discussed about tire programming language to use to

carry out the task, how the GUI would look like and also to made sure that we understood

what was assigned to us. We finally settled for .NET framework with Visual C# as program, language and thought of developing a standalone windows application.

It is an artificial assistant which designated to provide services to the user. The application is

so flexible that the user can ineract with the system even without physically touching it.

Our task was to create a virtual assistant which would assist the user, in almost all of the

daily works. It is a secure system which allows only those person It is a secure system which allows only those person to use the application who the system already knows.

Project thesis contains various chapters which contains cletailed information about the

implementation, tools & technology, and processing of various modules.

Abstract represents a summarized report of the complete project in a very concise and informative format covering the main objective and aim of the project, the background information, processes and methods used, and methodologies implemented, followed with a brief conclusion of two to three lines talking about the results and scope of the project.

  
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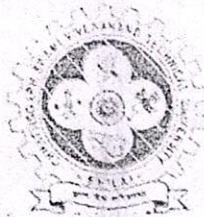
RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



# "CITY HOSPITAL SUE"

A Thesis Submitted to

Chhattisgarh Swami Vivekananda Technical University  
Bhilai (C.G.), India



*For fulfillment of the award of Degree*

**BACHELOR OF ENGINEERING**

In

**Computer Science and Engineering**

By

Students Name

**SHIKHA TIWARI**

Roll No.

**301202216061**

Enrollment No:-

**BB0137**

&

**KAVITA GANDLE**

Roll No.

**301202216014**

Enrollment No:-

**BA4896**

Under The Guidance of

**Mr. Yogesh Rathore**

Assistant professor, Department of CSE RITEE, Raipur

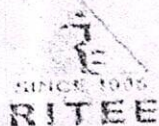
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR**

Chhatauna, Mandir Hasaud, Raipur (CG) India - 492 101

Phone - 91- 0771 - 3250790, 3208842, Fax - 91-0771-2537634

E-mail - [contactus@rit.edu.in](mailto:contactus@rit.edu.in), Website - [www.ritee.in](http://www.ritee.in)



**SESSION: 2020-2021**



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



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RITEE

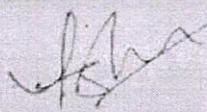
Department of Computer Science and Engineering  
Raipur Institute of Technology  
- Chhatauna, Mandir Hasaud, Raipur (C.G.)

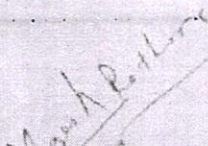
### CERTIFICATE BY THE SUPERVISOR

This is to certify that the report of the thesis entitled " City Hospital Site " is a record of research work carried out by bearing Shikha Tiwari, Kavita Gondle under my guidance and supervision for the award of Degree of Bachelor of Engineering in Computer Science and Engineering of Chhattisgarh Swami Vivekanand Technical University, Bilai(C.G.), India.

To the best of my knowledge and belief the thesis

- (i) Embodies the work of the candidate herself/himself.
- (ii) Has duly been completed,
- (iii) Fulfils the requirement of the Ordinance relating to the B.E. degree of the University and
- (iv) Is up to the desired standard both in respect of contents and language for being referred to the examiners.

  
(Signature of the HOD)

  
(Signature of the Supervisor)



  
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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



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**CHHATTISGARH SWAMI VIVEKANAD TECHNICAL UNIVERSITY  
BHILAI (C.G.)**

**Semester: VII**  
**Subject: Mobile Computing and Application**  
**Total Theory Periods: 40**  
**Total Marks in End Semester Exam: 80**

**Branch: Computer Science & Engg.**  
**Code: 322731(33)**  
**Total Tutorial Periods: 12**  
**Minimum number of CT to be conducted: 02**

**Course Objective**

- To introduce the fundamental design principles & issues in cellular & mobile communications.
- To enable the student to understand the basic features of cellular-mobile communication systems and digital radio system.
- To motivate students to understand the different technology for working of mobile devices, their advantages and disadvantages and emerging problems.

**Unit- I Introduction, Cell Coverage &, Frequency Management:** Mobile and wireless devices, Frequencies for radio transmission, A basic cellular system, Cell Size. Elements of cellular radio systems, Design and Interference, Concept of frequency reuse, cell splitting, Channels, Multiplexing, Access Techniques, Medium Access control, Spread spectrum, Specialized MAC, Cell Throughput, Co-channel interference reduction factor, Frequency management, fixed channel assignment, non-fixed channel assignment, traffic & channel assignment, Why hand off, types of handoff and their characteristics, dropped call rates & their evaluation.

**Unit- II GSM Architecture & Services:** GSM Services and Features, GSM System Architecture, GSM Radio Subsystem, GSM Channel Types, Example of a GSM Call, Signal Processing in GSM, Channel Coding for Data Channels, Channel Coding for Control Channels, Frequency and Channel Specifications. **New Data Services:** DECT Functional Concept, DECT Radio Link, Personal Access Communication Systems, PACS System Architecture, PACS Radio Interface, UMTS

**UNIT-III: Wireless Networks:** Wireless LAN, Hidden Nodes in Wireless Networks, Ordered MAC Techniques and Wireless Networks, Deterministic MACs for Wireless Networks, Comparison Of MAC Techniques for Wireless Networks; Infrared V/S Radio Transmission; IEEE 802.11, Architecture, Layers, Management; HIPERLAN; Bluetooth; Wireless Broadband (WiMAX), RFID, Java Card., WLL.

**UNIT-IV: Mobile network and Transport layer:** Mobile Network Layer; Mobile IP, DHCP, ADHOC Networks; Mobile Transport Layer; Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP; Fast Transmit/Fast Recovery, Transmission/Time Out Freezing, Selective Retransmission, Transaction Oriented TCP.

**UNIT-V: Mobile System Development and Support:** Wireless Application Protocol (WAP) – WAP Model, WAP Gateway, WAP Protocols WAP User Agent Profile and Caching, Wireless Bearers for WAP, WAP Developer Toolkits, Mobile Station Application Execution Environment Third-Generation Mobile Services - Paradigm Shifts in Third-Generation Systems W-CDMA and cdma2000, Improvements on Core Network, Quality Service in 3G Wireless Operating System for 3G Handset, Third- Generation Systems and Field Trials, Other Trial Systems, Impact on Manufacture and Operator Technologies.

**Course Outcome:** After successful completion of the course students will be able to

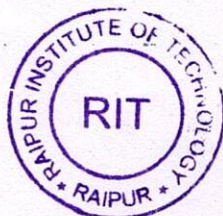
- Understand the basic physical-layer architecture of a mobile communication system.
- Understand various multiple-access techniques for mobile communications, and their advantages and disadvantages.
- Students will be able to acknowledge about the working and development of mobile and wireless devices in detail, services provided by them and recent application development trends in this field.

**Text Books**

1. Mobile Communications – Schiller, Jochen; 2nd Indian Reprint, Pearson Education Asia – Addison Wesley Longman PTE. Ltd.
2. Wireless Communication Principles and Practice, Theodore S Rappaport, 2<sup>nd</sup> Ed, Pearson Education.

**Reference Books:**

1. Mobile Data Wireless LAN Technologies – Dayem, Rifaat A.; Prentice Hall International.
2. The Essential Guide to Wireless Communication Applications – Dornan, A.; 1st Indian Reprint, Pearson Education Asia.
3. Sandeep Singhal, “The Wireless Application Protocol”, Pearson Education Asia,
4. P. Stavronlakis, “Third Generation Mobile Telecommunication systems”, Springer Publishers



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)**



# EL-SHOPPING (ECOMMERCE)

A Thesis Submitted to

Chhattisgarh Swami Vivekanand Technical University  
Bhilai (C.G.), India



*For fulfillment of the award of Degree*

*Bachelor of Engineering*

In  
Computer Science and Engineering  
By

AAKASH VERMA  
Roll no.- 301202217001

ARUN PATEL  
Roll no.- 301202217004

BHEKHRAJ PARMAL  
Roll no.- 301202217006

KHOMAN SAHU  
Roll no.- 301202217019

Under The Guidance of

Mr. DEVBRAT SAHU  
Assistant professor, Department of CSE RITEE, Raipur



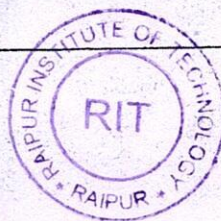
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING  
RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

Chhatauna, Mandir Hasaud, Raipur (CG) India - 492 101 Phone - 91- 0771

- 3250790, 3208842, Fax - 91-0771-2537634

E-mail - [contactus@rit.edu.in](mailto:contactus@rit.edu.in), Website - [www.rit.edu.in](http://www.rit.edu.in)

SESSION: 2020-2021



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



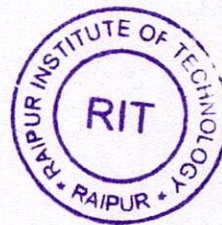
## ABSTRACT

The thesis aimed to develop an online electronic shop using open source technology(PHP, HTML5,CSS3,JavaScript,MySQL and apache web server) for electronics product in EL -- Shop Where customers will be able to buy products online.

The designed application will have an admin view and the public or guest view. The admin view meant for the administrator to update the products, change, prices, remove and add products.

The customer will be able to accessible to the customers, and they will be able to handle their information such as their name, address etc.

Also, the customer will be able to order products online from EL-SHOP.



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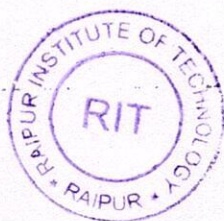
CERTIFICATE BY THE EXAMINERS

The Thesis entitled "EL-Shopping (E-Commerce)" submitted by

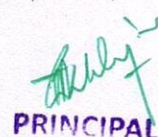
AAKASH VERMA	301202217001	BD2052
ARUN PATEL	301202217004	BD2070
BHEKHRAJ PARMAL	301202217006	BD2072
KHOMAN SAHU	301202217019	BD2065

has been examined by the undersigned as a part of the examination and is hereby recommended for the award of the degree of Bachelor of Engineering in Computer Science and Engineering of Chhattisgarh Swami Vivekanand Technical University, Bhilai.

Internal Examiner  
Date:



External Examiner  
Date:



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# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Engineering**

Branch: **Electronics & Telecommunication**

Semester: **VII**

Subject: **Wireless Communications**

Code: **328733(28)**

Total Theory Periods: **40**

Class Tests: **Two (Minimum)**

ESE Duration: **Three Hours**

Total Tutorial Periods: **12**

Assignments: **Two (Minimum)**

Maximum Marks: **80** Minimum Marks: **28**

## Course Objectives:

1. To give students brief history of the evolution of mobile communications throughout the world.
2. To give knowledge of cellular concepts and its designing aspects.
3. To give students a detailed overview of GSM, its architecture, interfaces, frames etc.
4. To familiarize students about advanced modulation techniques used in mobile communications.
5. To teach students about the practical limitations on the performance of wireless communications systems.

**UNIT-I Introduction to wireless communications:** Evolution of Mobile Radio Communication, Different Wireless Communication Systems, Comparison of Various Wireless Communication System, Introduction to Modern Wireless Communicating System-Second Generation (2G), Third Generation (3G) and Fourth Generation (4G).

**UNIT-II Cellular Concepts and System Design Fundamentals:** Cellular Concepts and Frequency Reuse, Channel Assignment Strategies and Handoff Strategies, Interference and System Capacity Channel Planning for Wireless Systems, Trunking and Grade of service, Improving coverage and capacity in Cellular System.

**UNIT-III Global Systems for Mobile:** System Architecture, GSM frequency bands, GSM PLMN, GSM subsystems, GSM interface, Mapping of GSM Layer onto OSI Layers, GSM Logical Channel and Frame Structure, GSM Burst, Data encryption in GSM, Mobility Management.

**UNIT-IV Modulation Techniques:** Constant Envelope Modulation, MSK, GMSK, Combined Linear and Constant Envelope Modulation Technique, MPSK, QAM, OFDM, Introduction to Spread Spectrum, PN Sequence, DS-SS, FH-SS, Performance of DS-SS and FH-SS.

**UNIT-V Transmission problems:** Introduction to Radio Wave Propagation: The basic Propagation Mechanisms: Reflection, Diffraction, Scattering, Path Loss, Shadowing, Time dispersion, Time Alignment, Combined Signal Loss, High Bit Error Rate, Solution to Transmission Problems, Channel Coding, Interleaving, Diversity, Fundamental of Equalization Frequency Hopping.

## Textbooks:

1. Wireless Communications by T.S. Rappaport, Pearson Education
2. Principles and Application of GSM by Vijay K. Garg, Pearson Education.

## Reference books:

1. Mobile Communications—Schiller, Jochen; 2nd Indian Reprint, Pearson Education Asia—Addison Wesley Longman Pte. Ltd.
2. Mobile Communication Engineering by W.C. Lee, TMH Pub.

## Course Outcomes

1. Students will have idea about the growth in mobile communications that gives rise to technological improvements.
2. Students will be able to visualize the use of frequency reuse to increase the system capacity and also other designing aspects.
3. Students will be able to understand the architecture of the GSM and mechanism to support mobility of the GSM terminals.
4. Students will see how modulation techniques are used to transport the message signal via a radio channel with best possible quality with minimum radio spectrum.
5. Students will be able to understand various transmission problems and their counter measures.



*[Signature]*  
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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



A

## Major Project Report

On

“Home Appliances Controlled using NodeMCU and Blynk App”

Submitted

To



CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C. G.),  
INDIA

*In partial fulfilment*

For The award of Degree Of

Bachelor of Engineering

In

ELECTRICAL AND ELECTRONICS ENGINEERING

By

Narad Singh

Under the guidance of

Prof. UMASHNKAR PATEL

Assistant Professor

---

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

Chhatauna, Mandir Hasaud, Raipur, Chhattisgarh



Ph.: 0771-3208842, 3250790 Fax: 0771-2537634

Email: [contactus@rit.edu.in](mailto:contactus@rit.edu.in)

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Session: 2020-2021

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RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



## CERTIFICATE

This is to certify that the report of the project entitled " Home Appliances controlled Using Node MCU and Blynk app "

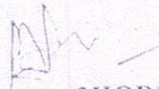
is a record of project work carried out by:-

Name	Roll No.	Enrolment No.
Narad Singh	301202517002	BD2856

under my guidance and supervision for the award of Degree of Bachelor of Engineering in ELECTRICAL & ELECTRONICS branch of Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.) India.

To the best of my knowledge and belief the report

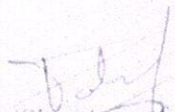
- Embodies the work of the candidate them self,
- Has duly been completed,
- Fulfils the requirement of the Ordinance relating to the BE degree of the University and
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.

  
(Signature of HOD)

Dr. Aditya Khare

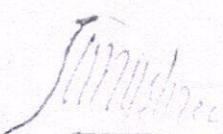
HOD (EEE)

RITEE, Raipur

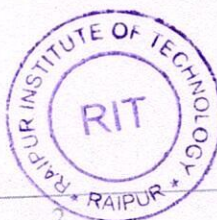
  
(Signature of Guide)

Asst. Professor  
UmaShankar Patel

RITEE, Raipur

  
Principal

RITEE, Raipur, Chhattisgarh



  
PRINCIPAL

RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



## 1. INTRODUCTION

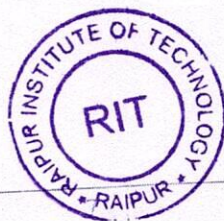
A load controlled by computer systems has many advantages compared with manual controlled loads. Nowadays there are many programs and applications help to control things better using codes or python algorithms in artificial intelligence projects. In order to save energy and make loads monitored easily, this research suggests smart home project based on IoT technology. This smart home is an Internet of Things (IoT) project that controls loads with internet connection via Wireless Fidelity WIFI connection. A smart phone connected to internet with Blynk application as a control panel, and NodeMCU microcontroller kit in other side as a controller that receives control commands via WIFI signal. NodeMCU kit is built with ESP8266 WIFI receiver that able to process and analyse WIFI signal to input the microcontroller. The WIFI receiver and microcontroller are built in one kit to be used as IoT project. It's called NodeMCU.

To connect the system to the Internet, needs a Wi-Fi receiver. In my case I used ESP8266 that is connected as built-in in the NodeMCU board that contains a firmware runs with the ESP8266. The firmware is a low-level control computer software.

The NodeMCU is coded via Arduino Integrated Development Environment (IDE) with the Universal Serial Bus port (USB) to tell the NodeMCU what to do. I want to make the NodeMCU controls four-channel relay kit by Blynk hand phone application and shows the temperature that measured by LM35 sensor.

Parts used to create the project:

- 1) NodeMCU board. Open source internet of things platform.
- 2) AC-DC step down converter. Switch mode power supply to provide the project with power. This project needs 5 volts.
- 3) DC-DC step down converter as a regulator to convert the 12 V output of the power supply into regulated 5 V.
- 4) Four-channel relay kit. To drive loads from digital NodeMCU output pins.
- 5) LM35 temperature sensor. To measure room temperature.
- 6) Computer with Arduino (IDE) program installed to code the NodeMCU once.
- 7) Android smart phone with Blynk application installed to be used as control panel.



  
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## 2. OBJECTIVE OF PROJECT

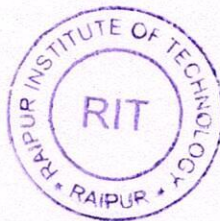
- The goal of this project is to develop a home automation system that gives the user complete control over all remotely controllable aspects of his or her home.
- The automation system will have the ability to be controlled from a central host PC, the Internet, and also remotely accessed via a Pocket PC with a Windows Mobile based application.
- The System will also sense the Accidental Gas leakage , water level and will notify the user by SMS.


## 3. SCOPE OF PROJECT

Day by day, the field of automation is blooming and these systems are having great impact on human beings. The project which is to be implemented is a home automation using Easy IOT Webserver and WIFI and has very good future development.

In the current system webserver is installed on a windows PC so the home appliances can be controlled using only by using the device on which webserver is installed. This can be further developed installing webserver on cloud .

Advantage of installing webserver on the cloud is that home can be controlled by using any device which has WIFI 802.1 and a web browser. By visiting the IP address of the cloud the control actions can be taken.



  
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# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Mechanical Engineering/Mechatronics Engineering** Semester: **V**  
Subject: **Dynamics of Machines** Code: **337553 (37)**  
Total Theory Periods: **40** Total Tutorial Periods: **10**  
No. of class Tests to be conducted: **2 (Minimum)** No. of assignments to be submitted: **2 (Minimum)**  
ESE Duration: **Three Hours** Maximum Marks in ESE: **80** Minimum Marks in ESE: **28**

## Course Objectives:

- To study types of mechanical governors and to analyze its performance parameters
- To Apply the theory of balancing to rotating and reciprocating masses.
- To analyze gyro-effect on moving bodies
- To understand the concepts of mechanical vibration
- To perform inertia force analysis of machine elements
- To draw turning moment diagram of reciprocating engines
- To analyze performance parameters flywheel

## Course Outcome

- Apply knowledge of Dynamics of machine for understanding, formulating and solving engineering problems.
- Acquire knowledge and hands-on competence in applying the concepts Dynamics of machine in the design and development of mechanical systems.
- Demonstrate creativeness in designing new systems components and processes in the field of engineering.
- Identify, analyze and solve mechanical engineering problems useful to the society.
- Work effectively with engineering and science teams as well as with multidisciplinary designs.

- UNIT I Governors:** Characteristics of centrifugal governors, Gravity controlled governors, Porter and proell. Spring controlled centrifugal governor: Hartung, & Hartnell governor. Performance parameter: Sensitivity, stability, Isochronisms, Governor Effort and power.
- UNIT II Balancing:** Balancing of rotating masses, Static and dynamic balancing, Determination of balancing masses in two plane balancing, Balancing of internal combustion engines, Balancing of in-line engines, Firing order, Balancing of V-twin and radial engines, Forward and reverse crank method, Balancing of rotors.
- UNIT III Gyroscope:** Gyroscopic forces and couple, gyroscopic effect in Airplanes, Ship motion and Vehicles moving on curved path.
- UNIT IV Mechanical Vibrations:** One-dimensional, longitudinal, Transverse, and torsional vibrations, Natural frequency, Effect of damping on vibrations, Different types of damping, Forced vibration, Forces and displacement, Transmissibility, Vibration Isolation, Vibration sensors: seismometer and Accelerometers, Whirling of shafts with single rotor.
- UNIT V (a) Inertia force analysis:** Effective force and inertia force on link, Inertia force on reciprocating engine. Inertia force in four bar chain mechanism.  
**(b) Turning moment diagram and flywheel:** Turning moment diagram for single and multi cylinder internal combustion engine, Coefficient of fluctuation of speed, Coefficient of fluctuation of energy, Flywheel.

## TEXT BOOKS

1. Theory of Machine- S.S.Rattan - Tata McGraw Hill, New Delhi
2. Theory of Machines - Thomas Bevan, - CBS/ Cengage Publishers

## REFERENCE BOOKS

1. Theory of Machines and Mechanism- Uicker, Pennock, & Shigley – Oxford Univ. Press
2. Theory of Mechanisms and Machines- A. Ghosh, A. K. Mallik – EWP Press.
3. Mechanism and Machine theory-Ambekar-PHI, Delhi
4. Theory of Machine – P.L. Ballaney – Khanna Publishers, New Delhi
5. Theory of Machine -Jagdish Lal- Metro Politan Books, New Delhi



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**RAIPUR INSTITUTE OF TECHNOLOGY**  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

Name of the Programme: Bachelor of Engineering

Duration of the Programme: 3 Years



# **MODELING, SIMULATION AND CONTROL OF HYDRAULIC CRANE**

A Thesis submitted

to

**CHHATTISGARH SWAMI VIVEKAN AND  
TECHNICAL UNIVERSITY BHILAI (C.G.), INDIA**



In the partial fulfillment of award of the degree Of  
**BACHELOR OF ENGINEERING**

In

**Mechanical Engineering**

**SUBMITTED BY-**

RUPESH KUMAR DHIWAR - 301203717021  
MAHENDRA LODHI - 301203717012  
VICKY SAHU - 301203717026  
RAJESH KUMAR SAHU - 301203717018  
RAJESH KUMAR VERMA - 301203717019  
DEVCHAND LODHI - 301203716008

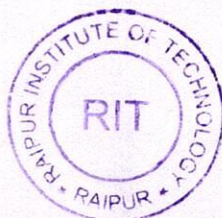
Under the supervision and guidance of

**Mr. ANOOP KUMAR**  
(Assistant Professor)

**DEPARTMENT OF MECHANICAL ENGINEERING**



**Raipur Institute of Technology**  
**Chhatauna, Mandir Hasaud, Raipur (C.G.) 492101**



  
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**RAIPUR INSTITUTE OF TECHNOLOGY**  
**CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)**



# Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.)

Name of program: **Bachelor of Engineering**  
Branch: **Mechanical Engineering**  
Subject: **Machine Tool Technology**  
Total Theory Periods: **40**  
Class Tests: **Two (Minimum)**  
ESE Duration: **Three Hours**

Semester: **VII**  
Code: **337734(37)**  
Total Tutorial Periods: **10**  
Assignments: **Two (Minimum)**  
**Maximum Marks: 80**  
**Minimum Marks: 28**

## Course objectives:

- To impart knowledge about cutting tool geometry, tool material, mechanics of metal cutting, machinability and importance of cutting fluid.
- To understand the kinematics drive of machine tool.
- To design speed gear box and feed gear box
- To understand the procedure of acceptance test of machine tool

## UNIT - I

**Cutting Tool – Types, requirements, specification & application**

**Geometry of Single Point Cutting Tool - tool angle, Tool angle specification system, ASA, ORS and NRS and inter-relationship.**

**Mechanics of Metal Cutting**

Theories of metal cutting, chip formation, types of chips, chip breakers, Orthogonal and Oblique cutting, stress and strain in the chip, velocity relations, power and energy requirement in metal cutting.

## UNIT - II

**Machinability :** Concept and evaluation of Machinability, Mechanism of Tool failure, Tool wear mechanism, Tool life, Tool life equation, Machinability index, factors affecting machinability.

**Thermal Aspects in Machining and Cutting Fluid**

Source of heat in metal cutting and its distributions, temp measurement in metal cutting, function of cutting fluid, types of cutting fluid.

## UNIT – III

**Design of Machine Tool Elements :** Design of Lathe bed - Material and construction feature, various bed section, analysis of force under headstock, tail stock and saddle, torque analysis of lathe bed, bending of lathe bed, designing for torsional rigidity, use of reinforcing stiffener in lathe bed.

Design of Guide ways, Material and construction features, over turning diagram, Antifriction guide ways.

## UNIT – IV

**Design of Speed Gear Box :** Drives in Machine Tool, classification, selecting maximum and minimum cutting speeds, speed loss, kinematic advantage of Geometric progression, kinematic diagrams, design of Gear Box of 6,9,12 and 18 speed.

## UNIT – V

**Design of Feed Gear Box :** Elements of feed gear box, classification-Norton drive, draw key drive, Meander's drive, Design of feed gear box for longitudinal and cross feed and for thread cutting.

**Acceptance Test of Machine tool :** Testing, Geometrical checks, measuring equipment for testing, acceptance test for Lathe and Radial drilling machines.

## TEXT BOOKS

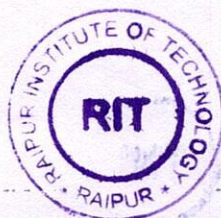
1. Machine Tool Engineering – G.R. Nagpal – Khanna Publishers, New Delhi
2. Fundamentals of Metal Cutting & Machine Tool – B.L. Juneja, G.S. Sekhan, Nitin Sethi – New Age Publishers – New Delhi

## REFERENCE BOOKS

1. Production Engineering – P. C. Sharma – S. Chand & Company – New Delhi
2. Production Technology – R.K. Jain – Khanna Publisher – New Delhi
3. Principle of Metal Cutting -Sen, Bhattacharya – New Central Book Agency, Calcutta
4. Machine Tool Practices – Kibbe Richard R – PHI, New Delhi
5. Manufacturing Technology Vol.-II – P. N. Rao - TMH Delhi
6. Manufacturing Engineering & Technology – Serope Kalpakjian- Pearson, Delhi

## Course Outcomes:

1. Graduates will gain a strong foundation in machine tool engineering
2. Acquire knowledge and hands-on competence in design and development of machine tool.
3. Develop an ability to identify, analyze and solve technical problems related to machine tools.



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



# MULTIPURPOSE AGRICULTURAL MACHINE

A Thesis submitted

to

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL  
UNIVERSITY BHILAI (C.G.), INDIA



In the partial fulfillment of award of the degree

Of

BACHELOR OF ENGINEERING

In

Mechanical Engineering

By

DHANRAJ SAHU	BD2980	301203717004
DINESH KASHYAP	BD1953	301203717005
KAILASH VERMA	BD1963	301203717009
KHOMAN DAS	BD1935	301203717010
BANJARE		
RAJKISHOR	BD1975	301203717016
DEWANGAN		

Under the supervision and guidance of

**Mr. ANOOP KUMAR**

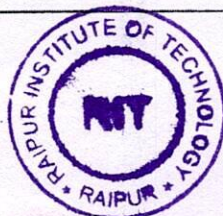
(Assistant Professor)

Department of Mechanical Engineering



**Raipur Institute of Technology**  
**Chhatauna, Mandir Hasaud, Raipur (C.G.) 492101**

Session: 2017-2021



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**PRINCIPAL**

**RAIPUR INSTITUTE OF TECHNOLOGY**  
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



**"AUTOMATED RAIN WATER SENSING UMBRELLA"**

**(ARDUINO CONTROLLED)**

A Thesis submitted to

**"CHHATTISGARH SWAMI VIVEKANAND TECHNICAL  
UNIVERSITY BHILAI (C.G.), INDIA**



In the partial fulfillment of award of the degree of

**Bachelor of Engineering**

**In**

**MECHANICAL ENGINEERING**

**By**

RAJ KUMAR PATEL	BD1932	(301203717020)
RAJEEV LUNKAD	BD1923	(301203717017)
KHUSHI KUSHWAHA	BD4574	(301203717028)
POKHRAJ SAHU	BD1962	(301203717015)
NIKHIL CHANDRAVANSHI	BD1887	(301203717014)

Under the supervision and guidance of

**ASHWINI BHOI**

(Assistant Professor)

Department of Mechanical Engineering



**Raipur Institute of Technology Chhatauna,  
Mandir Hasaud, Raipur (C.G.) 492101**

Session: 2017 – 2021



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Mechanical Engineering/Mechatronics Engineering** Semester: **VI**  
Subject: **Machine Design II** Code: **337651(37)**  
Total Theory Periods: **40** Total Tutorial Periods: **10**  
No. of class Tests to be conducted: **2 (Minimum)** No. of assignments to be submitted: **2 (Minimum)**

ESE Duration: **Four Hours**

Maximum Marks in ESE: **80**

Minimum Marks in ESE: **28**

**Note: Design data book by PSG and ISI data sheets are allowed in the examination.**

## Course Objectives

- To design and analyze coil, leaf and laminated springs.
- To design and analyze spur, helical and bevel gears.
- To design and analyze rolling contact bearings.
- To design and analyze journal bearing.
- To design and analyze chain and belt drive.

## Course outcomes:

- Apply knowledge of machine design for understanding, formulating and solving engineering problems.
- Acquire knowledge and hands-on competence in applying the concepts in the design and development of mechanical systems.
- Demonstrate creativeness in designing new systems components and processes in the field of engineering in general and mechanical engineering in particular.
- Identify, analysis, and solve mechanical engineering problems useful to the society.
- Work effectively with engineering and science teams as well as with multidisciplinary designs.

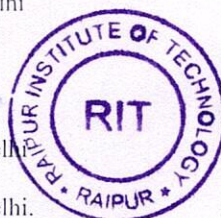
- UNIT I** **Spring:** Spring materials and their mechanical properties, equation for stress and deflection, helical coil springs of circular section for tension, compression and torsion, dynamic loading, fatigue loading, Wahl line, leaf spring and laminated spring.
- UNIT II** **GEARS: Spur Gears** - Gear Drives, Classification of Gears, Selection of Type of Gears, Law of Gearing, Force Analysis, Gear Tooth Failures, Selection of Material, Number of Teeth, Face Width, Beam Strength of Gear Tooth, Effective Load on Gear Tooth, Estimation of Module Based on Wear Strength, Lewis equation, Gear Design for Maximum Power Transmitting Capacity, Gear Lubrication.
- UNIT III** **Helical Gears:** Helical Gears, Terminology of Helical Gears, Virtual Number of Teeth, Tooth Proportions, Force Analysis, Beam-Strength of Helical Gears, Effective Load on Gear Tooth, Wear-Strength of Helical Gears.  
**Bevel Gears:** Bevel Gears, Terminology of Bevel Gears, Force analysis, Beam strength of Bevel Gears, Wear Strength of Bevel Gears, Effective Load on Gear Tooth.
- UNIT IV** **Bearings: Rolling Contact Bearings** - Types of ball and roller bearings, selection of bearing for radial and axial load, bearing life, Mounting and lubrication, shaft scales – contact type and clearance type.  
**Journal Bearings:** Types of lubrication, viscosity, Hydrodynamic theory of lubrication, Sommerfeld number, heat balance, self-contained bearings, bearing materials.
- UNIT V** **Chain Drives:** Chain drives, roller chains, geometric relationships, dimensions of chain components polygonal effect, power rating of roller chains.  
**Belt Drives:** Flat and V-belts, belt constructions, geometrical relationships for length of the belt, analysis of belt tensions, condition for maximum power, selection of flat & V-belts, adjustment of belt tensions. Wire ropes, stresses in wire ropes

## TEXT BOOKS:

1. Design of Machine Elements - V.B. Bhandari, TMH Publications, Delhi
2. Machine Design - Shigley – McGraw Hill, Delhi/Noida

## REFERENCE BOOKS:

1. Machine Design - Mavrin – MIR Publishers, Moscow
2. Machine Design - Fundamental & Application – Gope – PHI, New Delhi
3. Machine Design - Sharma & Agrawal – Katson, New Delhi
4. Principles of Mechanical Design - R. Phelan – McGraw Hill, New Delhi.
5. Machine Design – Sundarajamoorthy & Shanmugum – Anuradha, Chennai



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**PRINCIPAL**

RAIPUR INSTITUTE OF TECHNOLOGY

Name of the Programme: Bachelor of Engineering :::: Duration of the programme: Four Years



# **MODELING, SIMULATION AND CONTROL OF HYDRAULIC CRANE**

A Thesis submitted

to

**CHHATTISGARH SWAMI VIVEKAN AND  
TECHNICAL UNIVERSITY BHILAI (C.G.), INDIA**



In the partial fulfillment of award of the degree Of  
**BACHELOR OF ENGINEERING**

In

**Mechanical Engineering**

**SUBMITTED BY-**

**RUPESH KUMAR DHIWAR - 301203717021**

**MAHENDRA LODHI - 301203717012**

**VICKY SAHU - 301203717026**

**RAJESH KUMAR SAHU - 301203717018**

**RAJESH KUMAR VERMA - 301203717019**

**DEVCHAND LODHI - 301203716008**

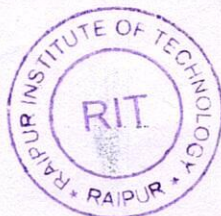
**Under the supervision and guidance of**

**Mr. ANOOP KUMAR**  
(Assistant Professor)

**DEPARTMENT OF MECHANICAL ENGINEERING**



**Raipur Institute of Technology**  
**Chhatauna, Mandir Hasaud, Raipur (C.G.) 492101**



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**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,  
BHILAI (C.G.)**

Semester: M.E. Ist

Subject: **Water Pollution Control**

Total Theory Periods: 40

Total Marks in End Semester Exam: 100

Minimum number of class tests to be conducted :02

Branch: Chemical Engg.(Environmental Engg.)

Code: 530114 (19)

Total Tutorial Periods: 12

Note: Internal choice may be given in any three units.

- Unit I**      Waste Water: Industrial Wastewater – Characterization, Treatability Studies, Segregation, Battery Limits Treatment, and Pretreatment, Control of Pollutants.
- Unit II**      Municipal Sewage: Definition of Sewage Water Carriage System, Cross –Sections And Classification of Sewers; Sewage Treatment: Various Processes: Preliminary, Primary, Secondary Treatment, Attached And Suspended Growth Processes, Activated Sludge, Sludge Digestion, Septic Tank, Imhoff Tank, Oxidation Ponds.
- Unit III**      Industrial Waste Water Treatment & Design of Equipments: Coagulation, Sedimentation, Thickening, Precipitation, Biological Oxidation, Biomethanation, Adsorption, Ion Exchange, Membrane Separation, Chemical Oxidation, Sludge Dewatering And Disposal Methods..
- Unit IV**      Control of Water Pollution From Organic Chemicals: Refinery, Petrochemical, Distillery, Pulp And Paper, Textile Fertilizer, Tanneries, Food And Pharmaceutical Industries, Coke Ovens And Steel Plants.
- Unit V**      Wastewater Disposal: Disposal By Dilution Factors Affecting Self-Purification of Polluted Streams, Oxygen Sag Curve, Disposal on the Surfaces.

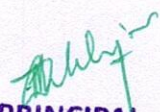
**Text Books:**

1. Water and waste water Technology ,Marks and Hammer.
2. Water and waste water Treatment, Humenick M.J. (Mc Graw Hill)
3. Wastewater Engineering, Metcalf and Eddy.

**Reference books:**

1. Waste water Treatment for pollution control, Areeivala S.J. (Tripathi private Ltd)
2. Industries pollution control, W.W. Eckenfelder (Mc Graw Hill)



  
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**RAIPUR INSTITUTE OF TECHNOLOGY**  
Chandiauna, Mandirhasaud, Raipur (C.G.)



**“Experimental Study On Effect Of Three Phase Fluidization On  
Reduction Of Selective Heavy Metal Ions From Ground Water”**

A Thesis Submitted To

**CHHATTISGARH SWAMI VIVEKANANDA TECHNICAL UNIVERSITY**

**BHILAI (C.G.), India**



In partial fulfillment

For the award of the Degree

Master of Technology

In

Environmental Engineering

By

**DHANSHREE MONE**

Enrollment No. AN1658

Roll No. 501203018006

Under the Guidance of

**Dr. Vaishali Pendse**

(Associate Professor)

Department of Chemical Engineering



**RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR**

Chhatouna, Mandir Hasaud, Raipur (C.G.) - 492101

Session 2020-2021



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)**

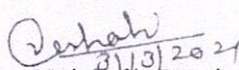


## CERTIFICATE OF THE SUPERVISOR

This is to certify that the thesis entitled "Experimental Study On Effect Of Three Phase Fluidization On Reduction Of Selective Heavy Metal Ions From Ground Water" is a record of bonafide research work carried out by Dhanshree Mone bearing Roll No.: 501203018006 & Enrollment No.: AN1658 under my guidance and supervision for the award of Degree of Master of Technology in the faculty of Environmental Engineering, of Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the thesis

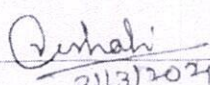
- Embodies the work of the candidate herself,
- Has duly been completed,
- Fulfils the requirement of the ordinance relating to the M.Tech degree of the University and
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.

  
Dr. Vaishali Pendse

Associate Professor

Department of Chemical Engineering

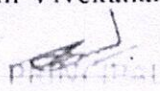
Raipur Institute of Technology, Raipur

  
(Signature of the Head of Department)

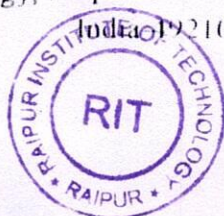
Department of chemical Engineering

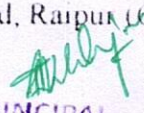
Raipur Institute of Technology, Raipur

Forwarded to Chhattisgarh Swami Vivekanand Technical University Bhilai

  
(Signature of the Principal)

Raipur Institute of Technology, Raipur Chhatouna, Mandur Hasaud, Raipur (C.G.)



  
PRINCIPAL  
RAIPUR INSTITUTE OF TECHNOLOGY  
CHHATOUNA, MANDIRHASAUD, RAIPUR (C.G.)

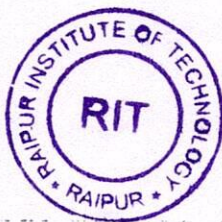


## ABSTRACT

Today's most common and serious problem is water pollution. Water maybe of any place, it may be surface, ground or industrial waste water, if polluted is harmful for the environment, animals, humans and all the living beings. Water contains many pollutants which change its physico-chemical properties making it unfit for drinking and other purposes. Among various pollutants, heavy metals are those pollutants which make water toxic and when present in excess concentration can cause deadly effects on the living beings. Many advance and effective technologies are applied for water treatment like filtration, coagulation, precipitation, adsorption, nanotechnology, fluidization, bioremediation, etc. Different types of materials are used in these processes like various kinds of membranes, adsorbents, nanoparticles.

Present study deals with the treatment of water containing heavy metals using fluidization as the process. Fluidization process which is used in the study involves three phase fluidization in which water, air are used as liquid and gas phase respectively and the solid material used as an adsorbent is zeolite. In the fluidization process many types of solid materials can be used and with different combinations.

Zeolites are extensively used in ion exchange and adsorption processes due to their low cost, worldwide abundance, high exchange capacity and selectivity properties. In the present research work, fluidization process was carried out and the effect of zeolite was studied on the concentration of metal ions. Effect on metal ion concentration was studied by varying the parameters like bed height, gas flow rate and time. Water samples were taken from Raipur city from the popular residential areas. And samples were tested for both pre and post treatment for iron and manganese metal ions. All the samples contained iron which was not under the permissible limits but manganese was under permissible limit. The post result of the samples showed reduction in the concentration of metal ions.



  
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**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,  
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Semester: M.E. IInd

Subject: **Environmental Measurement &  
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Branch: Chemical Engg.(Environmental Engg.)

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Total Theory Periods: 40

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Note: Internal choice may be given in any three units.

- Unit I** Evolution of EIA; EIA at Project, Regional, And Policy Levels, EIA Process on India And Other Countries.
- Unit II** EIA Methodologies, Screening and Scooping Criteria, Rapid & Comprehensive EIA, Economic Evaluation Methods, Practical Applications of EIA.
- Unit III** Lifecycle Design and Analysis, Environmental Auditing, and Ecolabeling, Biodiversity.
- Unit IV** Methodology of Environmental Management --Review National And International Protocols, Environmental Quality Criteria And Standards, Significant Sources of Water & Air Pollution, Indices of Environmental Quality.
- Unit V** Preparation of Management Plan --Case Studies, And Metropolitan Air Quality Improvement Plan.


**Text Books:**

1. G.J. Rau and C.D.Wooten, Environmental impact analysis handbook, McGraw-Hill
2. Rosencranz S. Divan, M.L.Noble, Environmental Law and Policies in India-cases, material and status, Tripathi Pvt. Ltd. Bombay

**Reference books:**

1. S.Musharraf, Legal aspects of environmental pollution and its Management, C.B.S.Publishers, Delhi



  
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**“MODERN APPROACH FOR ASSESSING  
ENVIRONMENTAL PERFORMANCE AND RISK  
ASSESSMENT OF AN INTEGRATED TOWNSHIP AS  
POLLUTION DIMINUTION EFFORT”**

A Thesis submitted

to

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL  
UNIVERSITY**

**BHILAI (C.G.), India**

*In partial fulfillment*

*For the award of the Degree*

*of*

**Master of Technology**

In

**ENVIRONMENTAL ENGINEERING**

By

**ANSHUL SUNIL MAHESHWARI**

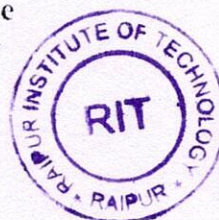
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Session: 2019 - 2021



## CERTIFICATE OF THE SUPERVISOR

This is to certify that the report of the thesis entitled "MODERN APPROACH FOR ASSESSING ENVIRONMENTAL PERFORMANCE AND RISK ASSESSMENT OF AN INTEGRATED TOWNSHIP AS POLLUTION DIMINUTION EFFORT" is a record of bonafide research work carried out by ANSHUL SUNIL MAHESHWARI bearing Roll No. 501203019022 & Enrollment No.: AJ9058 under my guidance and supervision for the award of Degree of Master of Technology in Environmental Engineering from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the thesis

- Embodies the work of the candidate him herself.
- Has duly been completed.
- Fulfills the requirement of the Ordinance relating to the M Tech degree of the University and
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.

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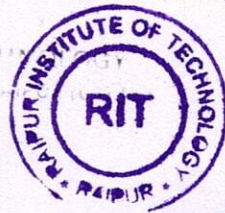
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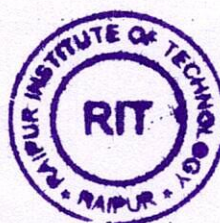
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