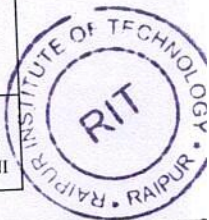
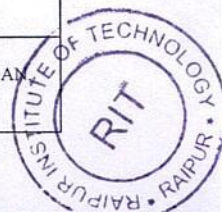


1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during the session 2023-2024

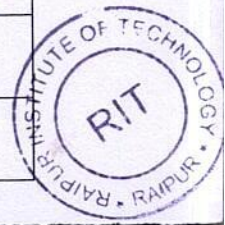
2023-2024					
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech Biotechnology	018	Pharmaceutical Biotechnology	D018711(018)	2023-24	Anjali Bhosale, Divya Sahu
B.Tech Biotechnology	018	Enzyme Technology	C018612(018)	2023-24	Athrva Trivedi, Harsh Ghritlahare, Ayush Patel
B.Tech Biotechnology	018	Agriculture Technology	D018811(018)	2023-24	Ekta Sahu, Poonam Sahu, Varsha soi, Tamanna Samuel, Joshna Lal
B.Tech Biotechnology	018	Phytochemistry	D000711(018)	2023-24	Pushpanjali Verma, Shristi Sharma
B.Tech Biotechnology	018	Analytical Techniques	C018513(018)	2023-24	Priyanka Verma , Jyoti sahu
B.Tech Biotechnology	018	Entrepreneurship and Startups Lab	C018521(018)	2023-24	Mansi Chandrakar, Ayushi Panigrahi
B.Tech Biotechnology	018	Microbial Technology	B018312(018)	2023-24	Vishesh Kumar Sharma,Rahul Thomas, Ujjawal Kumar Shukla, Tekram Lodhi
B.Tech Biotechnology	018	Bio Chemistry	B018311(018)	2023-24	Sambhavi Sahu, Sunanda Sahu
B.Tech Biotechnology	018	Bioinformatics and Computational Biology	B018414(018)	2023-24	Pandru Gota, Amarsingh Kachlam, Sulendra Kumar Nureti
B.Tech Chemical Engineering	019	Mass Transfer-II	D019711(019)	2023-24	Abhijeet Mukherjee, Lakshya Kumar Kashyap, D Anand Rao, Purvesh Kumar Sahu, Arkadyuti Barat, Md. Obaid
B.Tech Chemical Engineering	019	Organic Process Technology	B019413(019)	2023-24	Rahul Yadav, Bhagwat, Ramsevak Lodha, Dinesh Kumar Kanwar, B Arun Prasad, P Mohan Raju
B.Tech Chemical Engineering	019	Material Science	B019415(019)	2023-24	Rishi Kumar Singh, D Bala Krishna, Pratiba Panda, Rajesh Kumar Rathore, Ghanesh Kumar Baghel
B. The Civil Engineering	020	Structural Engineering Design-I	C020511(020)	2023-24	MOHAMMAD LUCKYBUL, MOHAMMAD IMTIYAZ, DAMEND PATEL, TEEKARAM SAO, ASMITA TIRKEY, ANURAG
B. The Civil Engineering	020	Structural Analysis	C020531(020)	2023-24	ANURADHA SAHU,PAWAN SINHA, SRISHTI NAG, TRINIT KUMAR TANDE, SURABHI, BABEETA
B. The Civil Engineering	020	Concrete Technology	C020532(020)	2023-24	KHUSHBOO GAVEL, RAHUL PATLEY, RAVI RAUSHAN KUMAR, SEVATI SAHU, UMA, GOPESH KUMAR SAHU
B. The Civil Engineering	020	Surveying & Geomatics	B020414(020)	2023-24	PRITAM NISHAD, NARHARI PRASAD, PRINCY KANWAR, AMBEY DHURUW, AKSHAY DHURUW, VIJAY DHURUW
B. The Civil Engineering	020	Structural Engineering Design-II	C020611(020)	2023-24	BHUESHWAR KUMAR DHURUW, KAMESHWAR VERMA, YAMINI SONKAR, MOHANI, HARSH SONI



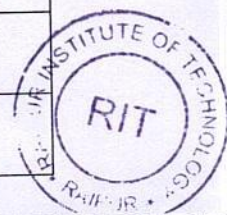
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech. Computer Science and Engineering	022	Database Management System	B022413(022)	2023-24	KHUSHI SONCHHATRA, Jharna Chandrakar, Deepak Kumar Sahu
B.Tech. Computer Science and Engineering	022	Computer Networks	C022512(022)	2023-24	BHAGVENDRA SINGH, Ashish Tripathi, Anurag Verma
B.Tech. Computer Science and Engineering	022	Data Analytics and Python	C022514(022)	2023-24	PATHARKAR SOHAM, Aditya, Raut, Jalla Upendra Rao
B.Tech. Computer Science and Engineering	022	Object Oriented Analysis and Design	C022532(022)	2023-24	POORAN KUMAR PATEL, Omkar Verma, Tikam Chandrakar
B.Tech. Computer Science and Engineering	022	Operating System	B022315(022)	2023-24	SUDHAKAR PATEL, Priyanshu Verma, Anand Biswas
B.Tech. Computer Science and Engineering	022	Principle of Programming Language	B022313(022)	2023-24	Durgesh Sahu
B.Tech. Computer Science and Engineering	022	Data Structures & Algorithms	B022312(022)	2023-24	SANSKAR SHARMA, Sunny Dubey, Yahsaswi Upadhyay
B.Tech. Computer Science and Engineering	022	Compiler Design	C022611(022)	2023-24	PRERNA SAHU, Avishkar Bhardwaj, Maaz Diddiqui
B.Tech. Computer Science and Engineering	022	Object Oriented Programming (with JAVA)	B022414(022)	2023-24	DHARAM KUMAR SAHU, Ankit Prajapati, Arif Raza Ansari
B.Tech. Computer Science and Engineering	022	Digital Image Processing	C022533(022)	2023-24	MD. HUSSAIN KHAN, Palak Sharma, Sheikh ADEEB SHARIF
B.Tech. Computer Science and Engineering	022	Software Engineering and Project Management	C022612(022)	2023-24	UTKARSH VERMA, Aditya Kumar Sharma, Priyanshu Patel
B.Tech. Computer Science and Engineering	022	Web Technologies	C022631(022)	2023-24	HARSH BHATNAGAR, PRANEET MISHRA, AKSHAT VISHKARMA
B.Tech. Computer Science and Engineering	022	Internet of things	C022632(022)	2023-24	AITAD SHARMA, AYUSHMAAN SAHOO, ISHA VISWAKARMA
B.Tech. Computer Science and Engineering	022	Soft Computing	C022633(022)	2023-24	KOMAL RAJPUT, PRACHI VERMA
B.Tech. Computer Science and Engineering	022	Cyber Security	C000614	2023-24	RAJU
B.Tech. Computer Science and Engineering	022	Machine Learning	D022711(022)	2023-24	MEHUL KUMAR DEWANGAN, AANCHAL RAJ SINGH



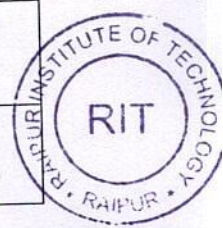
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
B.Tech. Computer Science and Engineering	022	Data Mining and warehousing	D022712(022)	2023-24	UTKARSH VERMA, OMKAR VERMA
B.Tech. Computer Science and Engineering	022	Software Testing	D000721(022)	2023-24	REENA GAWDE, VAISHALI SAHU
B.Tech. Computer Science and Engineering	022	Neural Network	D000718(022)	2023-24	Dhananjay Sahu
B.Tech. Computer Science and Engineering	022	Cyber Law	D022811(022)	2023-24	SHAIKENDRA KUMAR JAISWAL, VIDYASHANKAR YADAV
B.Tech. Computer Science and Engineering	022	Multimedia and computer vision	D022833(022)	2023-24	ARYAN CHANDRAKAR, ADITYA KUMAR, MARIYAM NADEEM
B.Tech. Computer Science and Engineering	022	R Programming	D022832(022)	2023-24	MD. MAAZ SIDDIQUI, DHARAM KUMAR SAHU
B.E. Electrical and Electronics Engineering	024	Microcontroller and Embedded System	C024632(024)	2023-24	Devendra Kumar, Khilesh Ratre, Ravi Gendre, Ulesh Pradhan, Surbhi Paikra
B.E. Electronics and Telecommunication Engineering	028	Instrumentation & IoT	D028712(028)	2023-24	Jatin Patel, Nalleshwar Thakur, Chandraprakash Verma, Subhuj Kumar Pandey
B.E. Electrical and Electronics Engineering	024	Electrical circuit analysis	B024312(024)	2023-24	Rahul Kumar Singh, Indraneel Chowdhury, Rupak Roy, Moondeep Nath
B.E. Electrical and Electronics Engineering	024	Electrical Machine I	B024313(024)	2023-24	Chandak, Jhamman Lal Yadav, Yogesh Kumar, Prahlad Singh
B.Tech Mechanical Engineering	037	Design of Machine Elements	C037611(037)	2023-24	Suraj Kumar Pandit, Suman Mandal, Ajay Navrang, Abhishek Kumar
B.Tech Mechanical Engineering	037	Fluid Mechanics	B037412(037)	2023-24	Shamsad Ansari, Yogesh Kumar Chandrakar, Soamriya,
B.Tech Mechanical Engineering	037	Fluid Machines	C037513(037)	2023-24	Adarsh Dixit, Bhaskar Sahu, Divyansh Verma, Rishikesh yadu, Chandan Patel, Rohit Patel, Love nishad, Atal kumar
M.Tech Environmental Engineering	30	Principals of Environmental Engg	530111 (19)	2023-24	Praveen Kumar Adil
M.Tech Environmental Engineering	30	Advanced Water Supply Engg.	530231 (19)	2023-24	Pankaj Singh
M.Tech Environmental Engineering	30	Environmental Measurement & Impact Assessment	530214 (19)	2023-24	T Jayshree
M.Tech Environmental Engineering	30	Principals of Environmental Engg	530111 (19)	2023-24	Urwashi Chandrakar
M.Tech Environmental Engineering	30	Energy & Environment	530131 (19)	2023-24	Jitendra Katre



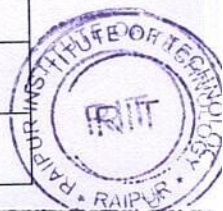
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship
M.Tech Environmental Engineering	30	Advanced Water Supply Engg.	530231 (19)	2023-24	Surabhi Sharma
M.Tech Environmental Engineering	30	Advanced Water Supply Engg.	530231 (19)	2023-24	Anisha Agrawal
M.Tech Environmental Engineering	30	Energy & Environment	530131 (19)	2023-24	Ashish Nanda
M.Tech Environmental Engineering	30	Water Pollution Control	530114 (19)	2023-24	Swapnil Tiwari
M.Tech Environmental Engineering	30	Principals of Environmental Engg	530111 (19)	2023-24	Prateek Kumar Tiwari
M.Tech Environmental Engineering	30	Energy & Environment	530131 (19)	2023-24	Pushpendra Verma
M.Tech Environmental Engineering	30	Energy & Environment	530131 (19)	2023-24	Deeksha Singh
M.Tech Environmental Engineering	30	Water Pollution Control	530114 (19)	2023-24	Salman Rashid
M.Tech Environmental Engineering	30	Natural Resource Management	530132 (19)	2023-24	Dolly Verma
M.Tech Environmental Engineering	30	Advanced Water Supply Engg.	530231 (19)	2023-24	Shiv Lal
M.Tech Environmental Engineering	30	Advanced Water Supply Engg.	530231 (19)	2023-24	Mayank Mishra
M.Tech Environmental Engineering	30	Principals of Environmental Engg	530111 (19)	2023-24	Arjun Kumar
M.Tech Environmental Engineering	30	Environmental Measurement & Impact Assessment	530214 (19)	2023-24	Sandeep Kumar Samanta
M.Tech Environmental Engineering	30	Process Equipment Design -II	C019613(019)	2023-24	Ankit Jaiswal
M.Tech Environmental Engineering	30	Energy & Environment	530131 (19)	2023-24	Minali Koshley
M.Tech Environmental Engineering	30	Plant Utility & Safety Engineering	C000647(019)	2023-24	Nargish E Shahla
M.Tech Environmental Engineering	30	Fuel Technology	B019313(019)	2023-24	Dageshwari Sahu
M.Tech Environmental Engineering	30	Science & Engineering of Water Pollution Control	653312 (53)	2023-24	Dheeraj Kumar Pandey
M.Tech Environmental Engineering	30	Heat Transfer Operation	B019412(019)	2023-24	Krishan Kumar Matwale



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
M.Tech- Power Electronic Engineering	62	Power Electronics in wind & Solar Power Converters	562333(24)	2023-24	Devendra Kumar
M.Tech- Power Electronic Engineering	62	Fuzzy Systems	562231(24)	2023-24	Aditya Singh
M.Tech- Power Electronic Engineering	62	EHV AC & DC	559211(24)	2023-24	Sheikh Shadab
M.Tech- Power Electronic Engineering	62	Power Electronics Drives	562212(24)	2023-24	Varsha Thakur
M.Tech- Power Electronic Engineering	62	Switched mode Power Conversion	562211(24)	2023-24	Rashi Singh
M.Tech- Power Electronic Engineering	62	Power Electronics Simulation Lab	562222(24)	2023-24	Sakshi Singh
M.Tech- Power Electronic Engineering	62	Digital Controllers in Power Electronics Application	562133(24)	2023-24	Jay Prakash Dadsena
M.Tech- Power Electronic Engineering	62	Static VAR Controller & Harmonic Filtering	562311(24)	2023-24	M.Vijay Kumar
M.Tech- Power Electronic Engineering	62	Digital Control Theory	562331(24)	2023-24	Filza Ahsan
MBA	76	Marketing Management	576213(76)	2023-24	ABHISHEK SOLOMON, PRATIBHA SALAM, SHIVANI SAHU, ALOK TIWARI, RISHABH CHAWDA
MBA	76	Management Concepts & Processes	576111(76)	2023-24	ALOK SINGH, TANNU SAHU, RITIK SINGH, SANSKAR THAKUR, SHIVANI VASWANI
MBA	76	Managerial Communication	576115(76)	2023-24	RAVINDRA AGRAWAL, ASHISH PANDEY, INDRANEEL ROY, RUSHALI SAHU, SOUMYA GUNDHAR
MBA	76	Managerial Economics	576114(76)	2023-24	MEGHA SONKAR, AAKASH DUTT ARYA, OM BAGHEL, ANAND MOHAN SINGH, NIKITA SHRIVASTAVA
MBA	76	Business Ethics and CSR	576118(76)	2023-24	KUNAL MISHRA, ABHIJIT BISWAS, NEHA SINGH, ARYAN SHUKLA, BHAVESH DWIVEDI
MBA	76	Management Information System & DSS	576211(76)	2023-24	RIYA PILLAI, SHIKHAR SINHA, CHANDANI KUMARI, LAKSHMI PATHAK, KAJAL KAMANI
MBA	76	Research Methodology	576212(76)	2023-24	ANIKET BAWANKAR, KRITESH CHANDRAVANSHI, ISHA DEWANGAN, AANCHAL KSHIRSAGAR, NISHA GUPTA
MBA	76	Entrepreneurship Development	576218(76)	2023-24	SUMITA BERA, DIVYANSH SHARMA, SURAJ MISHRA, NATASHA AGRAWAL, RITIK TIWARI



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
MBA	76	Advanced Financial Management	576214(76)	2023-24	SHIVANI SHARMA, SHANKAR MAKHIJA, AANCHAL VERMA, AYUSH SINGH, MAYANK AGRAWAL, DIVYANSH SHRIVASTAV
MBA	76	Materials Management	576217(76)	2023-24	ABHISHEK SOLOMON, PRATIBHA SALAM, SHIVANI SAHU, ALOK TIWARI, RISHABH CHAWDA
MBA	76	Organizational Development	576312(76)	2023-24	ALOK SINGH, TANNU SAHU, RITIK SINGH, SANSKAR THAKUR, SHIVANI VASWANI
MBA	76	Optimization Methods	576311(76)	2023-24	RAVINDRA AGRAWAL, ASHISH PANDEY, INDRANEEL ROY, RUSHALI SAHU, SOUMYA GUNDHAR
MBA	76	Corporate Strategy	576411(76)	2023-24	MEGHA SONKAR, AAKASH DUTT ARYA, OM BAGHEL, ANAND MOHAN SINGH, NIKITA SHRIVASTAVA
MBA	76	Behavioral Science	576113(76)	2023-24	KUNAL MISHRA, ABHIJIT BISWAS, NEHA SINGH, ARYAN SHUKLA, BHAVESH DWIVEDI
MBA	76	Accounting for Managers	576116(76)	2023-24	RIYA PILLAI, SHIKHAR SINHA, CHANDANI KUMARI, LAKSHMI PATHAK, KAJAL KAMANI
MBA	76	Human Resource Management	576215(76)	2023-24	ANIKET BAWANKAR, KRITESH CHANDRAVANSHI, ISHA DEWANGAN, AANCHAL KSHIRSAGAR, NISHA GUPTA
MBA	76	Production & Operation Management	576216(76)	2023-24	SUMITA BERA, DIVYANSH SHARMA, SURAJ MISHRA, NATASHA AGRAWAL, RITIK TIWARI
MCA	21	Advanced Database Management System	2021172(021)	2023-24	Avantika Tiwari
MCA	21	Management Information System	5021285(076)	2023-24	Jayant Yadu
MCA	21	Supply chain Management	5021282(076)	2023-24	Devendra
MCA	21	Mathematical Foundations of Computer Science	521151(14)	2023-24	Umesh Lahra
MCA	21	Data Structures	521253(21)	2023-24	Nisha Yadav
MCA	21	Computer Oriented Numerical Analysis	521254(14) C	2023-24	Madhulika Netam
MCA	21	Introduction to Management Functions	521255(76)	2023-24	Lucky Vishwakarma
MCA	21	Programming Laboratory in RDBMS	521262(21)	2023-24	Anurag Bani
MCA	21	Computer Networks and Communication	521351(21)	2023-24	Nikhil Minj



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
MCA	21	Formal Languages and Automata Theory	521353(21)	2023-24	Sudeep Kujur
MCA	21	Software Engineering	521453(21)	2023-24	Hemant Verma
MCA	21	Management Accounting	521576(76)	2023-24	Chumesh Bhoi
MCA	21	Management Information System	521574(76)	2023-24	Dilharan
MCA	21	Computer Graphics and Image Processing	5021371(021)	2023-24	Naiema Begum
MCA	21	System Programming	521476(21)	2023-24	Yamnee
MCA	21	Logic & Functional Programming	521472(21)	2023-24	Praveen Kumar Vishwakarma
MCA	21	Modeling & Simulation	521474(21)	2023-24	Onkar Prasad
MCA	21	Design & Analysis of Algorithms	521475(21)	2023-24	Hem Kumar Kashyap
MCA	21	Network Programming	521473(21)	2023-24	Ekta Sharma
MCA	21	Computer Oriented Optimization	521352(14)	2023-24	Tikeshwar



**"EXTRACTION OF KARETIN FROM SHEEP HAIR
AND PREPARATION OF HAIR MASK AND BODY
LOTION"**

A MAJOR PROJECT REPORT

SUBMITTED TO

DEPARTM.ENT OF BIOTECHNOLOGY

RAIPUR INSTITUTE OF TECHNOLOGY



**SINCE 1995
RITEE**

RAIPUR (C.G.)

SUBMITTED BY

ANJALI BHONSLE (301201820001)

8TH SEMESTER B.TECH BIOTECHNOLOGY

SESSION 2020-2024

UNDER THE SUPERVISION OF

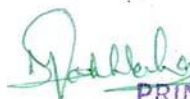
SUPERVISOR: DR. TANUSHREE CHATTERGEE

HOD, Department of Biotechnology,

RITEE, Raipur, Chhattisgarh, India.



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PRINCIPAL

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



RAIPUR INSTITUTE OF TECHNOLOGY

SINCE 1995
RITEE

(Under the aegis of Mahanadi education society)
Approved by AICTE, New Delhi, Affiliated to CSVTU BHILAI

CERTIFICATE BY THE EXAMINER

This is to approve that the work presented in this major project entitled "**EXTRACTION OF KERATIN FROM SHEEP HAIR AND PRODUCTION OF HAIR MASK AND BODY LOTION**"

Submitted by

Name of the Student

ANJALI BHONSLE

Roll No.

301201820001

Has been examined and undersigned as a part of the examination for the award of the degree of Bachelor of Engineering in Biotechnology of Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.).

(Signature of examiner)

Internal

(Signature of examiner)

External



[Signature]

PRINCIPAL

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

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ABSTRACT

Keratin is a fibrous protein found in hair, skin, and nails, known for its strengthening and protective properties. Keratin is a protein that helps form hair, nails and your skin's outer layer (epidermis). It helps support your skin, heal wounds and keep your nails and hair healthy. Using keratin in hair masks and lotions offers a range of benefits. Firstly, it strengthens hair by reinforcing the strands, reducing breakage, and promoting overall resilience. Secondly, keratin is effective in repairing damage caused by various factors like heat styling, chemical treatments, and environmental stressors, restoring the hair's health and vitality. Additionally, keratin improves elasticity, reducing frizz and making hair more manageable. It also enhances shine, giving hair a healthier and more vibrant appearance.

Extraction of keratin from hair involves several steps such as cleaning, grinding, and enzymatic hydrolysis to break down the protein into smaller, soluble components. This extracted keratin can then be used in the production of hair masks and body lotions, adding strength and moisture retention benefits to these products.

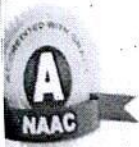
Hair masks enriched with keratin can help repair damaged hair, improve elasticity, and enhance shine. Similarly, body lotions containing keratin can nourish the skin, promote collagen production, and provide a protective barrier against environmental stressors. The extraction and utilization of keratin in cosmetic products offer promising avenues for enhancing hair and skin health.



Prabha
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"EXTRACTION OF KERATIN FROM SHEEP HAIR AND PRODUCTION OF HAIR MASK & BODY LOTION"



Project phase II Report

Submitted to



**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY (CSVTU)**

By

DIVYA SAHU

BTech BIOTECHNOLOGY

8TH SEMESTER

< 2020 – 2024 >

Under the supervision of

Dr. Tanushree Chatterjee,

HOD, Department of Biotechnology,

RITEE, Raipur, Chhattisgarh, India.

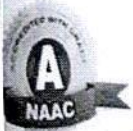


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PRINCIPAL

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

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RAIPUR INSTITUTE OF TECHNOLOGY

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



CERTIFICATE BY THE GUIDE

This to certify that the report of the major project submitted is the outcome of the project work entitled " **EXTRACTION OF KERATIN FROM SHEEP HAIR AND PRODUCTION OF HAIR MASK AND BODY LOTION** " carried out by **DIVYA SAHU** (Roll No. 301201820004 & Enrollment No. BK1921) under my supervision for the award of the degree of Bachelor of Technology in Biotechnology from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India. 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 both in the respect of concept and language for being referred to examiners.

(Signature of the guide)

Dr. Tanushree Chatterjee
HOD Biotechnology RITEE

Forwarded to the Chhattisgarh Swami Vivekanand Technical University, Bhilai
(C.G.)

(Signature of the Head Department)

Dr. Tanushree Chatterjee
HEAD
Deptt. of Biotechnology,
Raipur Institute of Technology,
RAIPUR, (C.G.) 492101



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

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RAIPUR INSTITUTE OF TECHNOLOGY

{Under the aegis of Mahanadi Education Society) Approved by AICTE,

New Delhi, Affiliated to CSVTU, Bhilai}



Dr. Tanushree Chatterjee

Head of the Department

RITEE. Department of Biotechnology

E-mail: tanushree52004@yahoo.com

Date: 24/4/24

APPROVAL CERTIFICATE

This is to approve that the work presented in this major project entitled **"EXTRACTION OF KERATIN FROM SHEEP HAIR AND PRODUCTION OF HAIR MASK AND BODY LOTION"** was carried out by **DIVYA SAHU** is submitted for the fulfilment of the award of the degree of Bachelor of Technology in Biotechnology, to Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.) is the original work carried out under the guidance and supervision of **Dr. Tanushree Chatterjee**, Head of Department. Biotechnology, Raipur Institute of Technology, Raipur, (C.G) and that no part of this project has been submitted elsewhere for the award of any degree or diploma.


Dr. Tanushree Chatterjee




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

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ABSTRACT

Keratin is a fibrous protein found in hair, skin, and nails, known for its strengthening and protective properties. Keratin is a protein that helps form hair, nails and your skin's outer layer (epidermis). It helps support your skin, heal wounds and keep your nails and hair healthy. Using keratin in hair masks and lotions offers a range of benefits. Firstly, it strengthens hair by reinforcing the strands, reducing breakage, and promoting overall resilience. Secondly, keratin is effective in repairing damage caused by various factors like heat styling, chemical treatments, and environmental stressors, restoring the hair's health and vitality. Additionally, keratin improves elasticity, reducing frizz and making hair more manageable. It also enhances shine, giving hair a healthier and more vibrant appearance.

Extraction of keratin from hair involves several steps such as cleaning, grinding, and enzymatic hydrolysis to break down the protein into smaller, soluble components. This extracted keratin can then be used in the production of hair masks and body lotions, adding strength and moisture retention benefits to these products.

Hair masks enriched with keratin can help repair damaged hair, improve elasticity, and enhance shine. Similarly, body lotions containing keratin can nourish the skin, promote collagen production, and provide a protective barrier against environmental stressors. The extraction and utilization of keratin in cosmetic products offer promising avenues for enhancing hair and skin health.

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

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Chhattisgarh Swami Vivekananda Technical University, Newai

Name of the Program: Bachelor of Technology

Semester: B.Tech – 7th

Subject: Pharmaceutical Biotechnology

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 2

Branch: Biotechnology

Course Code: D018711(018)

L: 3 T: 1 P: 0 Credits: 4

Course Objective(s):

- To impart knowledge on the basic principles of pharmaceutical Biotechnology.
- To make the students conversant with different technique fermentation, r-DNA, and gene therapy and how biotechnological technique are applicable in Pharmaceutical science especially in drugs discovery.
- The knowledge gained to understand and evaluate the different pharmaceutical parameters.
- To have the expertise and knowledge needed to be involved in different pharmaceutical care settings in community pharmacies, industrial sector, pharmaceutical sales and marketing, and drug legislations
- To have the ability for continuous self-education of new trends emerging in different fields of pharmacy through different available resources.

UNIT I Introduction of Pharmaceuticals Biotechnology

- Historical prospective of Pharmaceutical biotechnology, biotechnology and industry.
- GMP Compliance and biopharmaceutical facilities.
- Introduction to different dosage forms and formulations.

UNIT II Pharmacology

- Pharmacology.
- Dose determination.
- Route of drug administration.
- ADME of drugs.

UNIT III r-DNA Technology and Vaccines

- Current trends in Vaccines.
- Microbial transformation for production of important pharmaceuticals like steroids.
- Brief description of r-DNA technology.

UNIT IV Fermentation technology

- Fermentation Technology and Scale up Process.
- Production of Pharmaceuticals: through fermentation technology.
- Genetically engineered cells (some novel proteins, hormones, and interferon)
- Production of antibiotics (penicillin, tetracycline and streptomycin).

UNIT V Drug and Delivery System

- Drug discovery and development, Principles of targeted drug delivery system.
- Delivery consideration of biotechnological products.
- Delivery methods of peptides and proteins and related barriers.





PROJECT PHASE II



ON
"DESIGN OF BIOCOMPOSITES USING PINEAPPLE
LEAF (*Ananas comosus*)"

Submitted to



Chhattisgarh Swami Vivekanand Technical University,
Bhilai (India)

BIOTECHNOLOGY

RAIPUR INSTITUTE OF TECHNOLOGY

by

Athrva Trivedi (301201820002)

Ayush Patel (301201820025)

Harsh Ghritlahare (301201820007)

8th sem B. Tech Biotechnology

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

Under the supervision of

DR. TANUSHREE CHATTERJEE, HEAD OF DEPARTMENT
MR. VIRENDRA VAISHNAV, ASST. PROFESSOR
BIOTECHNOLOGY, RAIPUR INSTITUTE OF
TECHNOLOGY

2020-24



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Department of Biotechnology
Raipur Institute of Technology
Chhatauna, Mandir Hasaud Raipur,
C.G.-492001, India



Dr. Tanushree Chatterjee
Head of the Department RITEE,
Department of Biotechnology
E-mail: tanushree52004@yahoo.com

Date:

APPROVAL CERTIFICATE

This is to approve that the work presented in this minor project entitled "DESIGN OF BIOCOMPOSITES USING PINEAPPLE LEAF (*Ananas comosus*)" was carried out by Mr. Athrva Trivedi, Ayush Patel, Harsh Ghritlahare submitted for the partial fulfillment of the requirement of the award of the degree of Bachelor of Technology in Biotechnology, in RITEE, Raipur is the original work carried out under the guidance and supervision of Dr. Tanushree Chatterjee, Head of Department, Biotechnology, Raipur Institute of Technology, Raipur, (C.G.) and that no part of this project has been submitted elsewhere for the award of any degree or diploma.


HEAD OF DEPARTMENT
(Dr. Tanushree Chatterjee)

Collage Campus
Chhatauna, Mandir Hasaud
Raipur- 492001(C.G.) India

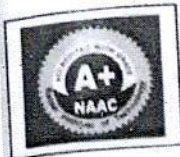
Head Office
Near Bal Ashram, Kutchery chowk,
Jail Road, Raipur (C.G.) India- 492001
Tel: 077125 34854, 09513397459




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RAIPUR INSTITUTE OF TECHNOLOGY (RITEE)

(An AICTE approved college affiliated to CSVTU)

Sector 1, Chhatauna, Mandir Hasaud, Raipur

C.G-492001, India.

Email: info@rit.edu.in Web: www.rit.edu.in/



CERTIFICATE BY THE GUIDE

This to certify that the report of the major project submitted is the outcome of the project work entitled "DESIGN OF BIOCOMPOSITES USING PINEAPPLE LEAF (*Ananas comosus*)" was carried out by Mr. Athrva Trivedi, Ayush Patel, Harsh Ghritlahare (Roll No. 301201820002, 301201820025, 301201820007 & Enrollment No. BK1910, BK2030, BK1936) under our supervision for the award of the degree of Bachelor of Technology in Biotechnology from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

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 both in the respect of concept and language for being referred to examiners.

(Signature of the guide)

Dr. Tanushree Chatterjee

Head of Department,
Biotechnology RITEE

Forwarded to the Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.)

(Signature of Head of Department)
Dr. Tanushree Chatterjee
HEAD,
Department of Biotechnology,
Raipur Institute of Technology,
RAIPUR, (C.G.) 492101
Department of Biotechnology RITEE




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Abstract

In this research work, the design and development of fibre biocomposite from epoxy resin with pineapple leaf (*Ananas comosus*) fibre reinforcement are discussed. The biocomposite material was developed by the hand lay-up method according to the proportion of the fibre and the resin. Natural fibre based biocomposites are under intensive study due to their ecofriendly nature and peculiar properties. The advantage of natural fibres is their continuous supply, easy and safe handling, and biodegradable nature. Although natural fibres exhibit admirable physical and mechanical properties, it varies with the plant source, species, geography, and so forth. Pineapple leave fibre (PALF) is one of the abundantly available wastes materials of Malaysia and has not been studied yet as it is required. A detailed study of chemical, physical, and mechanical properties will bring out logical and reasonable utilization of PALF for various applications. From the socioeconomic perspective, PALF can be a new source of raw material to the industries and can be potential replacement of the expensive and non renewable synthetic fibre. However, few studies on PALF have been done describing the interfacial adhesion between fibres and reinforcement compatibility of fibre but a detailed study on PALF properties is not available. In this review, we covered the basic information of PALF and compared the chemical, physical, and mechanical properties with other natural fibres. Furthermore, it summarizes the recent work reported on physical, mechanical, and thermal properties of PALF reinforced polymer composites with its potential applications.




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Chhattisgarh Swami Vivekananda Technical University, Newai

Name of the Program: Bachelor of Technology

Semester: B.Tech – 6th

Subject: Enzyme Technology

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 2

Branch: Biotechnology

Course Code: C018612(018)

L: 3 T: 1 P: 0 Credits: 4

Course Objective(s):

- To develop skills of students in the area of Enzyme engineering and technology.
- To make the students understand the application of enzymes in different areas of biotechnology as well as towards human welfare.
- An overview of the key enzymes currently used in large scale industrial processes.
- An introduction to downstream processing & purification methods, and enzyme optimization through enzyme discovery and engineering.
- This course serves to provide an awareness of the current and possible future applications of enzyme technologies.

UNIT-I Introduction to Enzyme

- Classification of enzymes; Mechanisms of enzyme action; Concept of active site and energetics of enzyme substrate complex formation.
- Specificity of enzyme action; Principles of catalysis – collision theory, transition state theory.

UNIT-II Kinetics of Enzyme Reactions

- Kinetics of single substrate reactions; Estimation of Michelis –Menten parameters, multi substrate reactions- mechanisms and kinetics.
- Allosteric regulation of enzymes, pH and temperature effect on enzymes & deactivation kinetics.

UNIT-III Enzyme Immobilization

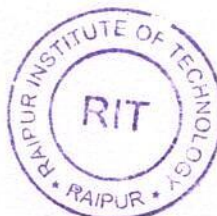
- Physical and chemical techniques for enzyme immobilization – adsorption, matrix entrapment, encapsulation, cross-linking, covalent binding etc.
- Advantages and disadvantages.

UNIT-IV Purification and Characterization of Enzymes from Natural Sources

- Production and purification of crude enzyme extracts from plant and microbial sources.
- Methods of characterization of enzymes.
- Development of enzymatic assays.

UNIT-V Enzyme Biosensors

- Application of enzymes in analysis.
- Design of enzyme electrodes and their application as biosensors in industry, healthcare and environment.





PROJECT PHASE - II
**STUDIES ON THE PROPERTIES OF PONGAMMIA
PINNATA FOR PROBABLE INDUSTRIAL APPLICATION**
SUBMITTED TO



**Chhattisgarh Swami Vivekanand Technical University,
Bhilai (India)**

Branch Biotechnology

RAIPUR INSTITUTE OF TECHNOLOGY

MANDIR HASAUD, CHHATTAUNA, RAIPUR (C.G.)

BY

JOSHNA LAL (301201820028)

VARSHA SOI (301201820022)

TAMANNA PRATHANA SAMUEL

EKTA SAHU

POONAM SAHU

SEMESTER 8th B.TECH BIOTECHNOLOGY

UNDER GUIDANCE OF

Dr. Tanushree Chatterjee

Head of the Department, Raipur Institute of Technology, Raipur

SESSION 2020-24

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

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Approved by AICTE, New Delhi, Affiliated to CSVTU, Bhilai

CERTIFICATE BY THE GUIDE

This to certify that the report of the major project submitted is the outcome of the project work entitled "Studies on the properties of Pongamia Pinnata industrial application carried out by Ms. Joshina Lal(BK2810), Ms.Varsha Soi(BK2013), Ms. Tamanna Samuel(BK2942), Ms. Ekta Sahu(BK1926), Ms. Poonam Sahu(BK1954) Under my supervision for the award of the degree of Bachelor of Technology in Biotechnology from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India. To the best of my knowledge the report.

- 1) Embodies the work of the candidate herself.
- 2) Has duly been completed.
- 3) Is upto the desired standard both in the respect of concept and language for being referred to examiners.

(Signature of the guide)

Dr. Tanushree Chatterjee
HOD
Biotechnology, RITEE

Forwarded to the Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.)

(Signature of the Head of Department)
Dr. Tanushree Chatterjee
Department of Biotechnology
RITEE
HEAD,
Department of Biotechnology,
Raipur Institute of Technology,
RAIPUR. (C.G.) 492101



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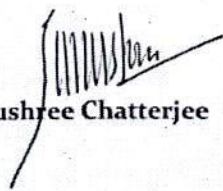
Approved by AICTE, New Delhi, Affiliated to CSVTU, Bhilai

APPROVAL CERTIFICATE

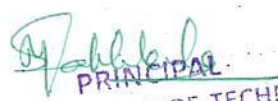
Dr. Tanushree Chatterjee
Head of the Department
RITEE, Department of Biotechnology
E-mail: tanushree52004@yahoo.com

Date:

This is to approve that the work presented in this major project entotled " Studies on the Properties of the Ponagammia Pinnata Industrial Application" was carried out by Varsha Soi, Joshna Lal, Tamanna Samuel, Ekta Sahu, Poonam Sahu submitted for the fulfillment of the award of the degree of Bachelor OF Technology in Biotechnology to Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.) is the original work carried out under the guidance and supervision of Dr. Tanushree Chatterjee, Head of the Department, Biotechnology, Raipur Institute of Technology, Raipur,(C.G.) and that no part of this project has been submitted elsewhere for the award of any degreee or diploma.


Dr. Tanushree Chatterjee




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ABSTRACT

Biodiesel (fatty acid methyl ester) which is derived from triglycerides by transesterification has attracted considerable attention during the past decade as a renewable, biodegradable and nontoxic fuel. Several processes for biodiesel fuel production have been developed, among which transesterification using alkali as catalyst gives high level of conversion of triglycerides to their corresponding methyl ester in a short duration. This process has therefore been widely utilized for biodiesel fuel production in a number of countries. In India, non-edible oils like Karanja oil and Jatropha oil are available in abundance, which can be converted to biodiesel. In the present studies, biodiesel has been prepared from karanja oil. As the acid values of this oil were more than, 3 hence it can be converted to biodiesel by esterification followed by transesterification processes. The methyl ester production by these methods was analysed to ascertain their suitability as diesel fuels. Then the comparison of physicochemical properties was done karanja oil, karanja oil methyl ester and biodiesel. The various properties of methyl esters are found to be comparable with that of diesel fuel. However it requires further studies for considering the product as a suitable biodiesel.

Keywords: *Karanja oil, Biodiesel, Esterification and Transesterification.*




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Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of the Program: Bachelor of Technology

Semester: B.Tech – 8th

Subject: Agriculture Technology

Total Marks in End Semester Exam: 100

Branch: Biotechnology

Course Code: D018811(018)

L: 3 T: 1 P: 0 Credits: 4

Minimum number of Class Tests: 2

Course Objective(s):

- To give the students a clear knowledge of current scenario of agriculture and rural development.
- To make the students learn different agricultural techniques.
- To know about the microbiology of soil.
- To understand the water harvesting methods.
- To know about the crop harvesting methods.

UNIT-I Introduction to Agriculture

- Introduction to agriculture; Indian agriculture: history; Crops, classification, general principles of crop production and introductory agronomy.
- Soil, characteristics, types, importance.
- Agriculture and biotechnology: artificial seeds, genetically modified crops, virus free plants, micropropagation, development of hybrids.

UNIT-II Soil Microbiology

- Soil microbiology: useful and harmful microorganisms, their importance.
- Diseases: disease classification, causal agent, effect of disease, disease control.
- Crop management: nutrition, weeding, irrigation, types, scheduling of irrigation and fertilizers.

UNIT-III Water Harvesting

- Soil conservation and water Harvesting: Soil erosion, causes, effects, methods of erosion control, Crop mixing and crop rotation, strip Cropping.
- Water harvesting; importance, methods, farm pond, percolation pond, dry farming techniques for improving crop production.

UNIT-IV Crop Harvesting Method

- Crop harvesting, methods.
- post harvesting techniques: importance, drying, cleaning, grading, shelling, milling; Storage, purpose, types, loss in storage, methods, packaging, types, packaging methods and materials, techniques.

UNIT-V Principles of Agroforestry

- Definition, objectives, importance and scope of agroforestry, selection of agroforestry tree species and its characteristics.
- Multipurpose trees (MPTs) in agroforestry, protein bank and fodder tree species, tree-crop interaction, soil productivity aspect of agroforestry.





PROJECT PHASE-II REPORT
ON
“EFFECT OF HEAVY METAL ON PLANT GROWTH AND
IMPROVE THROUGH ENDOPHYTIC BACTERIA”

Submitted to
DEPARTMENT OF BIOTECHNOLOGY
RAIPUR INSTITUTE OF TECHNOLOGY



MANDIR HASAUD, CHHATTAUNA, RAIPUR (C.G)

by

Shrishti Sharma (301201820033)

Pushpanjali Verma (301201820032)

8th Semester B.Tech Biotechnology

SESSION 2020-24

UNDER GUIDANCE OF

MR VIRENDRA VAISHNAV

ASST. PROFESSOR BIOTECHNOLOGY DEP



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Approved by AICTE, New Delhi, Affiliated to CSVTU, Bhilai



CERTIFICATE BY THE GUIDE

This to certify that the report of the major project submitted is the outcome of the project work entitled "Effects of heavy metal on plant growth and improve through endophytic bacteria" carried out by Ms. Shrishti Sharma (Roll No. 301201820033 & Enrolment No. BK2916) and Ms. Pushpanjali Verma under my supervision for the award of the degree of Bachelor of Technology in Biotechnology from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India. To the best of my knowledge, the report:

- Embodies the work of the candidate herself.
- Has duly been completed.
- Is upto the desired standard both in the respect of concept and language for being referred to examiners.

(Signature of the guide)

Mr. Virendra Vaishnav

Biotechnology RITEE

Forwarded to the Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G)

(Signature of the head Department)

HEAD,
Deptt. of Biotechnology;
Raipur Institute of Technology,
RAIPUR. (C.G.) 492101

Dr. Tanushree Chatterjee
Department of Biotechnology
RITEE



(Signature of the Principal)

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



Dr. Tanushree Chatterjee
Head of the Department
RITEE, Department of Biotechnology
Email: tanushree52004@yahoo.com

Date: 24/4/24

APPROVAL CERTIFICATE

This is to approve that the work presented in this major project entitled " Effects of heavy metal on plant growth and improve through endophytic bacteria " was carried out by Shrishti Sharma and Pushpanjali Verma submitted for the fulfilment of the award of the degree of Bachelor of Technology in Biotechnology, to Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.) is the original work carried out under the guidance and supervision of Dr. Tanushree Chatterjee, Head Department, Biotechnology, Raipur Institute of Technology, Raipur, (C.G) and that no part of this project has been submitted elsewhere for the award of any degree or diploma.

HEAD OF DEPARTMENT

(Dr. Tanushree Chatterjee)
HEAD,

Deytt. of Biotechnology,
Raipur Institute of Technology,
RAIPUR, (C.G.) 492101



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

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ABSTRACT

Salinity causes disturbance in symbiotic performance of plants, and increases Susceptibility of plants to soil-borne pathogens. Endophytic bacteria are an essential Determinant of cross-tolerance to biotic and abiotic stresses in plants. The aim of this Study was to isolate non-rhizobial Endophytic bacteria from the root nodules of chickpea(*Cicer arietinum* L.), and to assess their ability to improve plant growth and symbiotic Performance, and to control root rot in chickpea under saline soil conditions. A total Of 40 bacterial isolates from internal root tissues of chickpea grown in salinated soil Were isolated. Four bacterial isolates, colonizing root tissue demonstrated plant beneficial traits and/or antagonistic activity against *F. solani* and thus were characterized in more detail. The strain *B. subtilis* NUU4 proved Significant plant growth promotion capabilities, improved symbiotic performance of host plant with rhizobia, and promoted yield under saline soil as compared to untreated control Plants under field conditions. A combined inoculation of chickpea with *M. ciceri* IC53 And *B. subtilis* NUU4 decreased H₂O₂ concentrations and increased proline contents. Compared to the un-inoculated plants indicating an alleviation of adverse effects of salt Stress. Furthermore, the bacterial isolate was capable to reduce the infection rate of root Rot in chickpea caused by *F. solani*. This is the first report of *F. solani* causing root rot of Chickpea In a salinated soil of Uzbekistan. Our findings demonstrated that the endophytic *B. subtilis* strain NUU4 provides high potentials as a stimulator for plant growth and as biological control agent of chickpea root rot under saline soil conditions. These multiple Relationships could provide promising practical approaches to increase the productivity Of legumes under salt stress.



Dr. Pabhi Singh
PRINCIPAL
RAIPUR INSTITUTE OF TECHNOLOGY
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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	Common to all Branches	Semester:	VII
Subject:	Phytochemistry	Code:	D000711(018)
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	2 (Minimum)
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

Course Objective(s):

- To make the students familiar and aware of constitution, classification, structure determination and isolation of compounds present in plants.
- To make them learn about synthesis of drugs and use of different plants and chemical compounds to cure various diseases.
- To make them learn about synthesis and application of important biomolecules like lipid, protein, vitamins etc.
- To learn about the drug development process.
- To understand the chemistry behind the plant metabolites.

UNIT I	Introduction of plant constituents • A study of plant constituents with reference to classification. • Isolation and nomenclature of terpenes. • Structure determination and identification general methods of structure elucidation of terpenes. • Volatile oils: classification of citral and citronellol, menthol and camphor, Farnesol, Zinziberene.
UNIT II	Phytochemical Study • Alkaloids: Classification, isolation and general methods for structure investigation, structure elucidation of ephedrine and atropine. • Nicotine, study of ephedra and cinchona. • Structure of uric acid and caffeine. Tannins: general chemistry of tannins
UNIT III	Protein • Proteins: structure of proteins, partial and complete hydrolysis of polypeptides, determination of amino acid sequences. • Study of gelatin, papain and hyaluronidase.
UNIT IV	Lipid • Lipids: General chemistry of lipids and classification, hydrolysis of fats. • Study of following drugs- castor, olive, coconut.
UNIT V	Drugs and Vitamins • Study of following drugs with reference to sources, preparation, constituents and uses: honey, Starches and dextrin. • Vitamins: chemistry and structure determination of thiamine, riboflavin, ascorbic acid, vitamin A.

Text books:

- | | |
|----|--|
| 1. | 1. Chemistry of Natural Products, P. S. Kalsi, Kalyani Publishers. |
| 2. | Organic Chemistry of Natural Products (Vol I & Vol II), Chatwal, Himalayan Publishers. |
| 3. | Synthetic Drugs, Chatwal, Himalayan Publishers. |



**"CELLULOSE DEGRADING MICROBES ISOLATED
FROM EARTHWORM GUT"**

**PROJECT PHASE - 2 REPORT
SUBMITTED TO**



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

**IN THE PARTIAL FULFILMENT OF REQUIREMENT OF AWARD OF THE
DEGREE OF**

BACHELOR OF TECHNOLOGY

in

BIOTECHNOLOGY ENGINEERING

By

Name

Roll No.

Enrollment No.

Jyoti Sahu

301201820029

BK2824

Priyanka Verma

301201820014

BK1963

**Under the supervision and guidance of
Mr. Virendra Vaishnav
(Assistant Professor)
Department of Biotechnology**

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

Session: 2020-24



[Signature]
PRINCIPAL
RAIPUR INSTITUTE OF TECHNOLOGY
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

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CERTIFICATE BY THE GUIDE

This is to certify that the report of the thesis entitled "Cellulose Degrading Microbes Isolated From Earthworm Gut" is a record of bona fide research or carried out by-

Name	Roll No.	Enrollment No.
Jyoti Sahu	301201820029	BK2824
Priyanka Verma	301201820 014	BK1963

under my guidance and supervision for the award of Degree of Bachelor of Technology in the field of Mechanical Engineering, of Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the thesis

- Embodies the work of the candidate himself,
- Has duly been completed,
- Fulfills the requirement of the Ordinance to the B.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.

<i>[Signature]</i> (Head of Department) Department of Biotechnology, Raipur Institute of Technology, Raipur(C.G.) 492101	<i>[Signature]</i> (Supervisor) Mr. Virendra Vaishnav Assistant Professor Department of Biotechnology Raipur Institute of Technology, Raipur(C.G.)
--	--

Forwarded to Chhattisgarh Swami Vivekanand Technical University, Bhilai(CG)

.....
Principal
Raipur Institute of Technology
Mandir-Hasaud, Raipur(C.G)



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

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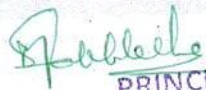
ABSTRACT

This research delves into cellulose-degrading microbes isolated from earthworm guts, aiming to understand their role in organic matter decomposition. Cellulose, a vital component in plant cell walls, is a major carbon source crucial for ecosystem balance. Earthworms, known soil ecosystem engineers, are hypothesized to house cellulolytic microbes, impacting nutrient cycling. The study involves isolating and characterizing these microbes, exploring their genetic makeup via molecular techniques, and analyzing enzymatic activities in cellulose breakdown. Through microbiological and molecular methods, we aim to unravel the intricate relationship between earthworms and cellulose degrading microbes.

This research holds practical significance, offering potential applications in sustainable waste management and agriculture. Insights into earthworm-associated microbes' cellulolytic capabilities could inform eco-friendly waste decomposition and soil fertility improvement. The study not only advances cellulose degradation understanding but also lays foundations for practical applications, contributing to environmental sustainability. This interdisciplinary investigation bridges gaps in microbiology, ecology, and environmental science, paving the way for future research.

Keywords: *Microscope , Incubator , Hot air oven, Analytical balance ,Autoclave.*




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Chhattisgarh Swami Vivekananda Technical University, Newai

Name of the Program: Bachelor of Technology

Semester: B.Tech – 5th

Subject: Analytical Techniques

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 2

Branch: Biotechnology

Course Code: C018513(018)

L: 3 T: 1 P: 0 Credits: 4

Course Objective(s):

- To learn different modern analytical techniques used in biotechnology.
- This subject is to provide a strong basis of Analytical Techniques.
- It also helps for assurance of quality, safety and efficacy of drugs, pharmaceuticals and of any compound.
- An overview of the instruments used in isolation and separation of molecules.
- To provide scientific understanding of analytical techniques and detail interpretation of results.

UNIT-I Microscopy

- Light spectroscopy and Microscopy-Absorption, IR, Scattering (Raman and Rayleigh).
- Resonance Raman, Fluorescence (steady-state and time resolved), confocal microscopy.
- Multi-photon microscopy, Atomic Force Microscopy.

UNIT-II Chromatography

- Chromatography-Ion-Exchange, Affinity.
- Hydrophobic, Size exclusion.
- FPLC, HPLC, GC.

UNIT-III Centrifugation and Electrophoresis Techniques

- Ultracentrifugation – Principle and types.
- Electrophoresis- Principles, methodology and types, 1D & 2D Gels; Pulse- Field Gel Electrophoresis(PFGE); Capillary electrophoresis; Gradient gel electrophoresis; Polyacrylamide Gel Electrophoresis (PAGE).
- Western blotting; Southern blotting; Northern blotting

UNIT-IV Colorimetry and Spectrophotometry

- Solution- and solid-state NMR spectroscopy, X-ray crystallography.
- Massspectroscopy-MALDI, LC-MS, GC-MS, MS-MS.
- Calorimetry- Basic Principle.

UNIT-V Genomics and Proteomics

- MALDI-Mass imaging, Proteomics, MS and NMR based Metabolomics.
- DNA and RNA sequencing for genomics,
- PCR for transcriptomic, Real time PCR, Droplet PCR.
- Surface Plasmon Resonance (SPR), Bio-layer interferometry (BLI), High content screening.

Text Books:

1. Biophysical Chemistry, Vol II by Charles R. Canter and Paul R. Shimmel.
2. Protein Purification: Principles and Practice by Robert K. Scopes (Narosa).
3. Principles of Fluorescence Spectroscopy by Joseph R. Lakowicz.





PROJECT PHASE II
ON
"FORMULATION OF NANOPARTICLE COATED
UREA FOR SLOW RELEASE OF NITROGEN"

Submitted to



Chhattisgarh Swami Vivekanand Technical University,
Bhilai (India)

Branch Biotechnology

RAIPUR INSTITUTE OF TECHNOLOGY

by

Mansi Chandrakar (301201820009)

Aayushi panigrahi (301201820026)

8th sem B.Tech Biotechnology

RAIPUR INSTITUTE OF TECHNOLOGY

Under the supervision of

MR. DIKESH KUMAR GURUPAHACH.

MR. VIRENDRA VAISHNAV,

ASST. PROFESSOR, BIOTECHNOLOGY, RAIPUR INSTITUTE OF
TECHNOLOGY

<2020-24>



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RAIPUR INSTITUTE OF TECHNOLOGY



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

Dr. Tanushree Chatterjee
Head of the Department RITEE,
Department of Biotechnology
E-mail: tamushee52004@yahoo.com

Date: 27/04/2024

APPROVAL CERTIFICATE

This is to approve that the work presented in this minor project entitled "FORMULATION OF NANOPARTICLE COATED UREA FOR SLOW RELEASE OF NITROGEN" was carried out by Miss Mansi Chandrakar, Aayushi panigrahi, submitted for the partial fulfillment of the requirement of the award of the degree of Bachelor of Technology in Biotechnology, in RITEE, Raipur is the original work carried out under the guidance and supervision of Mr. dikesk Kumar gurupahachan & Mr. Virendra vaishanav sir Asst. Professor Department of Biotechnology, Raipur Institute of Technology, Raipur, (C.G) and that no part of this project has been submitted elsewhere for the award of any degree or diploma.

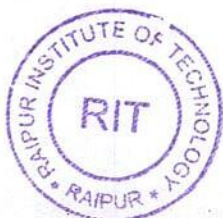

HEAD OF DEPARTMENT
(Dr. Tanushree Chatterjee)

College Campus
Chlutauna, Mandir hasaud
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(C.G.) India

Head Office
Near Bal Ashram, Kutchery Chowk,
Jail Road, Raipur (C.G.) India-492001
Tel: 077125 34854,09513397459

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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



RAIPUR INSTITUTE OF TECHNOLOGY



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Approved by AICTE, New Delhi, Affiliated to CSVTU, Bilai

CERTIFICATE BY THE GUIDE

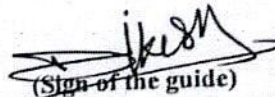
This to certify that the report of the project phase II submitted is the outcome of the project work entitled "FORMULATION OF NANOPARTICLE COATED UREA FOR SLOW RELEASE OF NITROGEN" was carried out by Miss Mansi Chandrakar (roll no. - 301201820009) (enroll no - BK1943), Miss Aayushi panigrahi (roll no. - 301201820026) (enroll no- BK2793), under my supervision for the award of the degree of Bachelor of Engineering in Biotechnology from Chhattisgarh Swami Vivekanand technical university Bilai chhattisgarh India .

To the best of my knowledge, the report

1) Embodies the work of the candidate herself..

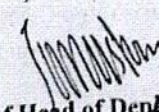
i) Has duly been completed.

ii) is upto the desired standard both in the respect of concept and language for being referred to examiners.


(Sign of the guide)

Mr. Dikesh Kumar gurupahachan
Asst. Professor Department of Biotechnology
RITEE

Forwarded to the Chhattisgarh Swami Vivekanand Technical University, Bilai
(C.G.)

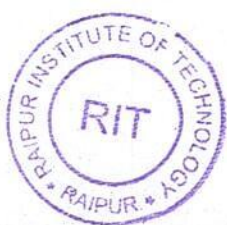

(Signature of Head of Department) Biotechnology,
Dr. Tanushree Chatterjee
Department of Biotechnology RITEE
RAIPUR (C.G.) 492101

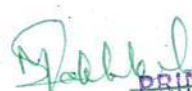
HEAD,

Department of Biotechnology,
Raipur Institute of Technology,
RAIPUR (C.G.) 492101

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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

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ABSTRACT

In this work, we have proposed a new formulation of a nanoparticle coated urea for slow and sustainable release of nutrients into soil and water. Urea-modified hydroxyapatite was synthesized, which is a rich source of nitrogen, calcium, and phosphate. Nanoparticles such as copper, iron, and zinc were incorporated into urea-modified hydroxyapatite to increase the efficiency of the proposed fertilizer. Different techniques including powder X-ray powder diffraction, Fourier-transform infrared spectroscopy, and scanning electron microscopy were used to get insight into the properties, morphology, and structure of the as-prepared fertilizer. The developed nanoparticle coated urea was used in a field experiment on the mustard (*Brassica runcae*) plant. The slow release of HNF was observed during leaching studies and confirmed the availability of Ca^{2+} , PO_4^{3-} , NO_2^- , NO_3^- , Cu^{2+} , Fe^{2+} , and Zn^{2+} .

A considerable increase in the physicochemical properties such as swelling ratio and water absorption and retention capacities of the proposed fertilizer was observed, which makes the fertilizer more attractive and beneficial compared with the commercial fertilizer. The composition of the proposed HNF was functionally valuable for slow and sustainable release of plant nutrients. The dose of prepared HNF applied was 50 mg/week, whereas the commercial fertilizer was applied at a dose of 5 g/week.



[Signature]

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

Chhattisgarh Swami Vivekananda Technical University, Newai

Name of the Program: Bachelor of Technology

Semester: B.Tech – 5th

Subject: Entrepreneurship & Startups

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 2

Branch: Biotechnology

Course Code: C018511(018)

L: 3 T: 1 P: 0 Credits: 4

Course Objective(s):

- Acquiring Entrepreneurial spirit and resourcefulness.
- Familiarization with various uses of human resource for earning dignified means of living.
- Understanding the concept and process of bioentrepreneurship - its contribution and role in the growth and development of individuals and the nation.
- Acquiring entrepreneurial quality, competency, and motivation.
- Learning the process and skills of creation and management of entrepreneurial venture.

UNIT-I Introduction to Entrepreneurship and Start – Ups

- Definitions, Traits of an entrepreneur, Intrapreneurship, Motivation
- Types of Business Structures, Similarities/differences between entrepreneurs and managers.
- Bioentrepreneurship; Building of a Bioentrepreneur; Indicators of Bio entrepreneurship.

UNIT-II Components of a Biotech company

- History of establishment of pioneer biotechnology companies, key for success.
- Mission and Strategy; Paths for starting new Biotech ventures.
- Product selection for new Biotech venture; Successful Bioentrepreneur in India.

UNIT-III Biotech Business Models and Management

- Vertical model, Product Model, Platform Business Model, Hybrid Model, Service Business Model from Genomics based companies.
- Company's Organization Structure,
- Recruitment and management of talent.
- Financial organization and management

UNIT-IV Business Plan

- General considerations: Business plan - Do's and don'ts.
- How to write Business proposal, Checklist for Business proposal writing.
- Deficiencies in startup Business Plan.

UNIT-V Business Strategies and Technology Transfer

- Intellectual property in biotech: Licensing, Accessing University technology.
- Licensing of Biotechnological invention, funding agencies in India



PROJECT PHASE - II REPORT
ON
BIOPLASTICS FROM BANANA PEEL

Submitted to

Chhatrapati Swami Vivekanand
Technical University



Raipur Institute of Technology Engineering and Entrepreneurship,
Raipur(C.G)

DEPARTMENT OF BIOTECHNOLOGY

By

RAHUL THOMAS (ROLL NO. 301201820016)
UJJWAL SHUKLA(ROLL NO. 301201820021)
TEKRAM LODHI(ROLL NO. 301201820037)
VISHEKH SHARMA(ROLL NO. 301201820023)

8TH SEMESTER B.TECH BIOTECHNOLOGY

Under the Supervision of

Supervisor: Dr Tanushree Chatterjee, Head of Biotechnology Department, RITEE

Co-supervisor: Dr Garima Sharma, Professor, RITEE

SESSION 2020 - 2024




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RAIPUR INSTITUTE OF TECHNOLOGY



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

CERTIFICATE BY THE GUIDE

This is to certify that report on the project fees to submitted is the outcome of the project work entitled "bioplastic from banana peels" carried out by Mr. Rahul Thomas Roll No. 301201820016 & Enrolment No. BK1980, mr. Ujjwal Shukla Roll No. 301201820021 & Enrolment No. BK2008, mr. Tekram Lodhi Roll No. 301201820037 & Enrolment No. BK2957 and Mr. Vishhek Sharma Roll No. 301201820023 & Enrolment No. BK2018 under my supervision for the award of the degree of bachelor of technology in biotechnology from Chhattisgarh, Swami Vivekananda technology University Bhilai (C.G), india.
To the best of my knowledge, the report.

- i) embodies the work of the candidates themselves
- ii) Has duly been completed
- iii) Is up to the desert standard both in the respect of concept and language for being referred to examiners.

(Signature of the guide)

Dr Tanushree Chatterjee
HOD
Biotechnology RITEE

Forwarded to the Chhattisgarh, Swami Vivekananda, technical University, Bhilai(C.G)

(Signature of The Head of Department) **HEAD,**
Dr Tanushree Chatterjee
Department of Biotechnology,
Raipur Institute of Technology,
RAIPUR (C.G.) 492101



PRINCIPAL

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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

RAIPUR INSTITUTE OF TECHNOLOGY

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

Dr Tanushree Chatterjee
Head of Department
RITEE, Department of Biotechnology
Email: tanushree52004@yahoo.com

Date: _____

APPROVAL CERTIFICATE

This is to approve that the work presented in this project phase ii entitled "bioplastic from banana peel" was carried out by Mr. Rahul Thomas Roll No. 301201820016 & Enrolment No. BK1980, mr. Ujjwal Shukla Roll No. 301201820016 & Enrolment No. BK1980, mr. Tekram Lodhi Roll No. 301201820016 & Enrolment No. BK1980 and Mr. Visekh Sharma Roll No. 301201820016 & Enrolment No. BK1980 submitted for the fulfilment of the award of the degree of bachelor of technology in biotechnology to Chhattisgarh, Swami Vivekananda University, Bhilai(C.G) is the original original work carried out under the guidance and supervision of Dr Tanushree Chatterjee, Head Of Department, Biotechnology, Raipur institute of technology, Raipur, (C.G) and that no part of this project has been submitted elsewhere for the award of any degree or diploma.

Dr Tanushree Chatterjee




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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

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ABSTRACT

This study explores the feasibility of utilizing banana peels, a common agro-industrial waste product, as a sustainable resource for the production of biodegradable plastics. Given the escalating environmental concerns associated with synthetic polymer disposal and the need for more sustainable manufacturing practices, this research investigates the potential of banana peels as a bioplastic feedstock due to their high starch content and widespread availability.

The methodology encompasses the mechanical and chemical processing of banana peels to extract and purify starch, which is then converted into a pliable and durable bioplastic film through a process of plasticization. The incorporation of glycerol as a plasticizer enhances the flexibility and workability of the starch-based bioplastic. Key performance indicators such as tensile strength, biodegradability, and thermal stability are measured and compared with those of conventional plastics.

Experimental results indicate that bioplastics produced from banana peels show promising physical properties that could make them suitable for applications in packaging, single-use products, and potentially other commercial uses that currently rely on conventional plastics. Biodegradation tests further reveal that these bioplastics degrade at a significantly faster rate than synthetic polymers, thus offering an environmentally friendly alternative that reduces both waste and carbon footprint.

This study not only supports the viability of banana peel bioplastics as a practical substitute for certain synthetic plastics but also contributes to the broader field of sustainable materials science by promoting a circular economy model. The findings encourage further research into other types of agricultural waste products for bioplastic production and highlight the importance of integrating waste management with sustainable production strategies to mitigate the environmental impacts of plastic pollution.



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

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Chhattisgarh Swami Vivekananda Technical University, Newai

Name of the Program: Bachelor of Technology

Semester: B.Tech – 3rd

Subject: Microbial Technology

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 02

Branch: Biotechnology

Course Code: B018312(018)

L: 3 T: 1 P: 0 Credits: 4

Course Objective(s):

- To make the student well acquainted with basic principles of Microbiology.
- The course impacts the knowledge of different types of microorganisms that are invisible to our naked eyes.
- The students will be introduced to the major groups of microorganisms and their diversity in structure and functions and microbial interactions.
- Emphasis has been laid on bacterial growth, nutrition, control, metabolism, and genetics.
- The course also introduces the students to the scope and relevance of microbes in the field of medicine, agriculture, and industry.

UNIT-I Introduction and classification

- Introduction to Microbiology, History and Scope, Organization of Prokaryotic and Eukaryotic Cell Structure and Function.
- Diversity of the Microbial World- (Microbial Evolution, Taxonomy, Microbial Diversity).
- The Viruses and pathogenic microbes.

UNIT-II Nutrition and Growth

- Bacterial morphology, structure and characterization, cellular components of bacteria, sporulation and its mechanics; Autotrophs, heterotrophs.
- Growth and nutrition, nutritional requirements, enrichment culture, growth curve, kinetics of Growth, mathematical expression of exponential growth phase.
- Measurement of growth and growth yields, Batch Culture, Synchronous growth; Techniques of pure culture.

UNIT-III Microbial metabolism

- Aerobic & anaerobic respiration.
- Fermentation, Entner-Doudoroff pathway.
- Photosynthesis and nitrogen fixation.

UNIT-IV Microbial molecular biology and genetics

- Genome and gene structure.
- Replication, Expression, Regulation of gene expression (operon system).
- Transformation conjugation and transduction.

UNIT-V Industrial application

- Industrial and commercial applications of microorganisms.
- Climate control and detoxification of pollutants.
- Genetically modified microorganisms and their application in medicine, industry and agriculture.





**"BROMELAIN EXTRACTION FROM PINEAPPLE FRUIT
FOR MILK CLOTTING UNIT"**

**PROJECT PHASE - 2 REPORT
SUBMITTED TO**



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

**IN THE PARTIAL FULFILMENT OF REQUIREMENT OF AWARD OF THE
DEGREE OF**

BACHELOR OF TECHNOLOGY

in

BIOTECHNOLOGY ENGRINEERING

By

Name

Roll No.

Enrollment No.

Shambhavi Sahu

301201820019

BK1997

Sunanda Sahu

301201820020

BK2003

**Under the supervision and guidance of
Mr. Dikesh Kumar
Gurupahchan(Asst. Professor)
Department of Biotechnology**

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

Session:2020-24



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

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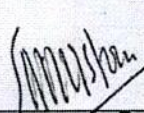
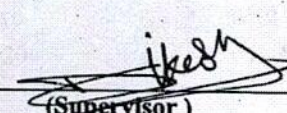
This is to certify that the report of the thesis entitled "**Bromelain extraction from pineapple fruit for milk clotting unit**" is a record of bona fide research or carried out by-

Name	Roll No.	Enrollment No.
Shambhavi Sahu	301201820019	BK1997
Sunanda Sahu	301201820020	BK2003

under my guidance and supervision for the award of Degree of Bachelor of Technology in the field of Biotechnology Engineering, of Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the thesis

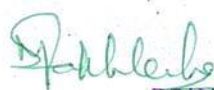
- Embodies the work of the candidate himself,
- Has duly been completed,
- Fulfills the requirement of the Ordinance to the B.Tech. Degree of the University and
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.

 HEAD; (Head of Department of Biotechnology; Department of Biotechnology, Raipur Institute of Technology, Raipur(C.G.)	 (Supervisor) Mr. Dikesh Kumar Gurupahchan Assistant Professor Department of Biotechnology Raipur Institute of Technology, Raipur(C.G.)
---	---

Forwarded to Chhattisgarh Swami Vivekanand Technical University, Bhilai(CG)

Principal
Raipur Institute of Technology
Mandir-Hasaud, Raipur(C.G.)





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ABSTRACT

Bromelain is a proteolytic enzyme, present in pineapple (*Ananas comosus*), these proteolytic enzymes are cysteine proteases which act as catalytic residue in the active site and it is a group of hydrolases acting on peptide bond of polymer.

In the present investigation that Bromelain was extracted from a part of pineapple known as pineapple fruit by use of phosphate buffer (0.1M pH-7). Crude extract and purified extract from pineapple fruit will assayed for its activity by titrimetric method and various other methods was performed in project phase II. This include extraction, filtration and centrifugation of pineapple juice to obtain its crude form. After extraction, purification was performed for analysis of activity of enzyme by various methods include Ammonium Salt precipitation, Gelatin test, dialysis method, Ion exchange Chromatography, SDS-PAGE method to successfully purify the crude form of bromelain enzyme.

After all the extraction and purification was done the sample bromelain is examined for milk clotting unit which can transform milk into curd and also helps in softening of various milk products like paneer.

Keywords: *Centrifuge machine, Waterbath, Magnetic stirrer, Analytical balance.*




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Chhattisgarh Swami Vivekananda Technical University, Newai

Name of the Program: Bachelor of Technology

Semester: B.Tech – 3rd

Subject: Bio Chemistry

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 02

Branch: Biotechnology

Course Code: B018311(018)

L: 3 T: 1 P: 0 Credits: 4

Course Objective(s):

- It is intended to impart basic undergraduate-level knowledge in the area of general Biochemistry.
- Students would be able to understand the biochemical basis of cellular functions and organism physiology.
- It augurs understanding on central metabolic process and the role of enzymes in modulating pathways.
- To make the students conversant with structures and properties of Carbohydrates, proteins, lipids and nucleic acids nutrition aspects and metabolic regulation.
- The theoretical background of biochemical systems helps to interpret the results of laboratory experiments.

UNIT-I Biochemistry of Acid and Base

- Introduction to biological buffers and its importance in biochemistry, pH, water, basics of amino acids, pK and pI values of amino acids and pK values of the ionizable groups of proteins.
- Importance of buffer in Homeostasis.
- Handerson-hasselbach equation.

UNIT-II Carbohydrate

- Classification, properties, structure and function.
- Metabolism : Embden Meyerhoff pathway, TCA cycle, Gluconeogenesis, Glycogenesis, Glycogenolysis, Pentose phosphate pathway.
- Electron transport chain.

UNIT-III Proteins and Amino acids

- Classification, properties, structure and function of proteins and amino acids, Ramchandran plot.
- Separation and purification of proteins.
- Metabolism : Synthesis of amino acids, urea cycle.

UNIT-IV Lipids, Nucleic acids and Vitamins

- Classification, function and lipid metabolism.
- Structure and types of DNA (Watson and Crick model) and RNA.
Nucleic acid metabolism : Synthesis and break down of purine and pyrimidines.
- Vitamins : Classification and function, abnormalities related to vitamin deficiency.





PROJECT PHASE – II

**PHYTOCHEMICAL SCREENING AND
ANTIMICROBIAL STUDY OF HIBISCUS AND
BHRINGRAJ**

SUBMITTED TO



**Chhattisgarh Swami Vivekanand Technical University,
Bhilai (India)**

Branch Biotechnology

RAIPUR INSTITUTE OF TECHNOLOGY

MANDIRHASAUD, CHHATTAUNA, RAIPUR (C.G.)

BY

Amar Singh Kachlam (301201820027)

Sulendra Kumar Nureti

(301201820034)

Pandru Gota (301201820011)

SEMESTER 8th B.TECH BIOTECHNOLOGY

UNDER GUIDANCE OF

Mr. DIKESH KUMAR GURUPAHACHAN

Assistant Professor, Raipur Institute Of Technology, Raipur

SESSION 2020-24



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

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RAIPUR INSTITUTE OF TECHNOLOGY

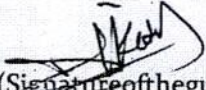
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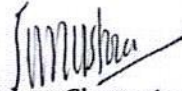
Approved by AICTE, New Delhi, Affiliated to CSVTU, Bhilai

CERTIFICATE BY THE GUIDE

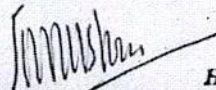
This is to certify that the report of the major project submitted is the outcome of the project work entitled **"PHYTOCHEMICAL SCREENING AND ANTIMICROBIAL STUDY OF HIBISCUS AND BHRINGRAJ"** carried out by Amar Singh Kachlam (BK2802), Sulendra Kumar Nureti (BK2931), Pandru Gota (BK 1951) under my supervision for the award of the degree of Bachelor of Technology in Biotechnology from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India. To the best of my knowledge and report.

- 1) Embodies the work of the candidate herself.
- 2) Has duly been completed.
- 3) Is up to the desired standard both in the respect of concept and language for being referred to examiners.

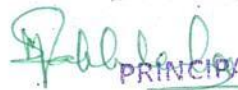

(Signature of the guide)


Dr. Tanushree Chatterjee
HOD
Biotechnology, RITEE

Forwarded to the Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.)


HEAD,
(Signature of the Head of Department)
Dr. Tanushree Chatterjee
Department of Biotechnology
RITEE




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

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Chhattisgarh Swami Vivekananda Technical University, Newai

Name of the Program: Bachelor of Technology

Semester: B.Tech – 4th

Subject: Bioinformatics and Computational Biology

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 2

Branch: Biotechnology

Course Code: B018414(018)

L: 2 T: 1 P: Credits: 3

Course Objective(s):

- This course is beneficial for students to understand the principles of analyzing biological data, building models and testing hypotheses using computer science algorithms.
- It will also introduce information technology practices in the field of biotechnology.
- The course will provide a basic overview of various information repositories widely used in biological sciences; and tools for searching or querying those databases.
- This course will build the foundation of sequence alignment techniques and find evolutionary connections.
- It will help students to analyze mRNA expression data and gene annotations.

UNIT-I General Introduction

- To study bioinformatics and its applications.
- Biological databases and tools: Nucleotide sequence databases, Protein sequence, structural and functional databases, Patent database, in silico tools for rDNA technology.
- Database searching: BLAST and its types, Entrez, Ensembl-Biomart.

UNIT-II Sequence Alignment

- Pairwise Sequence alignment: Pairwise alignment, Dynamic programming, Scoring Matrices, Gaps.
- Multiple sequence alignment: Dynamic and heuristic methods, Relevance to inferences about evolution, introduction to molecular phylogeny.

UNIT-III Phylogenetic Analysis

- Phylogenetic analysis: Introduction, Types of Phylogenetic Trees, Methods and Applications, Bootstrap.
- Genome informatics: Genome sequencing technologies and analysis methods; transcription factor regulation and motif finding.

UNIT-IV Computational Epigenetics

- Computational Epigenetics: Epigenetics and its role in transcription regulation, development, and diseases.
- Genomic variations and its associations: Linking genes, variations and diseases.
- Introduction to biomarkers and personalized medicine.
- Network biology and human diseases: Genome-wide association studies of human diseases, Genome editing tools and applications to human diseases.



"Extraction of Uranium from the Uranium Ore"
A Major Project Report Submitted To
Chhattisgarh Swami Vivekanand Technical University
Bhilai (India)



In partial fulfillment of the award of degree
BACHELOR OF TECHNOLOGY
in

CHEMICAL ENGINEERING

Under the Guidance of

Mrs. Aarju Shukla

Assistant Professor

Department Of Chemical Engineering

Submitted by

Rishi Kumar Singh (BK2463)

D. Bala Krishna (CA0717)

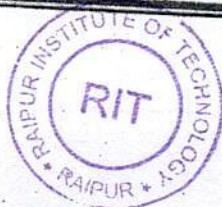
Prativa Panda (CA0720)

Rajesh Kumar Rathore (BF8278)

Ghanesh Kumar Baghel (BF8265)



DEPARTMENT OF CHEMICAL ENGINEERING
RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR
CHHATAUNA, MANDIR HASAUD, RAIPUR (C.G.) 492101
APRIL-MAY 2024

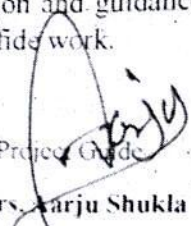


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PRINCIPAL

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

CERTIFICATE

This is to certify that the work in this project entitled "*Extraction of Uranium from Uranium Ore*" submitted by Rishi kumar Singh, D. Bala Krishna, Prativa Panda, Rajesh kumar Rathore, Ghanesh Baghel in partial fulfillment of the requirement of the prescribed curriculum for the Bachelor of Technology in Chemical Engineering, Raipur Institute of Technology, Raipur is an authentic work carried out by them under my supervision and guidance. To the best of my knowledge the matter embodied in the thesis is their bonafide work.


Project Guide

Mrs. Arju Shukla

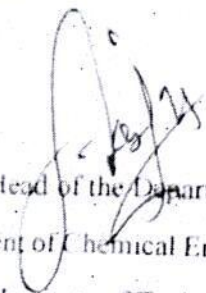
Assistant Professor

Department of Chemical Engineering

Raipur Institute of Technology,

Raipur, (C.G.)

The minor project work as mentioned above is being recommended and forwarded for examination and evaluation.


Head of the Department

Department of Chemical Engineering

Raipur Institute of Technology,

Raipur, (C.G.)



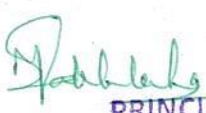

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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

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

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Chemical Engineering**

Subject: **Material Science**

Periods per week (L-T-P): **(2-0-0)**

Number of class Test to be conducted: **2 (Minimum)**

Scheme of Examination (Theory): Total Marks-**150 [ESE-100, CT-20, TA-30]**

Semester: **IV**

Code: **B019415(019)**

Credits: **02**

No. of assignment to be submitted: **05**

PREREQUISITES: Knowledge of (10+2) Physics, Chemistry and Basic Mechanical Engineering.

COURSE OBJECTIVES:

1. To give adequate knowledge of oxidation and reduction reactions.
2. To give Executable approach of Selection of MOC for a given application, maintenance and corrective measures for various engineering materials.
3. Criteria for selection of materials in chemical process industry.
4. To provide an understanding of the corrosion principles and engineering methods used to minimize and prevent the corrosion.

COURSE DETAILS:

Unit 1: Introduction to materials, bonding between atoms: metallic bonding, ionic bonding covalent bonding, Van der waals bond, thermal expansion, elastic modulus and melting point of materials Role of material selection in design, Effect of structure on properties: subatomic to macroscopic level. Elasticity, micro elasticity and phase transformation. **(10 hrs)**

Unit 2: Corrosion, Theories of corrosion and methods of corrosion control. Degradation and recycling. Theory of alloying and their construction, Applications of alloys in industries, Constitutional diagrams, Cast iron as material of construction with reference to its application in chemical Engineering. **(08 hrs)**

Unit 3: Imperfection in solid: vacancies, equilibrium concentration of vacancies, interstitial and substitution impurities in solid, dislocation, types and characteristics of dislocation, interfacial defects, stacking faults. **(08 hrs)**

Unit 4: Materials of construction with reference to application in chemical industry, Mild steel, high carbon steel, Stainless steel, High silicon steel, Molybdenum and tungsten steel. Nonferrous metals – Copper, Aluminum, Lead, Chromium, Tin, Brass, Bronze and Monel metal. **(08 hrs)**

Unit 5: Semi- crystalline materials: classification, structure and configuration of ceramics, polymers, and copolymer. Non-crystalline/amorphous materials: Silicates, glass transition temperature, viscoelasticity. **(06 hrs)**

On completion of each unit, students have to submit one assignment from every unit.

COURSE OUTCOMES (COs):

CO1: Illustrate the importance of selection materials for engineering purpose.

CO2: Considerate the corrosion phenomena on the basis of the fundamentals of chemical engineering

CO3: Student will be able to correlate the structure and properties of materials.

CO4: Student will be able to describe causes of mechanical failure.

CO5: Student will be able to combines engineering, physics and chemistry principles to solve real-world problems associated with the industrial material.

TEXT BOOKS:

1. Agrawal B.K., Introduction to Engg Materials, TataMcgraw Hill, Edition 1988.
2. Khurmi R.S., Materials Science, S Chand, 1st edition.

REFERENCE BOOKS:

1. Gupta K.M., Material Science & Engineering, Umesh Publication, 1st Edition

OPEN SOURCE LEARNING:

<http://nptel.ac.in/>

<http://ocw.mit.edu/courses/chemicaengineering/>



"PREPARATION OF COCONUT HONEY FROM COCONUT SAP WATER"

A Major Project Report Submitted To
**Chhattisgarh Swami Vivekanand
Technical University Bhilai(C.G.), India**



For fulfilment of the award of degree

BACHELOR OF TECHNOLOGY in CHEMICAL ENGINEERING

Under the Guidance of

Ms. Anjulata Pandey
(Assistant Prof. Chemical Engg.)

Submitted by

Abhijeet Mukherjee (BK2271)
Lakshya Kumar Kashyap (BK1303)
D Anand Rao (CA0714)
Purvesh Kumar Sahu (BH1435)
Arkadyuti Barat (CA0715)
Md. Obaid (CA0712)



**DEPARTMENT OF CHEMICAL ENGINEERING
RAIPUR INSTITUTE OF TECHNOLOGY,
Raipur, Chhatauna, Mandir Hasaud,
Raipur(C.G.) 492101
APR-MAY 2024**



[Signature]
PRINCIPAL

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

CERTIFICATE

This is to certify that the work in this project entitled "*Preparation of Coconut Honey from Coconut Sap Water*" submitted by **Abhijeet Mukherjee, Lakshya Kumar Kashyap, D Anand Rao, Purvesh Kumar Sahu, Md Obaid, Arkadyuti Barat** in partial fulfilment of the requirements of the prescribed curriculum for the Bachelor of Technology, Session 2020-24 in Chemical Engineering, Raipur Institute of Technology, Raipur (C.G.) is an authentic work carried out by them under my supervision and guidance. To the best of my knowledge to matter embodied in the thesis is their bonafide work.

Project Guide-


Ms. Anjulata Pandey

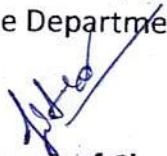
Assistant Professor

Department of Chemical Engineering

Raipur Institute of Technology, Raipur (C.G.)

The major project work as mentioned above is being recommended and forwarded for examination and evaluation.

Head of the Department-


Department of Chemical Engineering

Raipur Institute of Technology, Raipur (C.G.)




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

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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

Chhattisgarh Swami Vivekanand Technical University, Bhilai

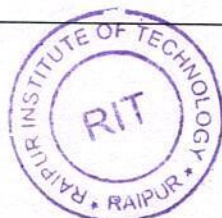
Name of Program:	Bachelor of Technology.		
Branch:	Chemical Engineering	Semester:	VII
Subject:	Mass Transfer-II	Code:	D019711(019)
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	5 (Minimum)
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

PREREQUISITES: Knowledge of Engineering Mathematics & Physics and Mass Transfer Operations-I.

COURSE OBJECTIVES:

1. Fundamental and conceptual understandings to impart the basic concepts of mass transport.
2. Demonstrative concept on understanding about, humidification, crystallization, drying, extraction and leaching operations and problems.
3. Comprehensive understanding and elaborative capacity to impart the basic concepts of mass transfer in, humidification, crystallization drying, extraction and leaching process and parameters.
4. Illustrative knowledge to develop understanding about design and analysis of humidification, crystallization, drying, extraction and leaching units.

UNIT I	Crystallization (08 Hrs) Introduction to crystallization, Classification of crystallizer, Equilibrium data (Solubility), Calculation of yields, Material and energy balance, Theory of crystallisation, Miers super saturation theory, Nature of nucleation's, Rate of crystal growth.
UNIT II	Humidification (10 Hrs) Humidification and air conditioning, Humidity chart (Psychrometric Chart) and use, Wet bulb and Dry bulb temperature, Adiabatic cooling line, General case of interaction between humid air and water, Levies relation, Dehumidification.
UNIT III	Drying (10 Hrs) Introduction to drying, Phase equilibrium, Moisture content, Bound and unbound moisture, Free moisture, Drying operation, Constant drying rate, Drying curve, Calculation the drying time under constant drying conditions
UNIT IV	Extraction (10 Hrs) Liquid extraction, Liquid equilibrium, System of three liquids-one pair partially soluble, Choice of solvents, Stage wise contact-single stage extraction, Multi stage cross current extraction, Insoluble liquids, Continues counter current multistage extraction.
UNIT V	Leaching (10 Hrs) Introduction to leaching, (Solid-Liquid extraction), Factor's affecting leaching operations, Single stage leaching, Multistage cross current leaching, Multistage counter current leaching, Solid-Liquid extraction calculation, Triangular diagram.



"PREPARATION OF MOSQUITO REPELLENT (DHOOP) FROM ORANGE PEELS"

**A Major Project Report Submitted To
Chhattisgarh Swami Vivekanand Technical University**

Bhilai (India)



In partial fulfillment of the award of degree

BACHELOR OF TECHNOLOGY

in

CHEMICAL ENGINEERING

Under the Guidance of

Mrs. Aarju Shukla

Assistant Professor

Department Of Chemical Engineering

Submitted by

Rohit Yadav (BK2298)

Bhagwat (CA0713)

Ramsevak Lodha (CA0716)

Dinesh Kumar Kanwar (AR4934)

B Arun Prasad (CA0718)

R Mohan Raju (CA0719)



**DEPARTMENT OF CHEMICAL ENGINEERING
RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR
CHHATAUNA, MANDIR HASAUD, RAIPUR (C.G.) 492101**

APRIL-MAY 2024



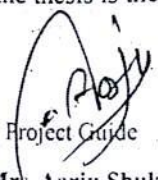
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PRINCIPAL

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

CERTIFICATE

This is to certify that the work in this project entitled "*Preparation of Mosquito Repellent (Dhoop) from Orange Peels*" submitted by Rohit Yadav, Bhagwat, Ramsevak Lodha, Dinesh Kumar Kanwar, B Arun Prasad, R Mohan Raju in partial fulfillment of the requirement of the prescribed curriculum for the Bachelor of Technology in Chemical Engineering, Raipur Institute of Technology, Raipur is an authentic work carried out by them under my supervision and guidance. To the best of my knowledge to matter embodied in the thesis is their bonafide work.


Project Guide

Mrs. Aarju Shukla

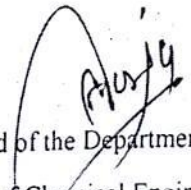
Assistant Professor

Department of Chemical Engineering

Raipur Institute of Technology.

Raipur, (C.G.)

The minor project work as mentioned above is being recommended and forwarded for examination and evaluation.


Head of the Department

Department of Chemical Engineering

Raipur Institute of Technology.

Raipur, (C.G.)



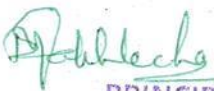

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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

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Chhattisgarh Swami Vivekanand Technical University, Bilai

Branch: **Chemical Engineering**

Semester: **IV**

Subject: **Organic Process Technology**

Code: B019413(019)

Periods per week (L-T-P): **(3-1-0)**

Credits: **04**

Number of class Test to be conducted: **2 (Minimum)**

No. of assignment to be submitted: **05**

Scheme of Examination (Theory): **Total Marks-150 [ESE-100, CT-20, TA-30]**

PREREQUISITES: Basic knowledge in Engineering Physics and Mathematics, Physical and Organic Chemistry.

COURSE OBJECTIVES:

1. The purpose of the course is to improve knowledge of the chemical processes along with emphasis on recent technological development.
2. To develop and assess alternative system designs for chemical engineering systems incorporating considerations such as feasibility, cost, safety, legal/regulatory issues and societal impacts.
3. The aim of the course is to study process technologies, availability of raw materials, production trends, and preparation of flow sheets.
4. Study the engineering and environmental problems of various chemical industries.
5. Illustrative knowledge on organic processes.

COURSE DETAILS:

Unit 1: Nitration: Introduction, agents, liquid and vapour phase nitration, nitration equipments, mixed acid preparation. Dyes and Intermediates: Introduction, classification of dyes, manufacture of dyes. **(10 hrs)**

Unit 2: Halogenations: Types of halogenations reactions, preparation of chloral. Pesticides: Introduction of pesticides, classification of insecticides, manufacturing of BHC & DDT. **(10 hrs)**

Unit 3: Sulfonation and Sulfation: Introduction, agents, chemical & physical factors, sulfonation equipments, sulfonation of benzene. Pulp and Paper: Raw materials, pulping processes, recovery of chemicals, stock preparation and paper making (production of paper from pulp). **(10 hrs)**

Unit 4: Esterification: Esterification By organic acid, study of continuous esterification column. Manufacture of ethyl acetate, cellulose acetate & nitroglycerine. Vegetable Oil: Types of oil, extraction and processing of vegetable oil, Types of animal's fat & oil. Types of waxes. Manufacturing of Soap & Detergent. **(10 hrs)**

Unit 5: Polymerization: Introduction, types of polymerization, methods of polymerization, properties of polymers. **(06 hrs)**

On completion of each unit, students have to submit one assignment from every unit.

COURSE OUTCOMES (COs):

- CO1:** After undergoing this course the students will acquire knowledge regarding various technological aspects of chemical industries.
CO2: It encourages the student to think invent and develop novel unit operations and processes.
CO3: Describe the principles, and process technology of different organic process and its application to industries.
CO4: After undergoing this course the students will understand about manufacturing process and technical problems associated with this.
CO5: Student will be able to understand synthetic *organic* chemistry for preparing the product.
CO6: Elucidate to *process* chemistry and *organic* synthesis with an emphasis on the science and *technology*.

TEXT BOOKS:

1. Groggins P. H., "Unit Processes in Organic Synthesis", McGraw-Hill Book Co.
2. Austin, G.T., "Shreve's Chemical Process Industries", McGraw-Hill Book Co.

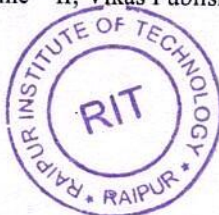
REFERENCE BOOKS:

1. Gopala Rao M. and Marshall S., "Dryden's Outlines of Chemical Technology", East-West Press Pvt Ltd.
2. Pandey G. N., "A Text Book of Chemical Technology", Volume – II, Vikas Publishing House Pvt. Ltd.

OPEN SOURCE LEARNING:

<http://nptel.ac.in/>

<http://ocw.mit.edu/courses/chemicalengineering>



A
Major Project Report
On
“Design and Analysis of Indoor Hall Roof Truss in RITEE College Campus”

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



In Partial Fulfilment of the award of the Degree of
BACHELOR OF TECHNOLOGY
In

CIVIL ENGINEERING

Submitted by:

Babeeta Koshle (BK1226) (301202020004)

Anuradha Sahu (BJ5786) (301202020020)

Surabhi Dhruw (BF8385) (301202021325)

Srishti Nag (BF1362) (301202021324)

Pawan Sinha (BK1255) (301202020007)

Trinit Tande (BJ7341) (301202020031)

Under the guidance of

Mr Dolendra Patel

Assitant professor



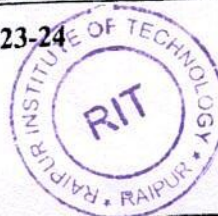
RAIPUR INSTITUTE OF TECHNOLOGY (RITEE) RAIPUR

Chhatauna, Mandir Hasaud Raipur (C.G.) India

492101 ph. No.-0771-3250790, Fax-91-0771-2537634

Email-conductus@rit.edu.in, Website:- www.rit.edu.in

SESSION-2023-24

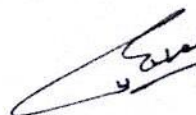


CERTIFICATE OF THE SUPERVISOR

This is to certify that the project work entitled "**DESIGN AND ANALYSIS OF INDOOR HALL ROOF TRUSS IN RITEE COLLEGE CAMPUS**" is a record of bonafide research work carried out by us. **Babeeta Koshle, Anuradha Sahu, Surabhi Dhruw, Srishti Nag, Pawan Sinha, Trinit Tande**. Under the guidance and supervision for the award of Degree of Bachelor of Technology in civil under the faculty of **Mr. Dolendra Patel** 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 him/herself,
- Has duly been completed,
- Is up to the desired standard both in respect of contents and language for being referred to the examiners



(Signature of the Supervisor)

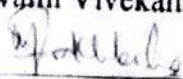
Mr. Dolendra Patel

Assistant Professor

Civil Engineering

RITEE Raipur

Forwarded to Chhattisgarh Swami Vivekanand Technical University Bhilai



(Signature of the Director/Principal) Name & address of the Institute



ABSTRACT

Roof trusses are generally used in industrial buildings. There are many types of truss available for the construction of roof truss. Analysis and design an economical and stable 2D truss for the usage in industrial purpose like storage rooms, workshops, warehouses etc., using STAAD. Pro.Vi8. It follows the method of design steps of steel truss type structures as per the guidelines of IS: 800-2007 and IS: 875-1987 part 1, 2 and IS: 875-2015 part 3 codes and certain amount of decision based on engineering judgments/practices and information from past experiences. In the present study, Fink type of truss has been taken using various span and rise. spans 25m have been taken into consideration. Angle section and Channel section have been compared for particular span and rise. Analysis was done using STAAD- Pro software and various results had been obtained. The safe and economical steel section was decided on the weight obtained of each truss after the analysis.



Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**
Branch: **Civil Engineering**
Subject: **Structural Engineering Design – I**
Class Tests: **Two (Minimum)**
ESE Duration: **Three Hours**

Semester: **V**
Code: **C020511(020)**
Assignments: **Two (Minimum)**
Maximum Marks: **100**
Minimum Marks: **35**

UNIT-1: Objectives of structural design, Steps in RCC Structural Design Process, Role of structural designer.

Design philosophies: Working stress design and limit state design method. Advantages of Limit State Method over other methods.

Introduction: Properties of Concrete and reinforcing steel, stress-strain curves, permissible stresses, modular ratio, loads on structure, shrinkage, creep, Type of Loads on Structures and Load combinations. Introduction to IS 456:2000 and IS 875.

Introduction to working stress method: Basis for design of rectangular beam using working stress method. Analysis and design of singly reinforced and doubly reinforced sections by working stress method, shear in beams.

UNIT-2: Limit State Method – Rectangular Beams: Introduction to limit state method, characteristic loads, partial safety factor, safety and serviceability considerations

Limit state of Collapse (Flexure): Assumptions, stress block parameters, neutral axis, analysis and design of singly and doubly reinforced section. Effective span to effective depth ratio, modification factors for singly reinforced, doubly reinforcement and flanged beams.

Limit State of Collapse (Shear, bond and torsion): shear in beams, Torsion in beams, bond and development length, design of lintels.

Limit State of Serviceability: Deflection.

UNIT-3: Limit State Method – L, T-Beams, Slab and Stairs: Properties of L and T-section, moment of resistance and design of singly reinforced T-beam, L beam. Dead loads, imposed loads, thickness of slabs, modification factors, effective span, reinforcement in slab, design of one-way slab and two-way slabs. Design of stairs – dog legged stair, open newel stair.

UNIT-4: Limit State of Collapse (Compression): Columns: Axially loaded short columns, minimum eccentricity, longitudinal and transverse reinforcement, effective length of column, safe load on columns, circular columns, $P_u - M_u$ interaction curves, combined axial load and uni-axial bending, combined axial load and bi-axial bending.

UNIT-5: Limit State Method – Column Footings- Isolated and Combined Rectangular Footing: General principle of design of reinforced concrete footing, proportioning of footings, edge thickness, depth of footing, design of isolated column footings – square and rectangular footings. Limit State Design of Combined Rectangular footing.

Text Books:

1. Limit State Design of Reinforced Concrete – B. C. Punmia, A. K. Jain and A. K. Jain (Laxmi Publications).
2. Limit State Theory and Design of Reinforced Concrete (IS:456-2000) – V. L. Shah and S. R. Karve (Structures Publications, Pune).
3. Reinforced Concrete Design – S. U. Pillai and D. Menon (Tata McGraw Hill).

Reference Books:

1. Relevant IS codes IS: 456:2000, IS 875, Part 1, 2
2. Reinforced Concrete Structures – Dayaratam P. (Oxford and IBH Publishing Co.)
3. Reinforced Concrete Limit State Design – Jain, A.K. (Nem Chand and Bros. Roorkee)
4. Fundamentals of Reinforced Concrete Design – M. L. Gambhir (PHI Learning)
5. Design of Reinforced Concrete Structures – M. L. Gambhir (PHI Learning)
6. Design Aids for Reinforced Concrete to I.S.-456-1978 – SP-16, 1980 (Bureau of Indian Standards, New Delhi)

COURSE OUTCOME:

1. Learner is able to understand the importance of reinforced cement concrete.



PROJECT REPORT
ON
“PLANNING & DESIGN OF (G+1) RESIDENTIAL BUILDING”

Submitted in partial fulfillment of the requirement for the award of
the degree of Bachelor of Technology in

CIVIL ENGINEERING

IN

RAIPUR INSTITUTE OF TECHNOLOGY (RITEE), RAIPUR



UNDER

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI



Submitted By,

ABDUL KARIM CHOUDHURY	301202021319
ABDUL WADUD BARBHUIYA	301202021320
ALMUMIN BARBHUIYA	301202021321
MD ABDUL MALIK TAPADAR	301202021305
MAHBUB ALAM TAPADAR	301202021302
ABU SAYEED MD ASHFAQUE BARBHUIYA	301202021315

Under the guidance of

Mr. Manish Nayak

(Assistant Professor)

DEPARTMENT OF CIVIL ENGINEERING

RAIPUR INSTITUTE OF TECHNOLOGY (RITEE) RAIPUR

Chhatauna, Mandir Hasaud, Raipur (C.G.)

India 492101 Ph. No.- 9329773006 | 9329773026

Email- info@rit.edu.in Website: - rit.edu.in



CERTIFICATE OF SUBMISSION OF PROJECT REPORT

This is to certify that the following 8th semester B.Tech students have successfully completed and submitted the project on "**PLANNING & DESIGN OF (G+1) RESIDENTIAL BUILDING**" to the Department in the partial fulfillment of the award of the degree of Bachelor of Technology (B.Tech) in Civil Engineering under CSVTU.

Name of the students:

ABDUL KARIM CHOUDHURY	301202021319
ABDUL WADUD BARBHUIYA	301202021320
ALMUMIN BARBHUIYA	301202021321
MD ABDUL MALIK TAPADAR	301202021305
MAHBUB ALAM TAPADAR	301202021302
ABU SAYEED MD ASHFAQUE BARBHUIYA	301202021315

I wish them every success in life.

Raipur

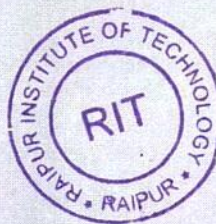
Dated. 26.04.2024

Sri. Gopesh Dawda
Assistant Professor & Head of the Department
DEPARTMENT OF CIVIL ENGINEERING
RAIPUR INSTITUTE OF TECHNOLOGY (RITEE) RAIPUR
Chhatauna, Mandir Hasaud, Raipur (C.G.)



ABSTRACT

All the building structures have to design based on the relevant code of practice of standard. The choice of the standard code to be applied varies and sometimes depends on the requirement of the local authority or familiarity of the designers. Standard code is essential in the reinforced concrete structures design to provide a safety and economic design. Currently, IS Code 456:2000 is the most widely used standards in designing reinforced concrete structures based on limit state principle. However, some of the design requirements such as partial safety factors, material properties, load combinations etc. are made to be different IS code of practice. This may affect the cost of building structures that were designed using these two standards. The aim of this study is to design the reinforced concrete structures for a three storey residential building, which will be designed using IS code. The material properties such as characteristics strength of reinforcements and dimensions of the structure elements are fixed. Generally, the study found out that the correctly designed structure may result in economical output while ensuring safety.



Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Engineering**

Branch: **Civil Engineering**

Subject: **Structural Analysis – I**

Class Tests: **Two (Minimum)**

ESE Duration: **Three Hours**

Semester: **IV**

Code: **B020411(020)**

Assignments: **Two (Minimum)**

Maximum Marks: **100**

Minimum Marks: **35**

Unit-1: Determinate Structures - Determinate vs. Indeterminate structures, plane frames and space frames, Static Indeterminacy - External and Internal, Indeterminacy of rigid and pin jointed frames, rules for determining degree of indeterminacy, Analysis of simple and determinate space trusses. Method of tension coefficient for pin jointed space truss.

Unit-2: Deflection and Slope - Moment curvature relation, the elastic curve, Relation between Loading, SF, BM, Slope and Deflection, Deflection and slopes of statically determinate beams by Double integration method, Macaulay's method, Area moment method, Introduction of Conjugate beam method.

Unit-3: Strain Energy - Strain energy due to axial load, bending, shear and torsion, Castiglione's theorem for deflection and rotation, Betti's theorem, Maxwell's law of reciprocal deflections, unit load and strain energy method for determination of displacements of statically determinate beams, pin-jointed trusses and rigid frames.

Unit-4: Rolling Loads & Influence Lines - Introduction to Rolling loads, concept of influence lines, influence lines for reaction, shear force and bending moment in simply supported beams, influence lines for forces in trusses, analysis for different types of rolling loads - single concentrated load, several concentrated loads, uniformly distributed load shorter and longer than the span, Absolute maximum bending moment.

Unit-5: Cables, suspension bridges & arches - Analysis of forces in cables with concentrated and continuous loadings, suspension bridges with three-hinged stiffening girders, Theory of arches - Eddy's theorem, analysis of three-hinged arches.

Course Outcomes:

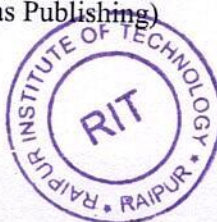
1. To be able to find out indeterminacies of structures and be capable of differentiating the structures.
2. To be able to find out and apply suitable method for analysis of structures to evaluate displacements.
3. To be capable of applying strain energy method to find displacements of determinate structures.
4. To be able to draw Influence Line Diagram for functions such as reactions at the supports, bending moment and shear force at a section and capable of evaluating maximum values of these functions for various load positions.
5. To be able to analyze suspension bridges and arches.

Text Books:

1. Mechanics of Materials – Dr. B. C. Punmia, Jain & Jain (Laxmi Publications)
2. Theory of Structures - Dr. B. C. Punmia, Jain & Jain (Laxmi Publications)

Reference Books:

1. Theory & Analysis of Structures (Vol. – I & II) – Jain, O.P. and Jain B.K. (Nem Chand)
2. Structural Analysis – R.C. Hibber (Pearson Publication)
3. Structural Analysis – Ghali, A. & Neville, M. (Chapman & Hall Publication. 1974)
4. Elementary Structural Analysis – Willbur and Norris (Tata McGraw Hill)
5. Structural Analysis – Negi L.S. & Jangid R.S. (Tata McGraw Hill)
6. Theory of Structures – Ramamurtham S. & Narayan R. (Dhanpat Rai Publications)
7. Basic Structural Analysis (Vol. I & II) – Bhavikatti S.S. (Vikas Publishing)



“PLANNING ANALYSIS AND DESIGN OF OVERHEAD CIRCULAR WATER TANK”

**A Thesis submitted to
CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI(C.G), India**



Submitted in partial fulfillment of the requirement for the award of the degree of

**Bachelor of Technology in
CIVIL ENGINEERING from
RAIPUR INSTITUTE OF TECHNOLOGY (RITEE), RAIPUR**



Submitted By,

GAUTAM PATHAK	301202021333
JANET	301202021331
MANAS DEKA	301202021316

Under the guidance of

Mr. Manish Nayak

(Assistant Professor) Department of Civil Engineering,

Raipur Institute of Technology (RITEE), Raipur, Chhatauna Mandir Hasaud, Raipur, India



CERTIFICATE OF COMPLETION

This is to certify that the following ⁸th semester B.Tech students of the **DEPARTMENT OF CIVIL ENGINEERING of RAIPUR TINSTITUTE OF TECHNOLOGY** have successfully completed the project on **“PLANNING ANALYSIS AND DESIGN OF OVERHEAD CIRCULAR WATER TANK”** in the partial fulfillment of the award of the degree of Bachelor of Technology (B.Tech) in Civil Engineering under **CHHATTISGARH SWAMI VIVEKANANDA TECHNICAL UNIVERSITY (CSVTU)**.

Name of the students and roll numbers –

GAUTAM PATHAK 301202021319

JANET 301202021331

MANAS DEKA 301202021316

I wish them every success in life.

Raipur

Dated.....

Mr. Manish Nayak Assistant

Professor

DEPARTMENT OF CIVIL ENGINEERING
RAIPUR INSTITUTE OF TECHNOLOGY (RITEE) RAIPUR
Chhatauna, Mandir Hasaud, Raipur (C.G.)



ABSTRACT

In this project, we have planned, analyzed and designed an overhead circular reinforced cement concrete tank, to cater to requirements of XYZ village panchayat. The population of the village panchayat is estimated as 1350 using conventional population forecasting methods. For this requirement, a circular overhead water tank is planned using the popular drafting software AutoCAD 2D. It is further analyzed using the premiere analysis software STAADPRO. Based on the analysis using STAAD PRO, the salient features of the overhead circular water tank is manually designed. The design and detailed drawings are presented in this project work.



Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Technology

Branch: Civil Engineering

Subject: Structural Analysis – II(Professional Elective –I)

Class Tests: Two (Minimum)

ESE Duration: Three Hours

Semester: V

Code: C020531(020)

Assignments: Two (Minimum)

Maximum Marks: 100

Minimum Marks: 35

UNIT-1: Analysis by Classical Methods: Introduction- What makes a structure and roles of a structural engineer.

Review of solid mechanics: Stability of structures, Indeterminate Structures, Static and kinematic indeterminacies, Boundary conditions, Redundancy, Flexural Rigidity, Elastic Curve, Degree of freedom, Force and Displacement methods of structure analysis, Principle of superposition.

Analysis of indeterminate beams using by Classical Methods: Consistent deformation method, Theorem of three moments (Clapeyron's theorem of three moments). Application to problems of beams and frames to determine the support reactions, plot shear force and bending moment diagrams, considering sinking of support.

UNIT-2: Analysis by Energy Method: Introduction - Concepts of energy principles, Strain energy of linear elastic systems due to axial load, bending moment and torsion. Minimum strain energy and Castigliano's second theorem, Principle of virtual displacement and virtual forces - Castigliano's first theorem - Maxwell's reciprocal theorem, Betti's law. Resilience, lack of fit, Thermal stresses, Settlement of supports,

Application to problems of indeterminate beams, 2D pin jointed frames (trusses), 2 hinged arches and 2D rigid frames to determine the support reactions, plot shear force and bending moment diagrams.

UNIT-3: Method of Moment distribution: Framed structure, sway and non-sway framed structure, causes of sway in framed structure, deformation in sway and non-sway framed structure, Stiffness, Fixed end moments due to various loads and settlement, Bending stiffness, Distribution factors, Carryover factors, Sign convention.

Application of Method of Moment Distribution to problems of indeterminate beams (also with cases of sinking of supports) and rigid frames (single/ multiple bay, single/ multi storey portals) without and with sway problem to determine the support reactions, plot shear force, bending moment diagrams and elastic curve.

UNIT-4: Method of Slope deflection: Joint equilibrium equations, compatibility and Boundary conditions

Application of Method of Slope deflection to problems of indeterminate beams (also with cases of sinking of supports) and rigid frames (single/ multiple bay, single/ multi storey portals) without and with sway problem to determine the support reactions, slope, deflections, plot shear force, bending moment diagrams and elastic curve.

Basics of Column analogy method and its application for fixed beams.

UNIT-5: Influence lines by Muller Breslau Principle: Review of Influence line, rolling load; Difference between ILD, SFD, BMD, Joint equilibrium equations, compatibility, Boundary conditions, Maxwell Betti's theorem. Muller Breslau Principle.

Application of Muller Breslau principle: Qualitative and quantitative influence lines for Support Reactions, Shear Force Diagram and Bending Moment. Diagram of indeterminate beams - propped Cantilevers and continuous beams.

Basics of Influence lines for Arches and stiffening girders.

Text Books:

1. SMTS – II Theory of Structures – Punmia B.C., A. K. Jain, A. K. Jain (Laxmi Publications)
2. Fundamentals of Structural Analysis (with Computer Analysis and Applications) – Sujit Kumar Roy and Subrata Chakrabarty (S. Chand)
3. Basic Structural Analysis – C.S. Reddy (Tata McGraw Hill)



A
Major Project Report on

"WAFSec"

Submitted

To

Chhatisgarh Swami Vivekanand Technical University
Bhilai (C.G.) India



In partial fulfilment

For the award of the Degree

Of

Bachelor of Technology

In

Computer Science and Engineering

By

Durgesh Sahu

Roll No.: 301202220065

Enroll No.: BJ5755

Under the guidance of

Mrs. Rashmi Chandra

Asst. Professor, Department of Computer Science and Engineering, RITEE



Department of Computer Science and Engineering

Raipur Institute of Technology, Raipur

Chhatauna, Mandir Hasaud, Raipur (C.G.) India – 492101

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SESSION: 2020-2024



[Signature]

PRINCIPAL

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

CERTIFICATE OF THE SUPERVISOR

This is to certify that the report of the thesis entitled "WAFSec(Web Application Firewall Security tool)" is a record of bonafide research work carried out by "Durgesh Sahu" bearing Roll No: "301202220065" & Enrollment No: "BJ5755" under my guidance and supervisor for the award of Degree of Bachelor of Technology in the faculty of "Computer Science and Engineering", of Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the Project:

- Embodies the work of the candidate him/herself.
- Has not been submitted for the award of any degree.
- Fulfils the requirement of the ordinance relating to the B. Tech degree of the university.
- I'm up to the desired standard in respect of contents and is being referred to the examiners.


27/04/24

(Signature of the Guide)

Mrs. Rashmi Chandra

Asst. Professor, CSE

RITEE, Raipur



(Signature of the HOD)

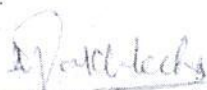
Mr. Mahadev Bag

Head of Department, CSE

RITEE, Raipur

Recommendation

The Project work as mentioned above is here by being recommended and forwarded for examination and evaluation.



Dr. Manish Sakhlecha (Principal)

(Raipur Institute of Technology, Raipur (C.G.))





PRINCIPAL

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

ABSTRACT

The increasing sophistication of cyber threats poses significant challenges to the security of web applications, necessitating the development of effective defense mechanisms. Web Application Firewalls (WAFs) play a crucial role in safeguarding web applications against a myriad of cyber attacks by inspecting and filtering HTTP traffic. However, assessing the effectiveness of WAF deployments remains a daunting task due to the complexity of WAF configurations and the dynamic nature of web application traffic. In response to these challenges, this thesis presents the WAF Security Testing (WAFSec) tool, an open-source Python-based application designed to evaluate the effectiveness of WAFs systematically. WAFSec employs a comprehensive set of predefined and customizable payloads to simulate real-world attack scenarios and assess WAF responses for false positives and false negatives. The tool offers both a user-friendly web interface and a command-line interface (CLI), catering to the diverse needs of security professionals and developers. Through meticulous requirement analysis, system design, implementation, testing, and deployment, WAFSec aims to provide organizations with a powerful and accessible solution for evaluating the security posture of their web applications. The thesis concludes with future research directions and recommendations for enhancing WAFSec's capabilities and addressing emerging challenges in web application security.



A handwritten signature in green ink, appearing to read "Dr. Chhatauna".

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

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

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

Program / Semester: B.Tech (III)	Branch: Computer Science & Engineering
Subject: Principles of Programming Languages	Course Code: B022313(022)
Total / Minimum-Pass Marks (End Semester Exam): 100 / 35	L: 2 T: 1 P: 0 Credits: 3
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): 03 Hours

UNIT- I Program Design: Introduction- fundamental design concepts - Modules and modularization criteria - Design notation: Procedure template, Pseudo code - Structured flow chart decision. Tables - Design techniques: Stepwise refinement, Levels of abstraction, Top down- Test Plans-Design guidelines.

UNIT-II Programming language processors: Characteristics of programming languages, Factors influencing the evolution of programming language, Development in programming methodologies, desirable features and design issues, Structure and operations of translators, software simulated computer, syntax, semantics, structure, virtual computers, binding and binding times, storage management comparisons.

UNIT- III Functional & Logic programming languages: Introduction, comparison and applications of functional and logic programming languages; fundamentals of LISP (Objects, Control constructs, List processing) & PROLOG (Syntax, Lists, Operators and arithmetic, Control constructs).

UNIT-IV Object-Oriented Programming Concepts-I: Introduction to Basic Object-Oriented Concepts: (Object, Class, Encapsulation, Abstraction, Data Hiding, Inheritance, Polymorphism, Message Passing), Basic structure of a C++ program, C++ Compiler, C++ Classes, Methods, Objects, Nested Class, Const, Static members, this pointer, Comparison between Pointer and Reference Variables, Comparison between New and Delete Operators.

UNIT-V Object-Oriented Programming Concepts-II: Constructor, Destructor, Function and Operator Overloading, Friend functions and Friend classes, Inheritance, Abstract classes, Polymorphism, Virtual Function and Classes, Dynamic Binding, Exception Handling and Templates.

Text Books:

1. "Software Engineering Concepts" by Richard Fairley, Tata McGraw Hill,
2. "Programming Languages, Design and implementation" by Terrance W. Pratt, and Marvin V. Zelkowitz, Prentice-Hall of India, Fourth edition, 2002.
3. E. Balagurusamy, Object Oriented Programming with C++, Tata McGraw Hill

Reference Books:

1. "Programming Languages – Concepts and Constructs" by Ravi Sethi, Addison-Wesley, 2nd Ed. 1996.
2. "Programming Languages: Principles and Paradigms" by Allen B. Tucker, Robert Noonan, TMH, 2006.

Course Outcomes [After undergoing the course, students will be able to:]

1. Obtain broad understanding of the role of computer science, fundamental software design concepts and notations.
2. Get an overview of various programming language paradigms, processors & software simulation types.
3. Understand key concepts in the implementation of common features of programming languages.
4. Acquire knowledge of basic concepts about object-oriented programming languages.
5. Program in object-oriented programming language paradigm using various computational methods.

A
Major Project Report on
"WEB 3.0 BLOCKCHAIN WEBAPP"
Submitted

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



In partial fulfilment
For the award of the Degree
Of
Bachelor of Technology
In
Computer Science and Engineering
By

Sunny Dubey
Roll No.: 301202220059
Enroll No.: BK3068

Sanskar Sharma
Roll No.: 301202220001
Enroll No.: BK0196

Yashaswi Upadhyay
Roll No.: 301202220007
Enroll No.: BK1724

Under the guidance of
Mrs. Rashmi Chandra
Asst. Professor, Department of Computer Science and Engineering, RITEE



**Department of Computer Science and
Engineering Raipur Institute of Technology,
Raipur**
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0771-2537 634



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SESSION: 2020-2024




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

CERTIFICATE OF THE SUPERVISOR

This is to certify that the report of the thesis entitled "**Web 3.0 BlockChain WebApp**" is a record of bonafide research work carried out by "Sunny Dubey, Yashaswi Upadhyay, Sanskar Sharma" bearing Roll No: "301202220059, 301202220007, 301202220001" & Enrollment No: "BK3068, BK1724, BK0196" under my guidance and supervisor for the award of Degree of Bachelor of Technology in the faculty of "Computer Science and Engineering", of Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the Project:

- Embodies the work of the candidate him/herself.
- Has not been submitted for the award of any degree.
- Fulfills the requirement of the ordinance relating to the B. Tech degree of the university,
- I'm up to the desired standard in respect of contents and is being referred to the examiners.

(Signature of the Guide)

Mrs. Rashmi Chandra
Asst. Professor, CSE
RITEE, Raipur

(Signature of the HOD)

Mr. Mahadev Bag
Head of Department, CSE
RITEE, Raipur

Recommendation

The Project work as mentioned above is here by being recommended and forwarded for examination and evaluation.

Dr. Manish Sakhlecha (Principal)
(Raipur Institute of Technology, Raipur (C.G.))

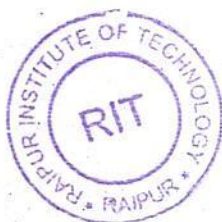


(Signature of the Principal)
PRINCIPAL

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

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[Signature]

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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

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

Program / Semester: B.Tech (III)	Branch: Computer Science & Engineering
Subject: Data Structures & Algorithms	Course Code: B022312(022)
Total / Minimum-Pass Marks (End Semester Exam): 100 / 35	L: 3 T: 1 P: 0 Credits: 4
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): 03 Hours

UNIT- I Introduction: Basic Terminology, Elementary Data Organization, Algorithm, Efficiency of an Algorithm, Time and Space Complexity, Asymptotic notations: Big-Oh, Time-Space trade-off. Abstract Data Types (ADT) Arrays: Definition, Single and Multidimensional Arrays, Row Major & Column Major Order Representation of Arrays, Application of arrays, Sparse Matrices and their representations. Linked lists: Array Implementation and Dynamic Implementation of Singly Linked Lists, Doubly Linked List, Circularly Linked List, Operations on a Linked List. Insertion, Deletion, Traversal, Polynomial Representation and Addition, Generalized Linked List.

UNIT-II Stacks: Abstract Data Type, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C, Application of stack: Prefix and Postfix Expressions, Evaluation of postfix expression, Recursion, Tower of Hanoi Problem, Simulating Recursion, Principles of recursion, Tail recursion, Removal of recursion Queues, Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues, Array and linked implementation of queues in C, Dequeue and Priority Queue.

UNIT- III Trees: Basic terminology, Binary Trees, Binary Tree Representation: Array Representation and Dynamic Representation, Complete Binary Tree, Algebraic Expressions, Extended Binary Trees, Array and Linked Representation of Binary trees, Search Trees: Binary Search Trees (BST), Insertion and Deletion in BST Trees, Traversal algorithms: Inorder, Preorder and Postorder, Threaded Binary trees, Traversing Threaded Binary trees.

UNIT-IV Graphs: Terminology, Sequential and linked Representations of Graphs: Adjacency Matrices, Adjacency List, Adjacency Multi list, Graph Traversal: Depth First Search and Breadth First Search, Connected Component, Spanning Trees, Minimum Cost Spanning Trees: Prim's and Kruskal algorithm. Transitive Closure and Shortest Path algorithm: Warshall Algorithm and Dijkstra Algorithm.

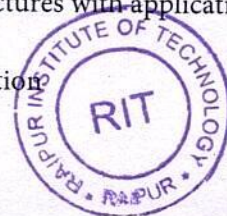
UNIT-V Searching: Sequential search, Binary Search, Comparison and Analysis Internal Sorting: Insertion Sort, Selection, Bubble Sort, Quick Sort, Two Way Merge Sort, Heap Sort, Radix Sort, Tree (BST) Sort; Complexity of Search Algorithm, AVL trees, Introduction to m-way Search Trees, B Trees & B+ Trees, Hashing: Hash Function, Collision Resolution Strategies, Storage Management: Garbage Collection and Compaction.

Text books:

1. Aaron M. Tenenbaum, Yeddyiah Langsam and Moshe J. Augenstein "Data Structures Using C and C/C++", PHI
2. Horowitz and Sahani, "Fundamentals of Data Structures", Galgotia Publication.
3. Lipschutz, "Data Structures" Schaum's Outline Series, TMH

References books:

1. Jean Paul Trembley and Paul G. Sorenson, "An Introduction to Data Structures with applications", McGraw Hill
2. R. Kruse et al, "Data Structures and Program Design in C", Pearson Education



A
Major Project Report on
"ROOM RENTAL WEBSITE"

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



In partial fulfilment
For the award of the Degree
Of
Bachelor of Technology
In
Computer Science and Engineering
By

Sudhakar Patel
Roll No: 301202220025
Enroll No.: BK1843

Priyanshu Verma
Roll No: 301202220021
Enroll No.: BK1815

Anant Biswas
Roll No: 301202220035
Enroll No.: BK2074

Under the guidance of
Mr. Mahadev Bag
Asst. Professor, Department of Computer Science and Engineering, RITEE



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SESSION: 2020-2024



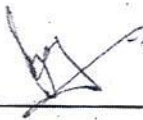
Mahadev Bag
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RAIPUR INSTITUTE OF TECHNOLOGY
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

CERTIFICATE OF THE SUPERVISOR

This is to certify that the report of the thesis entitled "Room Rental Website" is a record of bonafide research work carried out by "Sudhakar Patel, Priyanshu Verma, Anant Biswas" bearing Roll No: "301202220025, 301202220021, 301202220035" & Enrollment No: "BK1843, BK1815, BK2074" under my guidance and supervisor for the award of Degree of Bachelor of Technology in the faculty of "Computer Science and Engineering", of Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the Project:

- Embodies the work of the candidate him/herself.
- Has not been submitted for the award of any degree.
- Fulfils the requirement of the ordinance relating to the B. Tech degree of the university.
- I'm up to the desired standard in respect of contents and is being referred to the examiners.



(Signature of the Guide)

Mr. Mahadev Bag
Asst. Professor, CSE
RITEE, Raipur



(Signature of the HOD)

Mr. Mahadev Bag
Head of Department, CSE
RITEE, Raipur

Recommendation

The Project work as mentioned above is here by being recommended and forwarded for examination and evaluation.



Dr. Manish Sakhlecha (Principal)
(Raipur Institute of Technology, Raipur (C.G.))




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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

ABSTRACT

This project introduces a "Room Rental Website" designed to optimize the job search experience through the integration of the HTML, CSS, JS, Bootstrap and PHP.

RentRoom is a website where you can easily find and rent rooms. It helps people who need a place to live and those who have rooms to rent connect with each other.

On RentRoom, you can search for rooms based on things like where you want to live, how much you can pay, and what amenities you need. Landlords can list their rooms with pictures and details about the rent and rules.

The website is designed to be easy to use and keeps your information safe. It suggests rooms that match what you're looking for and lets you talk to landlords through messages.

It also helps with payments, scheduling visits to see the room, and managing agreements. It's made to work well on computers, phones, and tablets.

Overall, it makes finding and renting a room simple and convenient for everyone involved.



A handwritten signature in green ink, appearing to read "Rishabh".

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[Signature]
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RAIPUR INSTITUTE OF TECHNOLOGY
C. ...

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

Program / Semester: B.Tech (III)	Branch: Computer Science & Engineering
Subject: Operating System	Course Code: B022315(022)
Total / Minimum-Pass Marks (End Semester Exam): 100 / 35	L: 3 T: 1 P: 0 Credits: 4
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): 03 Hours

UNIT- I Introduction: Operation System objectives and functions, The Evolution of operating Systems, Batch Systems, interactive systems, time sharing and real time systems, Protection. Operating System Structure, System Components, operating system service, System structure. Distributed Computing.

UNIT-II Concurrent Processes: Process concept: Introduction, Definitions, Process States, Process State Transitions, The process Control Block, Operations on Processes, Suspend and Resume, Interrupt Processing. Mutual Exclusion, the Producer / Consumer problem, the critical section problem, Semaphores, Classical problems in concurrency, inter process communication. CPU scheduling: concepts, performance criteria, and scheduling Algorithms. Algorithm evaluation, Multiprocessor scheduling.

UNIT- III Dead Locks: System model, Deadlock characterization. Prevention, Avoidance and Detection, Recovery from deadlock, combined approach.

UNIT-IV Memory Management: Base machine, Resident Monitor, multiprogramming with fixed partition, Multiprogramming with variable partitions, Paging, Segmentation, paged - segmentation, virtual Memory concepts, Demand paging, performance, Page Replacement algorithms, Allocation of frames, Thrashing, cache memory organization.

UNIT-V I/O Management & Disk Scheduling: I/O system Interrupts Direct Memory Access, I/O Buffering, File system: File Concepts – File organization and Access mechanism, File Directories, File sharing, Implementation issues. Disk Scheduling algorithms. Case Study on LINUX: Kernel and Buffer Cache Architecture, concept of inode file & directory structure, Basic system calls (Open, Read, Write, namei, File and Record Close, File Creation, Creation of Special Files, Change Directory and Change Root, Change Owner and Change Mode

Text Books:

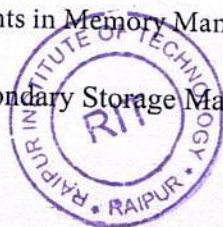
1. Operating system concepts Galvin by Silberschatz, John Wiley & Sons
2. Operating System Design & Implementation by Tanenbaum, A.S., PHI.
3. The Design of Unix Operating System, Maurice J. Bach, Pearson Education.

Reference Books :

1. Modern Operating System: Andrew S. Tanenbaum, PEARSON EDUCATION INTERNATIONAL
2. Operating System concepts by Silberschatz A and Peterson, J.L, PE- LPE.
3. Operating systems: Internals & Design Principles, William Stallings, PHI.

Course Outcomes [After undergoing the course, students will be able to:]

1. Identify the role of operating system in making computers execute data-processing jobs.
2. Realize managing computer's resource complexity during concurrent process execution through OS layers.
3. Analyse the reasons of resource bottlenecks-concurrency, deadlock and various synchronization mechanisms available.
4. Understand the functioning of operating system components in Memory Management techniques, Virtual Memory Management.
5. Understand disk organization, file system structure, Secondary Storage Management functions of OS.



A
Major Project Report On
"Expense Tracking Application"

Submitted

To

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY

BHILAI (C.G.), India



In partial fulfilment

For the award of the Degree

Of

Bachelor of Technology

In

Computer Science & Engineering

By

Khushi Sonchhatra, Jharna Chandrakar, Deepak Sahu

B.Tech

Under the guidance of

Ms. Jyoti Patel

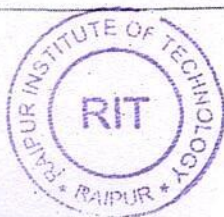
Assistant Professor (CSE)



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SESSION: 2020-24



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CERTIFICATE OF THE SUPERVISOR

This is to certify that the report of the thesis entitled "Expense Tracking Application" is a record of Bonafede research work carried out by "Khushi Sonchhatra, Jharna Chandrakar, Deepak Sahu "; bearing Roll No.: "301202220003, 301202220049, 301202220043" & Enrolment No.: " BK1697, BK2143, BK2114" under my guidance and supervision for the award of Degree of Bachelor of Technology in the faculty of "Computer Science and 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 him/herself,
- Has duly been completed,
- Fulfils the requirement of the Ordinance relating to the B.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.

(Signature of the Guide)

Ms. Jyoti Patel
Assistant Professor
Department of
CSE RITEE (Raipur)

(Signature of the HOD)

Mr. Mahadev Bag
Head of the department
Department of
CSE RITEE(Raipur)

Forwarded to Chhattisgarh Swami Vivekananda Technical University Bhilai

Dr. Manish Sakhlecha
(Signature of the Principal)

Raipur institute Of Technology
Chhatauna, Mandir Hasaud, Raipur Chhattisgarh, 492101



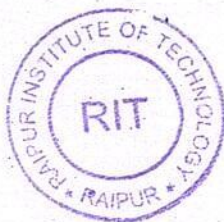
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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

ABSTRACT

The Expense Tracker Application developed using Flutter represents a pioneering solution in personal finance management, seamlessly combining the versatility of Flutter's cross-platform development with the practicality of efficient expense tracking. In today's dynamic and fast-paced world, individuals increasingly recognize the need for a robust tool to monitor, categorize, and analyse their expenses in real-time. This application emerges as a user-centric, feature-rich solution that empowers users to take control of their financial well-being.

At its core, the Expense Tracker Application serves as a digital companion for users to record and manage their daily expenditures effortlessly. The utilization of Flutter, an open-source UI toolkit by Google, facilitates the creation of a unified codebase that ensures consistent performance across both Android and iOS platforms. This cross-platform compatibility is a cornerstone of the application's accessibility, ensuring a broad user reach regardless of device preferences.

The user interface is intuitively designed to provide a seamless experience, allowing users to effortlessly input and categorize expenses. Flutter's 'hot reload' feature proves invaluable during the iterative design process, enabling developers to make real-time adjustments for an optimal user experience. Users can categorize expenses into predefined or customizable categories, providing a detailed breakdown of their spending patterns.



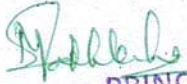
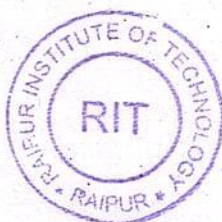

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Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: B.Tech (IV)	Branch: Computer Science & Engineering
Subject: Database Management System	Course Code: B022413(022)
Total / Minimum-Pass Marks (End Semester Exam): 100 / 35	L: 3 T: 1 P: 0 Credits: 4
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): 03 Hours

UNIT I Database system architecture: Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML). **Data models:** Entity-relationship model, network model, relational and object-oriented data models, integrity constraints, data manipulation operations.

UNIT II Relational query languages: Relational algebra, Tuple and domain relational calculus, SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server. **Relational database design:** Domain and data dependency, Armstrong's axioms, Normal forms, Dependency preservation, Lossless design.

UNIT III Query processing and optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms. **Storage strategies:** Indices, B-trees, hashing.

UNIT IV Transaction processing: Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp-based schedulers, Multi-version and optimistic Concurrency Control schemes, Database Recovery.

UNIT V Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection. **Advanced topics:** Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.

Text books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill.
2. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education
3. "Introduction to Database Systems", 8th Edition by C J Date, Addison Wesley, 2003.

Suggested reference books

1. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.
2. "Foundations of Databases", Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley

Course Outcomes [The students should be able to]:

1. Be familiar with basic concepts of RDBMS, Relational data model & be able to write relational algebra expressions for queries;
2. Be familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B-tree and hashing;
3. Understand DML, DDL and will be able to construct queries using SQL by knowing the importance of data & its requirements in any applications;
4. Utilize a database modelling technique for a single entity class, a one-to-one (1:1) relationship between entity classes, a one-to-many (1:M) relationship between entity classes, a many-to-many (M:M) relationship between entity classes, and recursive relationships;
5. Be familiar with the basic issues of transaction, its processing and concurrency control.



A
Minor Project Report on
"MEDICOAI"
A Machine Learning Approach to Personalized Healthcare
Submitted
To
Chhatisgarh Swami Vivekanand Technical University
Bhilai (C.G.) India



In partial fulfilment
For the award of the Degree
Of
Bachelor of Technology
In
Computer Science and Engineering

Ankit Prajapati
Roll No.: 301202220062
Enroll No.: BJ5741

Arif Raza Ansari
Roll No.: 301202220037
Enroll No.: BK2083

Dharam kumar Sahu
Roll No.: 301202220064
Enroll No.: BJ5750

Under the guidance of
Mr. Mahadev Bag
Head of Department, Department of Computer Science and Engineering,
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SESSION: 2020-2024


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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

CERTIFICATE OF THE SUPERVISOR

This is to certify that the report of the thesis entitled "**MedicoAI**" is a record of bonafide research work carried out by "Ankit Prajapati, Arif Raza Ansari, Dharam Kumar Sahu" bearing Roll No: "301202220062, 301202220037, 301202220064" & Enrollment No: "BJ5741, BK2083, BJ5750" under my guidance and supervisor for the award of Degree of Bachelor of Technology in the faculty of "Computer Science and Engineering", of Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

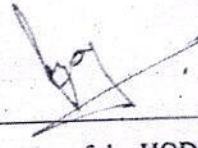
To the best of my knowledge and belief the Project:

- Embodies the work of the candidate him/herself.
- Has not been submitted for the award of any degree.
- Fulfils the requirement of the ordinance relating to the B. Tech degree of the university.
- I'm up to the desired standard in respect of contents and is being referred to the examiners.



(Signature of the Guide)

Mr. Mahadev Bag
Head of Department, CSE
RITEE, Raipur

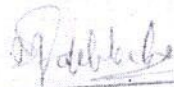


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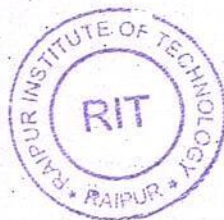
Mr. Mahadev Bag
Head of Department, CSE
RITEE, Raipur

Recommendation

The Project work as mentioned above is here by being recommended and forwarded for examination and evaluation.



Dr. Manish Sakhlecha (Principal)
(Raipur Institute of Technology, Raipur (C.G.))



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

ABSTRACT

In an era marked by exponential technological advancement, MedicoAI emerges as a transformative solution at the intersection of healthcare and artificial intelligence. Rooted in the principles of personalized medicine, this innovative platform harnesses the power of machine learning algorithms to revolutionize the way healthcare is delivered and experienced. MedicoAI serves as a beacon of hope for individuals seeking proactive and tailored approaches to managing their health.

At its core, MedicoAI is designed to empower users with actionable insights derived from their symptoms. By seamlessly integrating user-provided symptoms with advanced machine learning models, the platform offers accurate disease predictions, insightful descriptions, precautionary measures, and personalized healthcare recommendations. From suggesting appropriate medications to recommending workouts and dietary plans, MedicoAI equips users with the tools and knowledge needed to make informed decisions about their health.

MedicoAI's commitment to holistic wellness extends beyond physical health to encompass mental well-being. Through sophisticated psychological assessments, the platform evaluates users' mental health status and provides targeted resources and support, fostering a comprehensive approach to overall wellness.

Developed using a diverse array of technologies, including Python, Flask, HTML, CSS, and JavaScript, MedicoAI prioritizes usability, accessibility, and reliability. The platform's intuitive user interface simplifies the symptom input process, ensuring a seamless experience for users of all backgrounds and technical proficiencies.

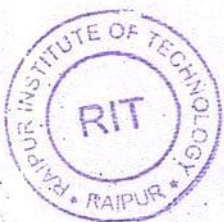
As a beacon of innovation in the healthcare landscape, MedicoAI is not merely a platform but a catalyst for change. By democratizing access to personalized healthcare insights and empowering individuals to take control of their health journey, MedicoAI represents a paradigm shift in healthcare delivery. With its unwavering commitment to accuracy, ethics, and user-centricity, MedicoAI stands poised to shape the future of healthcare, one personalized recommendation at a time.




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4.3 Data Collection and Preprocessing	
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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

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

Program / Semester: B.Tech (IV)	Branch: Computer Science & Engineering
Subject: Object Oriented Programming (with JAVA)	Course Code: B022414(022)
Total / Minimum-Pass Marks (End Semester Exam): 100 / 35	L: 2 T: 1 P: 0 Credits: 3
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): 03 Hours

UNIT- I Introduction & Fundamentals of JAVA, Background of JAVA, About Java Technology, Java's architecture, Reading console inputs, Arrays, Constructors, Finalize method, final, this method and reference, static members.

UNIT-II Concrete class, Abstract class, Interface, Inner classes. Aggregation, Composition and Inheritance, super method and reference. Method overloading and overriding. Singleton classes. Package concepts. Exception Handling: Inbuilt, User defined, Checked and Unchecked.

UNIT- III String class. Wrapper classes (Integer, Boolean, Character, etc.). Multi-threading: Thread concept, Thread class, Runnable interface, Creating customized threads, Thread synchronization, Thread class methods. Java I/O: Use of InputStream, OutputStream, Reader and Writer classes for reading from and writing data into disk files.

UNIT-IV AWT & SWING: Frame, Panel, Dialog, CheckBox, Choice, List, JComboBox, JFrame, JPanel, JRadioButton, JScrollPane, JTabbedPane, Using Listeners: ActionListener, ContainerListener, FocusListener, ItemListener, KeyListener, MouseListener, TextListener, WindowListener. Applets. JDBC: Type1 to Type4 drivers. Java Networking: ServerSocket, Socket, RMI.

UNIT-V Collections Frameworks: HashSet, TreeSet, ArrayList, LinkedList, Vector, HashMap, TreeMap, Hashtable classes. Generics in Java: Creating instances of generic classes, generic types, Declaring (and invoking) methods that take generic types. Creating and running executable JAR (Java ARchives).

Text Books:

1. Herbert Schildt: "Java A Beginner's Guide, 7th edition", Oracle Press.
2. Maurice Naftalin, Philip Wadler, "Javas Generics and Collections", O'Reilly Media, Inc.
3. Benjamin J Evans, David Flanagan., "Java in a Nutshell", O'Reilly Media, Inc.

Reference Books:

1. Kathy Sierra, Bert Bates, "Head First Java", O'Reilly Media, Inc.
2. Kathy Sierra, Bert Bates, "OCA Java SE 8 Programmer I Exam Guide", McGraw Hill Professional.
3. Kathy Sierra, Bert Bates, "OCA Java SE 8 Programmer II Exam Guide", McGraw Hill Professional.
4. Kathy Sierra, Bert Bates, "OCA/OCP Java SE 8 Programmer Certification Bundle", McGraw Hill Professional.

Course Outcomes [The students should be able to]:

1. Apply Java in developing Object Oriented code.
2. Apply the knowledge of Multi-threading and Streams in developing Java applications.
3. Design and implement applications using GUI and Networking in Java.
4. Apply the knowledge of Collections and Generics for building Java applications.
5. Design and develop Java based applications for solutions to real world problems.





A
Major Project Report
On



"UNDERGROUND FAULT DETECTION SYSTEM"

Submitted to



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

Submitted in Partial Fulfilment of requirement for the award of the degree of
BACHELOR OF TECHNOLOGY

in

ELECTRICAL AND ELECTRONICS ENGINEERING

Submitted by:

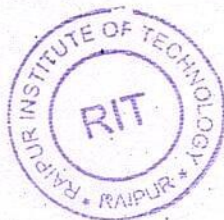
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| 1. DEWANSH KUMAR THAKUR | (301202521306) |
| 2. CHANDAK | (301202520001) |
| 3. JHAMMAN LAL | (301202520008) |
| 4. YOGESH KUMAR | (301202521314) |
| 5. PRAHLAD SAHU | (301202520303) |

Under the Guidance of
DR. RITESH DIWAN SIR
HOD E.E.E. RITEE

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SESSION: 2023-2024




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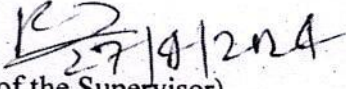
This is to certify that the report of project entitled "**UNDERGROUND FAULT DETECTION SYSTEM**" is a record of bonafide research work carried out by

- | | |
|-------------------------|----------------|
| 1. DEWANSH KUMAR THAKUR | (301202521306) |
| 2. CHANDAK | (301202520001) |
| 3. JHAMMAN LAL | (301202520008) |
| 4. YOGESH KUMAR | (301202521314) |
| 5. PRAHLAD SAHU | (301202520303) |

under my guidance and supervision for the award of degree of Bachelor of Technology in the name faculty of **Dr. Ritesh Diwan Sir** of RITEE, Raipur.

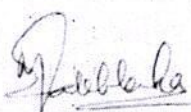
To the best of my knowledge and belief the project

- Embodies the work of the candidate herself
- Has duly been completed,
- Fulfils the requirement of the Ordinance relating to the B. 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,


(Signature of the Supervisor)

Dr. Ritesh Diwan Sir
HOD E.E.E.
RITEE, Raipur

Forwarded to Chhattisgarh Swami Vivekanand Technical University Bilai


(Signature of the Principal)

RITEE, Raipur, C.G.
PRINCIPAL

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





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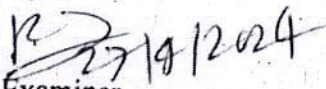
RAIPUR INSTITUTE OF TECHNOLOGY
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CERTIFICATE BY THE EXAMINERS

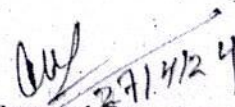
The Project report entitled "**UNDERGROUND FAULT DETECTION SYSTEM**" submitted by

- | | |
|-------------------------|----------------|
| 1. DEWANSH KUMAR THAKUR | (301202521306) |
| 2. CHANDAK | (301202520001) |
| 3. JHAMMAN LAL | (301202520008) |
| 4. YOGESH KUMAR | (301202521314) |
| 5. PRAHLAD SAHU | (301202520303) |

has been examined by the undersigned as a part of the examination and is hereby recommended for the award of the Bachelor of Technology in Electrical and Electronics branch of Chhattisgarh Swami Vivekanand Technical University Bhilai (C.G.), India under the supervision of **DR. RITESH DIWAN SIR** of RITEE, Raipur.

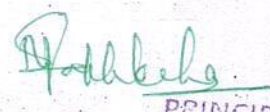

Internal Examiner

Date:


External Examiner

Date:




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

ABSTRACTS

Cable faults are damage to cables which affects the resistance in the cable. If allowed to persist, this can lead to a voltage breakdown. To locate a fault in the cable, the cable must first be tested for faults. This prototype uses the simple concept of OHM's law. The current would vary depending upon the length of fault of the cable. This prototype is assembled with a set of resistors representing cable length in Kilometers and fault creation is made by a set of switches at every known Kilometers (km's) to cross check the accuracy of the same. The fault occurs at what distance and which phase is displayed on a 16X2 LCD interfaced with the microcontroller. The program is burned into ROM of microcontroller. The power supply consists of a step down transformer 230/12V, which steps down the voltage to 12V AC. This is converted to DC using a Bridge rectifier. The ripples are removed using a capacitive filter and it is then regulated to +5V using a voltage regulator 7805 which is required for the operation of the microcontroller and other components.

In this project, a way for sleuthing underground cable fault distance locator is done by using microcontroller. The target of this project is to work out the gap of underground cable fault through base station in kilometers. It uses the straight forward conception of Ohm's law, voltage drop can vary counting on the length of fault in cable, since the current varies. A group of resistors are used to represent the length of cable in kilometers and a dc voltage is fed at one end and the fault is detected the change in voltage using analog to voltage converter. The fault occurring at what distance is shown on LCD which is interfaced with the microcontroller that is used to make the necessary calculations.




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CHHATISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: B.Tech III

Subject: Electrical Machines – I

Total Theory Periods: 36

Total Marks in End Semester Exam: 100

Branch: Electrical Engineering

Code: B024313(024)

Total Tutorial Periods: 12

Total Credits: 4

Course Outcomes: After successful completion of this course students will be able to-

1. CO1: Calculate various magnetic circuit variables and app for force/torque generation.
2. CO2: Develop equivalent circuit, phasor diagram of transformer and use them for performance analysis.
3. CO3: Analyze different type of connections of single and three phase transformer.
4. CO4: Appreciate various tests on transformer and DC machines.
5. CO5: Analyze the performance and operation of transformer and DC machines.

UNIT I: Magnetic Circuits and Electromagnetic Force/Torque (8 hours)

Review of magnetic circuit - MMF, flux, reluctance, inductance, B-H curve of magnetic materials, linear and non-linear magnetic circuits.

Electromechanical energy conversion - Energy stored in magnetic circuit, force as a partial derivative of stored energy with respect to position of a moving element, torque as a partial derivative of stored energy with respect to angular position of a rotating element; Examples-galvanometer coil, relay contact, lifting magnet, rotating element with eccentricity or saliency.

UNIT II: Single Phase Transformer (10 hours)

Review of single phase transformer - Constructional features, operating principle, EMF equation, ideal transformer, phasor diagram of transformer on no-load and on load, excitation phenomenon.

Performance and Testing-Equivalent circuit, per unit representation, voltage regulation, losses, efficiency, condition for maximum efficiency, all-day efficiency, open circuit and short circuit test, back-to-back test, polarity test, separation of losses, parallel operation (equal and unequal voltage ratios)

Auto-transformer-Equivalent circuit, phasor diagram, comparison with two winding transformer, conversion from auto-transformer to two winding transformer and vice versa.

UNIT III: Three Phase Transformer (10 hours)

Three-phase transformers-Constructional details (three and five limb), bank of three single phase units, three phase single unit transformer, different connections and vector groups, calculation of efficiency and regulation **Applications** - Power transformer, distribution transformer, parallel operation of three-phase transformer, Scott connection, open delta connection, tap changing transformer.

UNIT IV: DC Machine-I (10 hours)

Electromagnetic principle of DC machine, BLV and BLI concept, constructional details, production of voltage and torque, classification of DC machine, armature reaction and its effect, methods to reduce armature reaction, commutation, methods of improving commutation, effect of brush shift, Operating characteristics of DC separately excited, series and shunt generator, condition of self excitation, critical speed and critical resistance.

UNIT V: DC Machine-II (10 hours)

Electrical and mechanical characteristics of DC motor, starters for shunt motors-three point and four point starter, speed control of DC motors- armature and field control method, losses in DC machines, efficiency and condition for maximum efficiency, Testing of DC machines- Swinburne's test and Regenerative test (Study only).

Text Books:

1. Nagrath and Kothari, "Electric Machines", TMH Publications.
2. B. R. Gupta, "Electrical machines", New Age International.
3. P. S. Bimbhra, "Electrical Machinery", Khanna Publishers.

Reference Books:

1. J. B. Gupta, "Theory & Performance of Electrical Machines", S. K. Kataria & Sons.
2. Ashfaq Hussain, "Electric Machines", Dhanpat Rai Publication.
3. Samarjeet Ghosh, "Electrical Machines", PHI Publications.
4. P. K. Mukherjee and S. Chakravarti "Electric Machines", Dhanpat Rai Publication.



“Automatic Water Dispenser”

A

Thesis

submitted to

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



In the partial fulfilment of requirement of award of the degree of

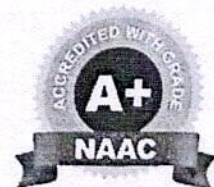
**BACHELOR OF TECHNOLOGY
in
MECHANICAL ENGINEERING
By**

Name	Roll No.	Enrollment No.
Suraj Kr. Pandit	301203721301	CA0747
Suman mandal	301203721316	CA0758
Ajay Navrang	301203721311	BD7208
Abhishek Kumar	301203721310	CA0754

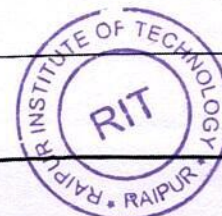
**Under the supervision and guidance of
Mr. Sudhir Singh Rajput
(Assistant Professor)**



**Department of Mechanical Engineering
Raipur Institute of Technology
Chhatauna, Mandir Hasaud, Raipur (C.G.) 492101
E-mail: contactus@rit.edu.in Website: www.rit.edu.in**



Session: 2020-24



CERTIFICATE BY THE SUPERVISOR

This is to certify that the report of the thesis entitled "Automatic Water Dispenser" is a record of Bonafide research work carried out by -

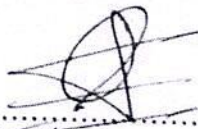
Name	Roll No.	Enrollment No.
Suraj Kr. Pandit	301203721301	CA0747
Suman mandal	301203721316	CA0758
Ajay Navrang	301203721311	BD7208
Abhishek Kumar	301203721310	CA0754

under my guidance and supervision for the award of Degree of Bachelor of Technology in the field of Mechanical Engineering, of Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the thesis

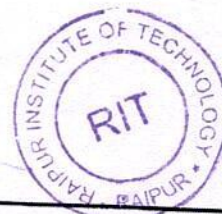
- Embodies the work of the candidate himself,
- Has duly been completed,
- Fulfils the requirement of the Ordinance to the B.Tech. Degree of the University and
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.


.....
Dr. Rajeshwar Verma
(Head of Department)
Department of Mechanical Engineering
Raipur Institute of Technology, Raipur(C.G.)


.....
Mr. Sudhir Singh Rajput
(Supervisor) Assistant Professor
Department of Mechanical Engineering
Raipur Institute of Technology,
Raipur(C.G.)

Forwarded to Chhattisgarh Swami Vivekanand Technical University,
Bhilai(CG)


.....
Principal
Raipur Institute of Technology
Mandir Hasaud, Raipur (C.G.)
RAIPUR INSTITUTE OF TECHNOLOGY
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



Abstract

The "Automatic Water Dispenser" project introduces a practical solution for hands-free water dispensing, ideal for various applications including pet care, plant watering, or small-scale hydration needs. Utilizing an array of components including an IR sensor, 18650 battery, mini slide switch, 7805 IC voltage regulator, 1-channel relay module, mini DC pump, and a 5V buzzer, the system offers a compact and efficient design. Upon detecting the presence of a hand or container through the IR sensor, the system triggers the relay module to activate the mini DC pump, facilitating the dispensing of water. Additionally, the inclusion of a 5V buzzer provides auditory feedback to indicate the dispensing process. Powered by the 18650 battery and regulated by the 7805 IC, the system ensures reliable and continuous operation. With its user-friendly and automated functionality, the Automatic Water Dispenser project presents a convenient and efficient solution for automated water dispensing in various settings.

Keyword: Mini pump, IR sensor, Water dispense, Relay module, 18650 Batteries



Chhattisgarh Swami Vivekanand Technical University, Bhilai

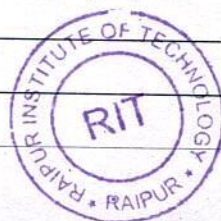
Name of program: Bachelor of Technology	Semester: VI
Branch: Mechanical Engineering	Code: C037611(037)
Subject : Design of Machine Elements	Total Tutorial Periods: 01
Total Theory Periods: 03	Maximum Marks: 100
Class Tests: Two (Minimum)	Minimum Marks: 35
Assignments: Two (Minimum)	ESE Duration: Four Hours

Course Objectives: The objective of this course is to teach students how to apply the concepts of stress analysis, theories of failure and material science analyze/ design commonly used machine components.

UNIT-I	General Considerations: Selection of Materials, Design Stress, Factor of Safety, Stress concentration factor, Intension, bending and torsion, theories of failures. Notch sensitivity, design stress for variable and repeated loads, fatigue stress concentration factor, endurance diagrams.
UNIT-II	Mechanical Joints: Design of socket pigot cotter joint, design of sleeve and cotter joint, design of Knuckle joint. Keys and Splines: Types of keys, design of keys, design of splines. Couplings: Types of couplings, design of flange and flexible couplings, compression coupling, muff coupling.
UNIT-III	Shafts and Axles : Transmission shaft, Design against static load, Design for strength, rigidity and stiffness, design under continuous loading for fatigue. Clutches: Friction clutches, Friction materials, Torque transmitting capacity, Single & Multiple plate clutch, centrifugal clutches.
UNIT-IV	Threaded Fasteners: Geometry of thread forms, terminology of screw threads and thread standards, specifications of steel bolts, initial tension, and relation between bolt tension and torque, design of statically loaded tension joints, design of bolted joints due to eccentric loading. Power Screws: Power screws, Force analysis-square and trapezoidal threads, Collar friction, Stresses in screw, coefficient of friction, efficiency of thread.
UNIT-V	Riveted Joints: Types of rivet threads, types of riveted joints, failure of riveted joint, strength of rivet joint, efficiency of riveted joint, design of riveted joint for boiler. Welded Joints: Types of welded joints, stresses in butt and fillet welds, strength of welded joints, location and dimension of weld design, eccentrically loaded joint, welded joint subjected to bending moment, design procedure, fillet weld under varying loads, stress relieving techniques.

Text Books:

1.	Design of Machine Elements-V.B.Bhandari- TMH, New Delhi
2.	Mechanical Engineering Design-Shigley- McGraw Hill, Delhi



**COMPUTER AIDED DESIGN AND ANALYSIS OF HOISTING
MECHANISM OF CRANE HOOK**

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 TECHNOLOGY

In

Mechanical Engineering

By

Name	Roll No.	Enrollment No.
Md Shamshad Ansari	301203720008	BJ8436
Yogesh Kumar Chandrakar	301203721318	BG4107
Somariya	301203721319	BG4121

Under the supervision of

Mr. Ashwini Bhoi

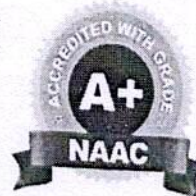
(Assistant Professor)



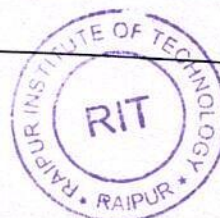
**Department of Mechanical Engineering
Raipur Institute of Technology**

Chhatauna, Mandir Hasaud, Raipur (C.G.) 492101

E-mail: contactus@rit.edu.in Website: www.rit.edu.in



Session: 2023-24



CERTIFICATE BY THE SUPERVISOR

This is to certify that the report of the thesis entitled "COMPUTER AIDED DESIGN AND ANALYSIS OF HOISTING MECHANISM OF CRANE HOOK" is a record of bonafide research work carried out by

S.N.	Name	Roll No.	Enrollment No.
1	Md. Shamshad Ansari	301203720008	BJ8436
2	Yogesh Kumar Chandrakar	301203721318	BG4107
3	Somariya	301203721319	BG4121

under my guidance and supervision for the award of Degree of Bachelor of Technology in the field of Mechanical Engineering, of Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the thesis

- Embodies the work of the candidate himself,
- Has duly been completed,
- Fulfills the requirement of the Ordinance to the B.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. Rajeshwar Verma

(Head of Department)

Department of Mechanical Engineering

Raipur Institute of Technology, Raipur(C.G.)


.....
Mr. Ashwini Bhoi

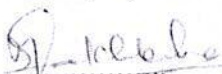
(Supervisor)

Assistant Professor

Department of Mechanical Engineering

Raipur Institute of Technology, Raipur(C.G.)

Forwarded to Chhattisgarh Swami Vivekananda Technical University,
Bhilai(CG)


.....
Principal

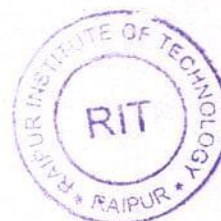
Raipur Institute of Technology
Mandir Hasaud, Raipur (C.G.)
PRINCIPAL

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



ABSTRACT

In this project an overall design of the hoisting mechanism of a crane hook has been carried out. The dimensions of the main components have been determined for a load capacity of 50 ton crane having 8 rope falls. Various dimensions for cross sections of various shapes for crane hook have been found. After the system was designed the stress and deflection are calculated at critical points using ANSYS and optimized. which cross section would be better keeping some parameters constant for all the case . Various dimensions and load per wire for wire rope has been found. Using various formulae found the dimensions for pulley, Rope-drum. Also calculated the Power and ratings for the motor, brakes used in the hoist mechanism.



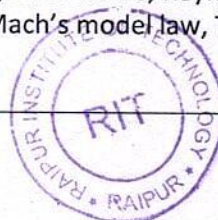
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Technology	Semester: IV
Branch: Mechanical Engineering	Code: B037412(037)
Subject: Fluid Mechanics	Total Tutorial Periods: 01
Total Theory Periods: 03	Maximum Marks: 100
Class Tests: Two (Minimum)	Minimum Marks: 35
Assignments: Two (Minimum)	ESE Duration: Three Hours

Course Objectives:

The objective of the course is to develop an understanding of the behavior of fluids at rest or in motion and the subsequent effects of the fluids on the boundaries as the mechanical engineers has to deal with fluids in various applications. This enables students to apply the analytical tools to solve different types of problems related to fluid & fluid flow.

UNIT- I	Properties of fluid: Fluid, ideal and real fluid, properties of fluid : mass density, weight density, specific volume, specific gravity, viscosity, surface tension, capillarity, vapour pressure, compressibility and bulk modulus. Newtonian and non-Newtonian fluids Fluid Statics: Pressure, Pascal's law, Hydrostatic law, Manometry, Hydrostatic force on submerged plane and curved surface, Buoyancy and Flotation.
UNIT-II	Fluid Kinematics: Description of fluid motion, Lagrangian and Eulerian approach, Type of fluid flow, Type of flow lines-path line, streak line, stream line, stream tube. Continuity equation, acceleration of a fluid particle, motion of fluid particle along curved path, Normal and tangential acceleration, Rotational flow, Rotation and Vorticity, circulation, stream and potential function, flow net ,its characteristics and utilities. Liquid in relative equilibrium.
UNIT- III	Fluid Dynamics: Euler's Equation, Bernoulli's equation and its practical application, Venturimeter, Orifice meter, Nozzle, Pitot tube. Impulse momentum equation, Momentum of Momentum equation, Kinetic energy and Momentum correction factor, Vortex motion, Radial flow.
UNIT- IV	Laminar Flow: Reynold's experiment, flow of viscous fluids in circular pipe, shear stress and pressure gradient relationship, Velocity distribution, Hagen-Poiseuille Equation, flow of viscous fluids between two parallel plates (Coutte flow) shear stress and pressure Gradient relationship, Velocity distribution, Drop of pressure head. Turbulent flow: Effect of turbulence, Expression for loss of head due to friction in pipes (Darcy-Weisbach equation), Expression for co-efficient of friction in terms of shear stress. Flow through pipe: Loss of energy in pipes, Hydraulic gradient and total energy line, pipe in series and parallel, equivalent pipe power transmission through pipe, water hammer in pipes.
UNIT-V	Dimensional Analysis: Methods of dimensional analysis, Rayleigh's method, Buckingham's theorem, Limitations. Model analysis: Dimensionless number and their significance, model laws, Reynold's model law, Fraude's model law, Euler's model law, Weber's model law, Mach's model law, Type of models, scale effect in model, limitation of hydraulic similitude.



“AUTOMACTIC HUMAN FOLLOWER TROLLEY”

A

Thesis

submitted to

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



In the partial fulfilment of requirement of award of the degree of

**BACHELOR OF TECHNOLOGY
in
MECHANICAL ENGRINEERING
By**

Name	Roll No.	Enrollment No.
Adarsh Dixit	301203720001	BK0870
Bhaskar Sahu	301203720002	BK0877
Divyansh Verma	301203720003	BK0890
Rishikesh Yadu	301203720004	BK0901
Chandan Patel	301203720005	BK2199
Rohit Prasad	301203720006	BK2206
Lav Nishad	301203720007	BK2540
Atal Kumar	301203721317	CA0757

**Under the supervision and guidance of
Dr. RAJESHWAR VERMA
(Assistant Professor)**



**Department of Mechanical Engineering
Raipur Institute of Technology
Chhatauna, Mandir Hasaud, Raipur (C.G.) 492101
E-mail: contactus@rit.edu.in Website: www.rit.edu.in**



Session: 2020-24



CERTIFICATE BY THE SUPERVISOR

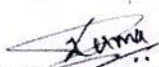
This is to certify that the report of the thesis entitled "Automatic Human Follower Trolley" is a record of Bonafide research work carried out by

Name	Roll No.	Enrollment No.
Adarsh Dixit	301203720001	BK0870
Bhaskar Sahu	301203720002	BK0877
Divyansh Verma	301203720003	BK0890
Rishikesh Yadu	301203720004	BK0901
Chandan Patel	301203720005	BK2199
Rohit Prasad	301203720006	BK2206
Lav Nishad	301203720007	BK2540
Atal Kumar	301203721317	CA0757

under my guidance and supervision for the award of Degree of Bachelor of Technology in the field of Mechanical Engineering, of Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the thesis

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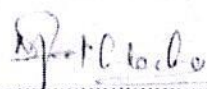

(Head of Department)

Department of Mechanical Engineering
Raipur Institute of Technology, Raipur(C.G.)


Dr. Rajeshwar Verma

(Supervisor) Assistant Professor
Department of Mechanical Engineering
Raipur Institute of Technology,
Raipur(C.G.)

Forwarded to Chhattisgarh Swami Vivekanand Technical University,
Bhilai(CG)


Principal

Raipur Institute of Technology
Mandir Hasaud, Raipur (C.G.)
RAIPUR INSTITUTE OF TECHNOLOGY
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)



Abstract

Shopping trolley is a necessary tool for shopping in supermarkets or grocery stores. However, there was shopping trolley abandoned everywhere in the supermarket after being used. In addition, there were also shopping trolley safety issues such as sliding down from an escalator. On the other hand, it is inconvenient and time wasting for customers who are in rush to search for desired products in a supermarket. Therefore, an automatic human and line following shopping trolley with a smart shopping system was developed to solve the problems. The trolley will follow the person maintaining a prespecified distance to avoid collision. It uses ultrasonic sensor to detect the human presence and IR blasters to detect direction, the trolley uses 12v Jonson Geared DC motor and LiPo battery to drive itself, to control and process all the elements of the trolley Arduino UNO microcontroller is used. In conclusion, users can enjoy shopping and pay more attention on their children during shopping without the need of pushing the shopping trolley. Besides, they can track the purchased items easily. Meanwhile, supermarket owners can save cost from hiring trolley collector.

Keyword: Smart trolley, IOT , Arduino UNO, Ultrasonic sensor.



Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Technology	Semester: V
Branch: Mechanical Engineering	Code: C037513(037)
Subject: Fluid Machines	Total Tutorial Periods: 01
Total Theory Periods: 03	Maximum Marks: 100
Class Tests: Two (Minimum)	Minimum Marks: 35
Assignments: Two (Minimum)	ESE Duration: Three Hours

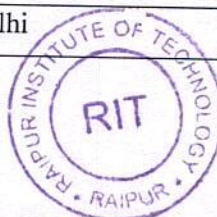
Course Objectives:

The objectives of this course is to impart an understanding boundary layer concepts, principle of operation of turbines and pumps and its performance characteristic.

UNIT- I	Boundary Layer Theory : Boundary layer definition and characteristics, momentum equation, Laminar and turbulent boundary Layer, Total drag, separation and control. Flow around submerge bodies Force exerted by flowing fluid on a body: Drag and lift; stream lined and bluff body, Drag on sphere and cylinder, circulation and lift on circular cylinder, lift of an airfoil, induced drag.
UNIT-II	Impact of Free Jets: Impulse momentum principle, force exerted by the jet on stationary flat and curved plate, hinged plate, moving plate and moving curve vanes, jet propulsion of ship. Impulse Turbine: Classification of turbine, impulse turbine, Pelton wheel, Construction working, work done, head efficiency and Design aspects, Governing of impulse turbine.
UNIT- III	Reaction Turbine: Radial flow reaction turbine, Francis turbine: construction, working, work done, efficiency, design aspect, advantages & disadvantages over Pelton wheel. Axial flow reaction turbine. Propeller and Kaplan turbine, bulb or tubular turbine, draft tube, specific speed, unit quantities, cavitation, degree of reaction, performance characteristics, surge tanks, governing of reaction turbine.
UNIT- IV	Centrifugal Pumps : Classification of Pumps, Centrifugal pump, Construction, working, work done, heads, efficiencies, multistage centrifugal pump, pump in series and parallel, specific speed, characteristic, net positive suction head, cavitation.
UNIT-V	Reciprocating Pumps: Classification, component and working, single acting and double acting pump, discharge, work-done and power required, slip & coefficient of discharge, indicator diagram, air vessels.

Text Books:

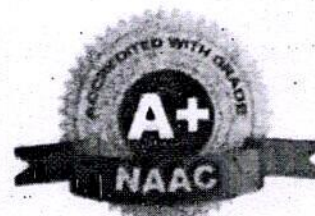
1.	Fluid Mechanics and Fluid Power Engineering – D.S. Kumar– Kataria & Sons-Delhi
2.	Fluid Mechanics- Yunush A Cengel, John M. Cimbala- TMH, Delhi





Major Project Report
On

HOME AUTOMATION USING ARDUINO



SUBMITTED TO



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

Submitted in Partial Fulfilment of requirement for the award of the degree of

**BACHELOR OF TECHNOLOGY
in
ELECTRICAL AND ELECTRONICS ENGINEERING**

SUBMITTED BY

- | | |
|-----------------------|----------------|
| 1. RAHUL KUMAR SINGH | [301202521310] |
| 2. INDRANEEL CHOWDHUR | [301202521303] |
| 3. RUPAK ROY | [301202521309] |
| 4. MOONDEEP NATH | [301202521311] |

Under the Guidance of

Mr. AVINASH DEWANGAN SIR

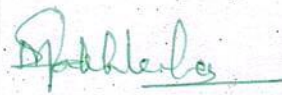
Assistant Professor E.E.E, RITEE

**RAIPUR INSTITUTE OF TECHNOLOGY, Raipur
Chhatuna, Mandir Hasaud, Raipur (C.G) India 492101**

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

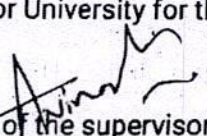
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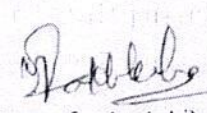
This is to certify that the project titled **HOME AUTOMATION SYSTEM USING ARDUINO** carried out by

Name	Roll No.	Registration No:
RAHUL KUMAR SINGH	301202521310	CA0745
INDRANEEL CHOWDHURY	301202521303	CA0743
RUPAK ROY	301202521309	CA0744
MOONDEEP NATH	301202521311	CA0746

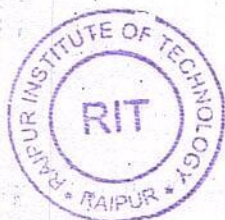
for the partial fulfillment of the requirements for B.Tech degree in **Electrical and Electronics Engineering** from **Raipur Institute of Technology, (Chhattisgarh)** Absolutely based on his own work under the supervision of **Mr, Avinash Dewangan Sir** of RITEE, The contents of this thesis, in full or in parts, have not been submitted to any other Institute or University for the award of any degree or diploma.

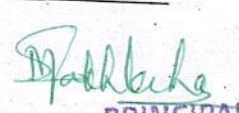

(Signature of the supervisor)
Mr, Avinash Dewangan
Assistant Professor E.E.E
RITEE, Raipur

Forwarded to Chhattisgarh Swami Vivekanand Technical University Bhilai


(Signature of principle)
RITEE, Raipur, C.G.
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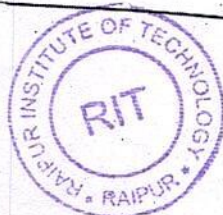
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ABSTRACT

The main objective of this project is to develop a home automation system using an Arduino board with Bluetooth being remotely controlled by any Android OS smart phone. As technology is advancing so houses are also getting smarter. Modern houses are gradually shifting from conventional switches to centralized control system, involving remote controlled switches. Presently, conventional wall switches located in different parts of the house makes it difficult for the user to go near them to operate. Even more it becomes more difficult for the elderly or physically handicapped people to do so. Remote controlled home automation system provides a most modern solution with smart phones. In order to achieve this, a Bluetooth module is interfaced to the Arduino board at the receiver end while on the transmitter end, a GUI application on the cell phone sends ON/OFF commands to the receiver where loads are connected. By touching the specified location on the GUI, the loads can be turned ON/OFF remotely through this technology. The loads are operated by Arduino board through opto-isolators and thyristors using triacs.



CHHATISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: B.Tech III
Subject: Electrical Circuit Analysis
Total Theory Periods: 36
Total Marks in End Semester Exam: 100

Branch: Electrical Engineering
Code: B024312(024)
Total Tutorial Periods: 12 Total Credits: 4

Course Outcomes:

1. CO1: Evaluate the responses by applying network theorems to electrical circuits.
2. CO2: Analyze circuits in the sinusoidal steady-state (single-phase and three-phase).
3. CO3: Obtain and analyze the transient and steady-state response of electrical circuits.
4. CO4: Obtain and analyze the response of electrical circuits using Laplace Transform for standard inputs.
5. CO5: Analyze two port circuit behavior with different parameters.

UNIT I: Network Theorems (10 Hours)

Thevenin's theorem, Norton's theorem, Maximum power transfer theorem, Millman's theorem (all theorems - analysis with dependent current and voltage sources). Super node and Super mesh Analysis, Concept of duality and dual networks. Series and parallel resonance conditions.

UNIT II: Sinusoidal steady state analysis (11 Hours)

Representation of sine function as rotating phasor, phasor diagrams, impedances and admittances, AC circuit analysis, effective or RMS values, average power and complex power. Three-phase circuits (balanced circuit), Mutual coupled circuits, Dot Convention in coupled circuits,

UNIT III: Solution of First order networks (7 Hours)

Solution of first order differential equations for Series and parallel R-L, R-C, R-L-C circuits, initial and final conditions in network elements, forced and free response, time constants, steady state and transient state response

UNIT IV: Electrical Circuit Analysis Using Laplace Transforms (10 Hours)

Review of Laplace Transform, initial and final value theorem. Analysis of electrical circuits using Laplace Transform for standard inputs (step, ramp and impulse functions), convolution integral, inverse Laplace transform, transformed network with initial conditions..

UNIT V: Two Port Network and Network Functions (10 Hours)

Transfer function representation. Poles and Zeros. Frequency response (magnitude and phase plots), Two Port Networks, terminal pairs, relationship of two port variables, impedance parameters, admittance parameters, transmission parameters and hybrid parameters, interconnections of two port networks, Reciprocity & Symmetry, cascade, series, parallel and series-parallel connections of Two port Networks, Barlett's bisection Theorem.

Text Books:

1. M. E. Van Valkenburg, "Network Analysis", Prentice Hall, 2006.
2. W. H. Hayt and J. E. Kemmerly, "Engineering Circuit Analysis", McGraw Hill Education, 2013.

Reference Books:

1. D. Roy Choudhury, "Networks and Systems", New Age International Publications, 1998.
2. Alexander & Sadiku, "Fundamentals of Electric Circuits", TMH Publications.
3. C. L. Wadhwa, "Network Analysis and Synthesis", New Age Publications.
4. Kuriakose, "Circuit theory", PHI Learning Publications.





A

Project Report PHASE-1

On

**"SINGLE AXIS SOLAR TRACKING USING
ARDUINO"**

Submitted to

CHHATISHGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY

BHILAI (C.G.), INDIA



In Partial Fulfilment of the award of the degree of

BACHELOR OF TECHNOLOGY

In

ELECTRICAL AND ELECTRONICS ENGINEERING

Submitted by:

- | | |
|-------------------------|----------------|
| 1. JATIN PATEL | (301202521304) |
| 2. NALESHWAR THAKUR | (301202520005) |
| 3. CHANDRAPRAKASH VERMA | (301202521313) |
| 4. SUBHUJ KUMAR PANDEY | (301202521307) |

Under the Guidance of

DR. RITESH DIWAN SIR

HOD E.E.E.

RAIPUR INSTITUTE OF TECHNOLOGY, Raipur

Chhatauna, Mandir Hasaud, Raipur (C.G.) India

492101 Ph. No. 0771-3250790, Fax: +91-07712537634

Email: contactus@rit.edu.in, Website: www.rit.edu.in

SESSION: 2023-2024



[Signature]
PRINCIPAL

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

CERTIFICATE OF THE SUPERVISOR

This is to certify that the report of project entitled "**SINGLE AXIS SOLAR TRACKING USING ARDUINO**" is a record of bonafide research work carried out by

JATIN PATEL (301202521304),

NALESHWAR THAKUR (301202520005),

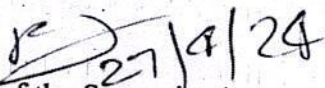
CHANDRAPRAKASH VERMA (301202521313),

SUBHUJ KUMAR PANDEY (301202521307)

under my guidance and supervision for the award of Bachelor of Technology in the name faculty of **Dr. Ritesh Diwan Sir** of RITEE, Raipur.

To the best of my knowledge and belief the project

- Embodies the work of the candidate herself
- Has duly been completed,
- Fulfils the requirement of the Ordinance relating to the B. 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,


(Signature of the Supervisor)

Dr. Ritesh Diwan Sir Head of Department

Department: Electrical and Electronics Engineering

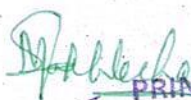
Raipur Institute of Technology

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(Signature of the Director/Principal)

Raipur Institute of Technology

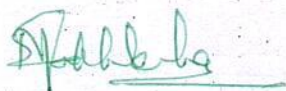



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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	Electronics & Telecommunication	Semester:	VII
Subject:	Instrumentation & IoT	Code:	D028712(028)
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	2 (Minimum)
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

Course Objectives:

The course intends to provide an overview of the principles, operation and application of the different transducer and sensors like, Resistive, Inductive and capacitive transducers, Piezo-electric transducers and photo electric transducers. And to equip the students with the basic and advanced knowledge of Pressure, Temperature, flow and optical measurements.

The course also intends to understand about the fundamentals of Internet of Things and its building blocks along with their characteristics & understand the protocols and standards designed for IoT and the current research on it. & to understand the recent application domains of IoT in everyday life

UNIT I	Introduction to Sensors & Transducer: Transducer definition, classification, and Static and Dynamic performance characteristics of Transducer, selection criteria for sensors, Resistive: Piezo-resistive effect, Basics of Strain Gauge, Inductive: LVDT, RVDT, Capacitive: Differential capacitance cell.
UNIT II	Pressure and Photoelectric Sensor: Pressure Measurement: Terminology, pressure units, manometers- U-tube Single and double column, elastic pressure transducer: Bourdon Tube, Dead weight piston gauge. Piezoelectric transducer, photoelectric transducer: Photoconductive cell, Photo emissive cell and Photo Voltaic Cell
UNIT III	Thermal and Flow Sensor: Temperature Measurement: Temperature scales units and relations, Bimetallic thermometer, Resistance thermometers, Thermocouple: Its types & characteristics, Thermistor, radiation & optical pyrometers Flow Sensors: Theory of variable head meters, constructional details of variable head meters- Venturimeter, Flow Nozzle, Orifice flow meter, Pitot tube, Ultrasonic flow meter.
UNIT IV	Introduction to Internet of Things: Introduction to Internet of Things: Overview of Internet of Things- the Edge, Cloud and the Application Development, Industrial Internet of Things (MOT - Industry 4.0), Quality Assurance, Predictive Maintenance, Real Time Diagnostics, Design and Development for IOT, Understanding System Design for IOT, Design Model for IOT.
UNIT V	Understanding Internet Protocols & Domain specific IOT: Simplified OSI Model, Network Topologies, Standards, Types of Internet Networking - Ethernet, WiFi, Local Networking, Bluetooth, Bluetooth Low Energy (BLE), Zigbee, 6LoWPAN, Sub 1 GHz, RFID, NFC, Proprietary Protocols, Simplicity, Networking Design - Push, Pull and Polling, Network APIs. Domain specific IOT and their challenges: Illustrated domains-home automation, smart cities, health and





A
Major Project Report
On
"HOME AUTOMATION"



Submitted to



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

Submitted in Partial Fulfilment of requirement for the award of the degree of
BACHELOR OF TECHNOLOGY

in

ELECTRICAL AND ELECTRONICS ENGINEERING

Submitted by:

- | | |
|------------------|----------------|
| 1. DEVENDRA SAHU | (301202520003) |
| 2. KHILESH RATRE | (301202520006) |
| 3. RAVI GENDRE | (301202520007) |
| 4. ULESH PRADHAN | (301202521308) |
| 5. SURBHI PAIKRA | (301202521312) |

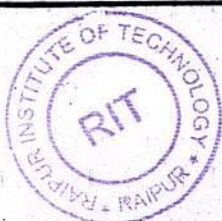
Under the Guidance of

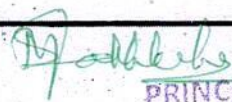
DR. RITESH DIWAN SIR
HOD E.E.E. RITEE

RAIPUR INSTITUTE OF TECHNOLOGY, Raipur

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SESSION: 2023-2024




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

CERTIFICATE BY THE SUPERVISOR

This is to certify that the report of project entitled "**HOME AUTOMATION**" is a record of bonafide research work carried out by

DEVENDRA SAHU (301202520003),

KHILESH RATRE (301202520006),

RAVI KUMAR GENDRE (301202520007),

ULESH PRADHAN (301202521308),

SURBHI PAIKRA (301202521312)

under my guidance and supervision for the award of degree of Bachelor of Technology in the name faculty of **Dr. Ritesh Diwan Sir** of RITEE, Raipur.

To the best of my knowledge and belief the project

- Embodies the work of the candidate herself
- Has duly been completed,
- Fulfils the requirement of the Ordinance relating to the B. 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,

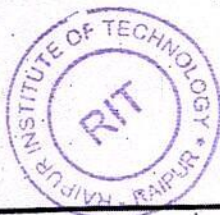
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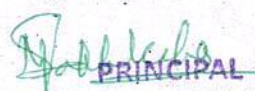
Dr. Ritesh Diwan Sir
HOD E.E.E.
RITEE, Raipur

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(Signature of the Principal)

RITEE, Raipur, C.G.




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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

ABSTRACT

Home automation is an automation technology that focuses on managing circuits and electronic equipment in homes, offices, and others. Home automation is a form of Internet of Things (IoT) development that allows communication and control through devices while connected to the internet. This study aims to design a Home Automation prototype on lighting devices such as lamps, light sensors to activate lights, and several lights controlled using mobile devices. The research method uses the prototype method, where system development is focused on the results of input from customers who will be evaluated for software development. The stages in this research begin with analysing device requirements, literature study, system design, hardware design, user interface design testing, and arriving at the results. This research output will be made in the form of a prototype, where all components will be placed based on the layout described in the design. This system can help users control the equipment in the house from anywhere and anytime, including using light sensors to provide input to turn the lights on or off.




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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Electrical Engineering**

Semester: **VI**

Subject: **Microcontroller and Embedded System(Professional Elective-II)** Code: **C024632(024)**

Periods per week (L-T-P): **(2-1-0)**

Credits: **03**

Number of class Test to be conducted: **2 (Minimum)**

No. of assignment to

be submitted: **02(Minimum)**

Scheme of Examination (Theory): **Total Marks-150 [ESE-100, CT-20, TA-30]**

COURSE OUTCOMES:After successful completion of this course, the student will able to:

Course Code	CO Statement	Knowledge Level
1	Compare elements of Microcontroller family, and understand pin configuration of 8051	2
2	Interpret the architecture, various instructions and their application in programming of microcontroller 8051	2
3	Apply the knowledge of counters and interrupts to make programs for external interrupts	3
4	Illustrate different Protocols of serial communication in microcontroller 8051	2
5	Explain different categories, requirements and applications of embedded system	2

COURSE DETAILS:

UNIT I Introduction to Microcontroller: A brief History of Microcontrollers, Harvard Vs Von-Neumann Architecture, RISC Vs CISC, Classification of MCS-51family based on their features (8051, 8052, 8031, 8751, AT89C51), Pin configuration of 8051

UNIT II 8051 Processor Architecture and Instruction Set: Internal block diagram, Registers of 8051, Inbuilt RAM, Register banks, stack, on-chip and external program code memory ROM, power reset and clocking circuits, I/O port structure, Addressing modes, Instruction set and simple programming

UNIT III Counter/Timer and Interrupts of 8051: Introduction, Registers of timer/counter, Different modes of timer/counter, Timer/counter programming, Interrupt Vs Polling, Types of interrupts and vector addresses, register used for interrupts initialization, programming of external interrupts, Timer interrupts.

UNIT IV Asynchronous Serial Communication: Introduction to serial communication, Types, RS232 standard, RS422 Standard, 1488 and 1489 standard, GPIB, Max 232/233 Driver

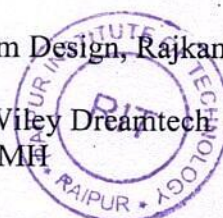
UNIT V Overview of Embedded System: Embedded System, Categories of Embedded System, Requirements of Embedded Systems, Challenges and Issues in Embedded Software Development, Applications of Embedded Systems in Consumer Electronics, Control System, Biomedical Systems, Handheld computers, Communication devices.

Name of Text Books:

1. The 8051 Microcontroller and Embedded Systems using Assembly and C, Mazidi, Mazidi & McKinlay, 2nd Ed., PHI.
2. The 8051 Microcontroller", Kenneth J. Ayala, 3rd Edition, Thomson/Cengage Learning.

Name of Reference Books:

1. Microcontrollers: Architecture, Programming, Interfacing and System Design, Rajkamal, Pearson Education
2. Programming for Embedded Systems- Dreamtech Software Team, Wiley Dreamtech
3. Programming and Customizing the 8051 Microcontroller. Predko: TMH



**EXPERIMENTAL STUDIES ON HYBRID FIBER
REINFORCED CONCRETE UTILIZING
POLYPROPYLENE FIBER & NATURAL FIBER**

A Thesis Submitted to



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

*In partial fulfilment
For award of the degree
of*

**MASTER OF TECHNOLOGY
in
ENVIRONMENTAL ENGINEERING
by**

URWASHI CHANDRAKAR

Enrollment no: AL0759

Roll No. 501203019020

Under the Guidance of
Ms. Nayanika Dasgupta
Assistant Professor



Department of Chemical Engineering

Raipur Institute of Technology

Chhatauna, Mandir Hasaud, Raipur (C.G) India 492001



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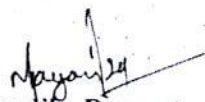
**RAIPUR INSTITUTE OF TECHNOLOGY
CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)**

CERTIFICATE BY THE SUPERVISOR

This is to certify that the report of the thesis entitled "**EXPERIMENTAL STUDIES ON HYBRID FIBER REINFORCED CONCRETE UTILIZING POLYPROPYLENE FIBER & NATURAL FIBER**" is a record of bonafide work carried out by **Ms. Urwashi Chandrakar**, bearing Roll No. **501203019020** & Enrollment No.: **AL0759** under my guidance and supervision for the award of **Master of Technology in Chemical Engineering (Specialization in Environmental Engineering)** of Chhattisgarh Swami Vivekananda 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 ME/MTech degree of the University and
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.

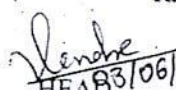

Ms. Nayanika Dasgupta

Assistant Professor

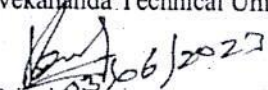
Department of Chemical Engineering

Raipur Institute of Technology

Raipur (CG)


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Department of Chemical Engineering
Raipur Institute of Technology, Raipur (CG)

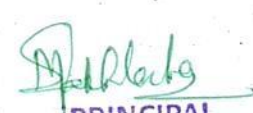
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Chhattisgarh Swami Vivekanand Technical University, Bhilai
(C. G.)

Semester: M.E. I Sem.
Total Theory Periods: 40
Total Marks in End Semester Exam: 100
Minimum number of class tests to be conducted: 02

Subject: Principles of Environmental Engineering
Specialization: Environmental Science & Engg.
Code: 653111 (53)
Total Tutorial Periods: 12

Unit 1

History of Environmental Pollution and its control, Population, economic growth, industrialization urbanization and energy-use, as causes of environmental pollution. Air quality and emission standards classification of air pollutants;

Unit 2

Fundamentals of aerosol behaviour – sedimentation, inertial impaction, convective diffusion; fundamentals of gaseous pollutant behavior – adsorption, absorption.

Unit 3

Water quality and effluent standards, physical chemical and biological water quality parameters. Processes in Natural Water systems. Dissolved oxygen models; Pathogen Indicator models

Unit 4

Solid – waste generation, properties and composition; solid – waste management systems.

Unit 5

Environmental engineering calculations. Mass and energy balance for environmental engineering systems under steady state and unsteady state conditions.

TEXT

1. G.M.Masters, Introduction to Environmental Engineering & Science, Prentice Hall, New Delhi, 1997
2. J.G. Henry and G. W. Heike, Environmental Science & Engineering", Prentice Hall International Inc., New Jersey, 1996.

REFERENCE

1. H.S. Peavy, D.R. Rowe, G. Tchobanoglous, Environmental Engineering, McGraw Hill, 1985.
2. S.K. Friedlander: Smoke Dust and Haze: Fundamentals of Aerosol Behaviour, Wiley 1977.
3. Metcalf and Eddy: Wastewater Engineering – Treatment Disposal and Reuse, 6th Edition Tata McGraw Hill, 1995.
4. Reible D.D.: Fundamentals of Environment Engineering, Lewis Publishers, 1999.



**EXPLORATION OF GROUND WATER QUALITY AND
DEPTH IN THE DHARSHIVA BLOCK SAKRA
CHHATTISGARH**

**A Thesis submitted To
CHHATTISHGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY BHILAI (C.G.), INDIA**



In the partial fulfillment For the award of the Degree of

**MASTER OF TECHNOLOGY
In ENVIRONMENTAL ENGINEERING**

By

Mr. Dheeraj Kumar Pandey

Enrollment No.: BJ8763

Roll No. 501203020003

Under the Guidance of

**MRS. AARJU SHUKLA
Assistant Professor**



**Department of Chemical Engineering
Raipur Institute of Technology, Raipur
Chhatauna, Mandir Hasaud, Raipur (C.G.) 492101
Session 2020-22**




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

CERTIFICATE OF THE SUPERVISOR

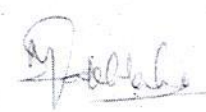
This is to certify that the work incorporated in the thesis "**STUDY ON GROUNDWATER QUALITY AND GROUND WATER LEVEL OF DHARSHIVA BLOCK SAKARA CHHATTISGARH**" is a record of research work carried out by **Mr. Dheeraj Kumar Pandey** Roll No.: 501203020003 & Enrollment No.:BJ 8763, under my guidance and supervision for the award of Degree of Master of Technology in Environmental Engineering from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

- I. To the best of my knowledge and belief the Thesis
- II. Embodies the work of the candidate,
- III. Has duly been completed,
- IV. Fulfills the requirement of the ordinance relating to the Master of Technology degree of the University and is up to the desire standard both in respect of contents and language for being referred to the examiners.

Mrs. Aarju Shukla
ASSISTANT PROFESSOR
Department Of Chemical Engineering
Raipur Institute of Technology, Raipur (C.G.)

(Forwarded to Chhattisgarh Swami Vivekanand Technical University Bhilai)


(Signature of Head of Department)
Department of Chemical Engineering
Raipur Institute of Technology, Raipur (C.G.)


(Signature of Principal)
Raipur Institute of Technology, Raipur (C.G.)
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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)




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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

ABSTRACT

Groundwater is a vital and purest form of natural resource. In the recent years, various anthropogenic causes threat its natural quality, its suitability for drinking, irrigation and other purposes makes doubtful conditions of human well-being, especially in developing countries.

In this present study, groundwater quality was evaluated for drinking, irrigation and human health hazard purposes. Groundwater is getting contamination rapidly due to various anthropogenic activities as well as some natural sources. In the direction, assessment of water quality analysis is the basic requirement for nurturing human being and its evolution. Water Quality Index (WQI) parameter has been widely used in determining water quality globally. The present investigation aims to provide the suitability of groundwater in the specified region that are used in drinking purpose, domestic works and household chores and maintaining the water level of location. The parameters are also used to find out about the WQI (Water Quality Index). The parameters are compared with the BIS (Bureau of India Standards) for checking the suitability of groundwater. The present approach output can be beneficial to the administrators in making decisions on groundwater quality but also gaining inside into the trade of between system benefit and environment requirement.



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

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

Semester: **M.E. III Sem.**

Subject: **Science & Engineering of Water
Pollution Control**

Total Theory Periods: **50**

Specialization : **Environmental Science & Engg.**

Total Marks in End Semester Exam: **100**

Code: **653312 (53)**

Minimum number of class tests to be conducted: **02**

Total Tutorial Periods: **28**

- Unit – I Aquatic Pollutant :** Chemistry of aquatic pollution with special emphasis on the Arsenic, fluoride and nitrate pollution. Source loading rates. River flow and reservoir analysis. Availability of groundwater resources. Diffusion, dispersion and pollutant transport mechanisms.
- Unit-II Water Quality Monitoring :** Mineral analysis, Demand analysis, and Nutrient analysis, metal analysis, organic analysis.
- Unit-III Microbiological Examination :** Rapid detection method. Hetrotopic plate count. Multiple tube fermentation technique, Membrane filters technique.
- Unit-IV Microbiological Examination :** Biological treatment of water pollution, Equalization: Volume requirement and effect of BOD mass loading rate, Coagulation does and aggregation Kinetics, Sedimentation: setting analysis, filtration: Head Loss, Chlorination, water and wastewater adsorption.
- Unit-V Related Chemistry :** Equilibrium and Kinetics, Aeration, Ion exchange Activated sludge: Rate of Substrate utilization rate, sludge growth rate, oxygen uptake rate and kinetics.

TEXT

1. G.M.Masters, Introduction to Environmental Engineering & Science, Prentice Hall, New Delhi, 1997
2. J.G. Henry and G. W. Heike, Environmental Science & Engineering", Prentice Hall International Inc., New Jersey, 1996.
3. W.J. Weber, Physicochemical processes for water quality control, John Wiley and sons, 1972.

REFERENCE

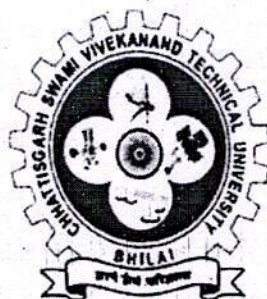
1. G. Tchobanoglous and F.G Buston, Wastewater engineering treatment disposal and reuse, McGraw Hill INC, 1991.
2. Meyers A. Robert (Eds.) Encyclopedia of Environmental Analysis and Remediation Vol. 1-8, John Wiley & Sons, 1998.
3. Standards methods for the Examination of Water and Wastewater, APHA / AWWA / WPCF Publishing, 19th Ed. 1995.



“Utilising Soft Computing to Identify Harmonics in Electrical Systems”

**A Thesis submitted
TO**

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



In partial fulfillment

*For the Award of Degree
of*

MASTER OF TECHNOLOGY

in

Power Electronics

by

M VIJAY KUMAR

Roll No: 501206221003

Enrollment No: BA5567

Under the Guidance of

Dr Ritesh Diwan

Associate Professor

**Department of Electronics & Telecommunication Engineering
Raipur Institute of Technology**



DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

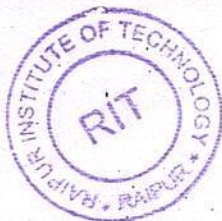
RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

Chhatauna, MandirHasaud, Raipur, Chhattisgarh

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

e-mail:contactus@rit.edu.in

SESSION: 2021-2023



[Signature]
PRINCIPAL

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

**DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION
ENGINEERING RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR**

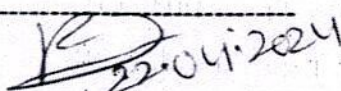
Chhatauna, Mandir Hasaud, Raipur (CG) India - 492 101
Phone - 91- 0771 - 3250790, 3208842, Fax - 91-0771-2537634
E-mail - contactus@rit.edu.in, Website - www.rit.edu.in

CERTIFICATE BY THE SUPERVISOR

This is to certify that the report of the thesis entitled "**Utilising Soft Computing to Identify Harmonics in Electrical Systems**" is a record of research work carried out by **M VIJAY KUMAR** bearing Roll No.:501206221006& Enrolment No.:BA5567 under my guidance and supervision for the award of Degree of **Master of Technology in Power Electronics** of Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.), India.

To the best of my knowledge and belief the thesis

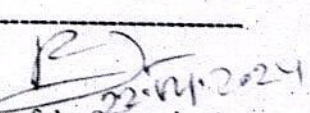
- Embodies the work of the candidate herself,
- Has duly been completed,
- Fulfils the requirement of the Ordinance relating to the M.Tech degree of the University,
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.


(Signature of the HOD)

Dr. Ritesh Diwan

Department of Electronics and Telecomm, Engg.

Raipur Institute of Technology, Raipur (C.G.)


(Signature of the Supervisor)

Dr. Ritesh Diwan

Associate Prof. (ET & T)

Raipur Institute of Technology, Raipur (C.G.)

Forwarded to Chhattisgarh Swami Vivekanand Technical University, Bhilai

(Signature of the Principal)

Principal, Raipur Institute of Technology, Raipur, Chhattisgarh




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

ABSTRACT

Various approaches have been utilised to extract the harmonic component of load currents and generate a reference current for shunt active power filters (SAPF). This contributes greatly to determining SAPF performance. As a result, several artificial neural network (ANN) topologies have been established in the literature. The most at least two Adaline networks have been employed to implement a controller that stabilises the terminal capacitor voltage. This study describes a revolutionary method and design that employs a single Adaline network. The latter combines tactics for obtaining reference currents and managing DC link voltage to provide proper power supply to the inverter.

The widespread use of power circuit equipment, particularly rectifiers, inverters, and switches, in power systems and manufacturing industries has resulted in major problems with power quality. One of the key concerns is the generation of harmonic current and voltage, which causes changes in the output waveform, voltage distortion, voltage degradation, equipment local heating, and so on. Nonlinear loads, such as UPS, SMPS, and speed drives, produce harmonics in the current waveform. These pull in the component of current with reactive power from the bus bar, resulting in an imbalance in the bus current waveform. To eliminate harmonic difficulties, we must correct for the harmonic component that is generating the trouble. With all of the present approaches used, one of them is minimizing harmonics in power utilities using SAPF. As a result, this paper advises doing a comprehensive investigation of SAPF performance using two current control methodologies. The first is instantaneous active and reactive power theory (p-q), and the second is synchronous frame reference theory (d-q), and their total performance is assessed before selecting one of the ways listed above. Harmonic current controller is explained and used, which gives accurate gating signals for the IGBT-based inverter and so helps to eliminate harmonic components. This paper also illustrates the Kalman Filter implementation in a real-world setting for frequency calculation, using a relevant example.

Key word – MATLAB, Kalman Algorithm, Soft-computing, ANN



[Handwritten Signature]

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

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: **M. E. III**
Subject: **Static Var Control & Harmonic Filtering**
Total Theory Periods: **40**
Total Marks in End Semester Exam. : **100**
Minimum number of class test to be conducted: **02**

Branch: **Electrical Engg.**
Code: **562311 (24)**
Total Tutorial Periods: **12**

Unit I:

Fundamentals of Load Compensation , Steady-State Reactive Power Control in Electric Transmission Systems , Reactive Power Compensation and Dynamic Performance of Transmission Systems . Power Quality Issues . Sags, Swells, Unbalance, Flicker , Distortion , Current Harmonics –

Unit II:

Static Reactive Power Compensators and their control. Shunt Compensators, SVCs of Thyristor Switched and Thyristor Controlled types and their control, STATCOMs and their control, Series Compensators of Thyristor Switched and Controlled Type and their Control, SSSC and its Control, Sub-Synchronous Resonance and damping,

Unit III:

Converters for Static Compensation . Single Phase and Three Phase Converters and Standard Modulation Strategies (Programmed Harmonic Elimination and SPWM) . GTO Inverters . Multi-Pulse Converters and Interface Magnetics . Multi-Level Inverters of Diode Clamped Type and Flying Capacitor Type and suitable modulation strategies (includes SVM) . Multi-level inverters of Cascade Type and their modulation . Current Control of Inverters.

Unit IV:

Passive Harmonic Filtering . Single Phase Shunt Current Injection Type Filter and its Control, Three Phase Three-wire Shunt Active Filtering and their control using p-q theory and d-q modelling . Three-phase four-wire shunt active filters . Hybrid Filtering using Shunt Active Filters . Series Active Filtering in Harmonic Cancellation Mode . Series Active Filtering in Harmonic Isolation Mode.

Unit IV:

Sources of Harmonics in Distribution Systems and Its Effects . Use of STATCOMs and SSSCs for Transient and Dynamic Stability Improvement in Power Systems Dynamic Voltage Restorer and its control . Power Quality Conditioner

Text Books:

1. T.J.E Miller : Reactive Power Control in Electric Systems, John Wiley & Sons
2. N.G. Hingorani & L. Gyugyi : Understanding FACTS: Concepts and Technology of Flexible AC Transmission, Systems. IEEE Press, 2000.

Reference Books:

1. Ned Mohan et.al : Power Electronics. John Wiley and Sons.



MODELLING AND CONTROL OF DC-DC CONVERTER BASED ON ARTIFICIAL NEURAL NETWORK

A Thesis submitted to

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



In partial fulfilment

For the award of the Degree

of

Master of Technology

in

Power Electronics

By

FILZA AHSAN

Enrollment No: BA3456

Roll No: 501206221005

Under the Guidance of

Avinash Kumar Dewangan

Assistant Professor

**Electrical & Electronics Engineering
Raipur Institute of Technology**

**DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING
RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR**

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

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EE

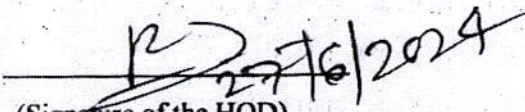


CERTIFICATE OF THE SUPERVISOR

This is to certify that the report of the thesis entitled "**Modelling And Control Of A Dc-Dc Converter Based On Artificial Neural Network**" is a record of bonafide research work carried out by **FILZA AHSAN** bearing Roll No.: **501206221005** & Enrollment No.: **BA3456** under my guidance and supervision for the award of Degree of Master of Technology in Power Electronics in the faculty of Electrical & Electronics 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 him/herself,
- Has duly been completed,
- Fulfils the requirement of the Ordinance relating to the ME/MTech degree of the University and
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.

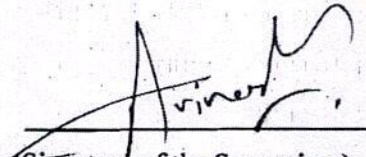

(Signature of the HOD)

Dr Ritesh Diwan

Associate Professor

Department of ET&T,

Raipur Institute of Technology, Raipur


(Signature of the Supervisor)

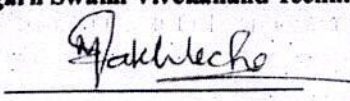
Avinash Kumar Dewangan

Assistant Professor

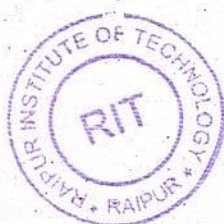
Department of EEE

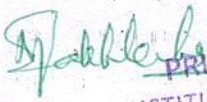
Raipur Institute of Technology, Raipur

Forwarded to Chhattisgarh Swami Vivekanand Technical University, Bhilai


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Principal, Raipur Institute of Technology, Raipur, Chhattisgarh




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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

ABSTRACT

DC-DC converters are highly efficient devices that play a crucial role in supplying power to various electronic systems. These converters are designed to convert a source of direct current (DC) from one voltage level to another, ensuring that different components receive the appropriate voltage for optimal performance. Despite their efficiency, DC-DC converters exhibit nonlinear behavior, which can pose challenges to maintaining stability, particularly when there are variations in their main parameters. In this thesis, we propose an innovative methodology based on Artificial Neural Networks (ANN) to control the output voltage of DC-DC converters. The core of our work involves the development and simulation of a detailed mathematical model of a nonlinear DC-DC converter. By accurately representing the nonlinear dynamics of the converter, we can better understand its behavior under various conditions and design more effective control strategies.

Traditionally, Proportional-Integral-Derivative (PID) controllers have been employed to regulate the output voltage of DC-DC converters. PID controllers are valued for their simplicity and ease of implementation; however, they often fall short in handling the complexities associated with nonlinear systems and parameter variations. To highlight the advantages of our proposed approach, we illustrate the conventional PID control method and use it as a benchmark for comparison. Our ANN-based control technique is evaluated using MATLAB Simulink software, a powerful tool for modeling, simulating, and analyzing dynamic systems. We assess the performance of the neural controller under different operating conditions. These conditions test the controller's ability to maintain stable output voltage across a wide range of operational states. The results from our simulations demonstrate the superior performance of the proposed neural controller. Compared to the traditional PID controller, the neural network-based approach exhibits a faster response time and enhanced robustness. These improvements are achieved without incurring significant additional costs, making the neural controller a cost-effective alternative for enhancing the stability and performance of DC-DC converters.



A handwritten signature in green ink, appearing to read "Dr. Abhishek", written over a horizontal line.

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CHHATAUNA, MANDIRHASAUD, RAIPUR (C.G.)

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: **M. E. III**
Subject: **Digital Control Theory**
Total Theory Periods: **40**
Total Marks in End Semester Exam. : **100**
Minimum number of class test to be conducted: **02**

Branch: **Electrical Engg.**
Code: **562331 (24)**
Total Tutorial Periods: **12**

UNIT – I: Sampling and Reconstruction

Introduction, sample and hold operations, Sampling theorem, Reconstruction of original sampled signal to continuous-time signal. The Z – transforms: Introduction, Linear difference equations, pulse response, Z-transforms, Theorems of Z-Transforms, the inverse Z – transforms, Modified Z-Transforms.

UNIT-II : Z- Plane Analysis of Discrete-Time Control System

Z-Transform method for solving difference equations; Pulse transforms function, block diagram analysis of sampled – data systems, mapping between s-plane and z-plane: Primary strips and Complementary Strips.

UNIT – III : State Space Analysis

State Space Representation of discrete time systems, Pulse Transfer Function Matrix solving discrete time state space equations, State transition matrix and it's Properties, Methods for Computation of State Transition Matrix, Discretization of continuous time state – space equations Concepts of Controllability and Observability, Tests for controllability and Observability. Duality between Controllability and Observability, Controllability and Observability conditions for Pulse Transfer Function.

UNIT – IV: Stability Analysis

Stability Analysis of closed loop systems in the Z-Plane. Jury stability test – Stability Analysis by use of the Bilinear Transformation and Routh Stability criterion. Stability analysis using Liapunov theorems. Design of digital control based on the frequency response method – Bilinear Transformation and Design procedure in the w-plane, Lead, Lag and Lead-Lag compensators and digital PID controllers. Design digital control through deadbeat response method.

UNIT – V: State Feedback Controllers And Observers

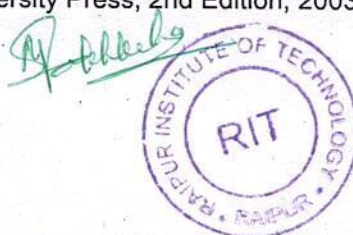
Design of state feedback controller through pole placement – Necessary and sufficient conditions, Ackerman's formula. State Observers – Full order and Reduced order observers, Linear Quadratic Regulators, Min/Max principle, Linear Quadratic Regulators, Kalman filters, State estimation through Kalman filters, introduction to adaptive controls.

TEXT BOOKS:

1. Discrete-Time Control systems - K. Ogata, Pearson Education/PHI, 2nd Edition
2. Digital Control and State Variable Methods by M.Gopal, TMH

REFERENCE BOOKS:

1. Digital Control Systems, Kuo, Oxford University Press, 2nd Edition, 2003.
2. Digital Control Engineering, M.Gopal



A

Major Project Report

On

**“CUSTOMER SATISFACTION TOWARDS
TELECOMMUNICATION SERVICE PROVIDER: A STUDY
ON BHARTI AIRTEL”**

Submitted for partial fulfillment of requirement for the award of degree

Master of Business Administration

OF

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Submitted by

ABHIJIT BISWAS

MBA IV Semester

Subject Code: 576422(76)

Session April – May 2024

Approved By:
Dr. Jayesh Karia
Director

Supervised By:
Prof. Abhinav Shrivastav
Assistant Professor

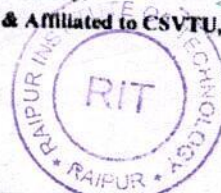


FACULTY OF MANAGEMENT

RAIPUR INSTITUTE OF TECHNOLOGY

(Under the aegis of Mahanadi Education Society)

NAAC A+ Accredited Approved By AICTE, New Delhi & Affiliated to CSVTU, Bilai (C.G.)



CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

MBA SEM I 576113(76): BEHAVIORAL SCIENCE (New)

CREDITS: 4 LECTURE SCHEME: (L-3; T-1; P-0) Min. No. of CTs: 2

OBJECTIVES

The objective of the course is to familiarize the student with basic concepts in individual and group behavior.

COURSE CONTENTS

UNIT I	⇒ Understanding Human Behavior, Conceptual framework for understanding individual behavior as an input-output system, Biological foundation of Behavior, The dynamics of people and Organization ⇒ <u>Comprehensive organizational behavior model; Determinants of organizational effectiveness; Biographical characteristics of individual behavior.</u>
UNIT II	⇒ Individual dynamics: Theory and application of Personality and Creativity, Attitudes and its components, Values, Emotional Intelligence.
UNIT III	⇒ Intra-Personal Processes: Theory and application of Learning, Motivation, Sensation and Perception, and Leadership. ⇒ Inter-personal Process: Analysis of Inter-personal relationships.
UNIT IV	⇒ Group Dynamics: Importance and Need for group formation, Intra-group and Intergroup processes and behavior, Team building and Development.
UNIT V	⇒ Transactional Analysis: Types and Methods. Types of Conflict, negotiation process and issues; Cooperation and Competition.

The examination paper will include question from each unit. The list of cases / specific references including recent articles will be announced and discussed in the class.

TEXT BOOK

- Robbins S.P., Organizational Behaviour, New Delhi, PHI.
- Davis Keith, Human Behaviour at Work, TMH, New Delhi

SUGGESTED READINGS

- Luthans Fred: Organizational Behaviour, TMH New Delhi
- Nelson, Quick, Khandelwal, Organizational Behavior, Cengage Learning.
- Singh, Dalip, Emotional Intelligence at Work, Response Books, Sage Publications, Delhi.
- Pareek Udai, Organisational Behaviour, Oxford, IBH, Mumbai
- Uma Shekharan, Organisation Behaviour, TMH, New Delhi.
- Greenberg & Baron, Behavior in Organization, 2004 Pearson India.
- L.M. Prasad, Behavioral Science,
- Chakraborty S.K Foundations of Managerial Work Contribution from Indian Thought, HPH, New Delhi.



A

Major Project Report

On

**"ANALYSING THE IMPACT OF CUSTOMER
RELATIONSHIP MANAGEMENT STRATEGIES ON
BUSINESS PERFORMANCE OF BANKING SECTOR"**

Submitted for partial fulfillment of requirement for the award of degree

Master of Business Administration

OF

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Submitted by

MAYANK AGRAWAL

MBA IV Semester

Subject Code: 576422(76)

Session April – May 2024

Approved By:
Dr. Jayesh Karia
Director

Supervised By:
Prof. Abhinav Shrivastav
Assistant Professor



FACULTY OF MANAGEMENT

RAIPUR INSTITUTE OF TECHNOLOGY

(Under the aegis of Mahanadi Education Society)

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CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

MBA SEM II

576214(76): ADVANCED FINANCIAL MANAGEMENT (New)

CREDITS: 4

LECTURE SCHEME: (L-3; T-1; P-0)

Min. No. of CTs: 2

OBJECTIVES

The objective of this course is to acquaint the students with the broad framework of financial decision making in a business unit.

COURSE CONTENTS

UNIT I	⇒ Financial Management: Nature and objectives, profit maximization v/s wealth maximization, finance functions, time value of money (discounting and compounding techniques).
UNIT II	⇒ Cost of different sources of raising capital, weighted average cost of capital. ⇒ Types of dividend policy, dividend theories dividend practices in India.
UNIT III	⇒ Capital Structure: Factors determining capital structure, approaches and theories ⇒ Operating and Financial leverages: Impact, trading on equity
UNIT IV	⇒ Budget: Concept and Types, Budgetary Control, Capital budgeting, Zero based budgeting. ⇒ Ratio analysis: Liquidity, profitability and solvency. Analysis of Fund flow and cash flow statement.
UNIT V	⇒ Management of working capital: Concept of working capital, need and factors influencing, estimation of working capital, inventory and receivables management, management of cash.

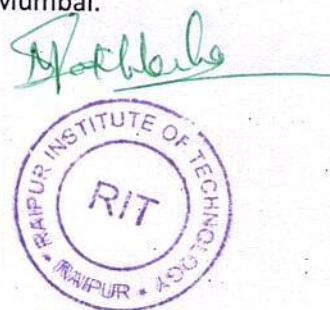
The examination paper will include question from each unit. The list of cases / specific references including recent articles will be announced and discussed in the class.

TEXT BOOKS

- V.K. Bhalla, Financial Management and Policy. 2nd Edition, New Delhi, Anmol, 1998

SUGGESTED READINGS

- Hampton, John. Financial Decision Making. Englewood Cliffs, New Jersey, Prentice Hall Inc.
- Van Horne, James C. Financial Management and Policy, New Delhi, Prentice Hall of India.
- Winger, Bornard and Mohan, Nancy, Principles of Financial Management, New York, Macmillan Publishing Company.
- I.M. Pandey, Financial Management Vikas Pub. House, New Delhi.
- P. Chandra, Financial Management, TMH, New Delhi.
- S.C. Kuchhal, Financial Management, Chaityna Publishing House, Aligarh.
- R.M. Srivastava, Financial Decision Making, Himaylaya Publishing House, Mumbai.



A

Major Project Report

On

**"A Study Of Consumer Perception Towards Online Shopping With Special
Reference To Flipkart"**

Submitted for partial fulfillment of requirement for the award of degree

Master of Business Administration

OF

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Submitted by

Om Baghel

MBA IV Semester

Subject Code: 576422(76)

Session April – May 2024

Approved By:
Dr. Jayesh Karia
Director

Supervised By:
Name: Abhinav Shrivastava
Designation: Assistant Professor



FACULTY OF MANAGEMENT

RAIPUR INSTITUTE OF TECHNOLOGY

(Under the aegis of Mahanadi Education Society)

NAAC A+ Accredited Approved By AICTE, New Delhi & Affiliated to CSVTU, Bilai (C.G.)



CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

MBA SEM IV 576411(76): CORPORATE STRATEGY (New)

CREDITS: 4 LECTURE SCHEME: (L-3; T-1; P-0) Min. No. of CTs: 2

OBJECTIVES

The objective of this course is to develop a holistic perspective of enterprise, critical from the point of view of the top executives.

COURSE CONTENTS

UNIT I	⇒ Strategic decision-making. Process of strategic management and levels at which strategy operates. Role of strategists. General vocabulary of SM: Vision, Mission, Objectives and Purpose.
UNIT II	⇒ Environmental scanning techniques- ETOP, QUEST and SWOT (TOWS), Internal Appraisal – The internal environment, organizational capabilities in various functional areas and Strategic Advantage Profile, Methods and techniques used for organisational appraisal (Value chain analysis, Financial and non financial analysis, historical analysis, Industry standards and benchmarking, Balanced scorecard and key factor rating). Identification of Critical Success Factors (CSF). ⇒ Strategic step application: Drucker's theory of business, Blue ocean strategy, resource based view and dynamic view.
UNIT III	⇒ Corporate level strategies-- Stability, Expansion, Retrenchment and Combination strategies, Corporate restructuring, Concept of Synergy, Mergers & Acquisitions, Corporate Restructuring ⇒ Business level strategies—Porter's framework of competitive strategies, Conditions, risks and benefits of Cost leadership, Differentiation and Focus strategies, ⇒ Strategic Analysis and choice—Corporate level analysis (BCG, GE Ninecell, Hofer's product market evolution and Shell Directional policy Matrix) ⇒ Industry level analysis; Porter's five forces model, Qualitative factors in strategic choice.
UNIT IV	⇒ Strategy implementation: Resource allocation, Projects and Procedural issues. Organization structure and systems in strategy implementation. ⇒ Operational and derived functional plans to implement strategy, Integration of functional plans.
UNIT V	⇒ Strategic control and operational Control, Organizational systems and Techniques of strategic evaluation.

The examination paper will include question from each unit. The list of cases / specific references including recent articles will be announced and discussed in the class.

TEXT BOOKS

- Thompson & Arthur A and Others, Crafting and Executing Strategy, Tata McGraw Hill, 14th ed. 2006
- Pankaj Ghemawat: Strategy & The Business Landscape, Pearson Education Asia
- T. Wheelen and K. Rangarajan, "Concepts in Strategic Management and Business Policy", Pearson Education
- Johnson & Scholes : Exploring Corporate Strategy 4th Prentice Hall India
- Grant, Contemporary Strategic Management Case Studies, 6ed, Wiley Publications.

REFERENCE BOOKS

- F.R. David, "Strategic Management", Pearson Education
- Kazmi, Business Policy & Strategic Management 2nd Tata McGraw Hill
- Budhiraja S D, Athreya M B , Cases In Strategic management , Tata McGraw Hill



A

Major Project Report

On

**"Study of Talent Management Process and its effects on
employees of Google"**

Submitted for partial fulfillment of requirement for the award of degree

Master of Business Administration

OF

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Submitted by

Soumya Gundhar

MBA IV Semester

Subject Code: 576422(76)

Session April – May 2024

Approved By:
Dr. Jayesh Karia
Director

Supervised By:
Name: Abhinav Shrivastava
Designation: Assistant Professor



FACULTY OF MANAGEMENT

RAIPUR INSTITUTE OF TECHNOLOGY

(Under the aegis of Mahanadi Education Society)

NAAC A+ Accredited Approved By AICTE, New Delhi & Affiliated to CSVTU, Bilai (C.G.)



CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

MBA SEM III

576311(76): OPTIMIZATION METHODS (New)

CREDITS: 4

LECTURE SCHEME: (L-3; T-2; P-0)

Min. No. of CTs: 2

OBJECTIVES

The objective of this course is to develop an understanding of basic decision making techniques and their role in managerial decision making.

COURSE CONTENTS

UNIT I	⇒ Optimization Methods: Meaning and Scope; Various Stages in Optimization Projects. ⇒ Linear Programming Problem: Meaning of Linear programming, General Mathematical Formulation of LPP. Feasible and Optimal Solutions: Graphical Analysis, Simplex Method, Duality and Sensitivity Analysis. Advantages and Limitations of LPP.
UNIT II	⇒ Transportation Model: Mathematical Formulation, Initial Basic Feasible Solution: North West Corner Method, Least Cost Method and Vogel's Approximation Method; Optimization (Minimization and Maximization) using Modified Distribution Method.
UNIT III	⇒ Assignment Problem: Assignment Model as a Particular Case of Transportation Model, Formulation of Assignment Problems, Solution of Assignment Problems using Hungarian Method, Travelling Salesman Problem.
UNIT IV	⇒ Waiting Line Models: Basic Queuing Process, Basic Structure of Queuing Models, Scope in Management Decisions, Solution to M/M/1: ∞/FCFS Model. ⇒ Sequencing Model: Processing n-Jobs through Two Machines, Processing n-Jobs through Three Machines.
UNIT V	⇒ Network Analysis: Shortest Route Problem, Network & Time Estimation, Project Planning & Control Using Critical Path Method (CPM) and Programme Evaluation & Review Technique (PERT). Project Scheduling - Cost Slope, Crashing the Network, Estimation of Optimum Project Cost.

The examination paper will include question from each unit. The list of cases / specific references including recent articles will be announced and discussed in the class.

TEXT BOOKS

- A.M. Natrajan, "Operation Research", Pearson Education.
- N. D. Vohra. "Quantitative Techniques", New Delhi: Tata McGraw Hill Publications.

REFERENCE BOOKS

- P. K. Gupta and D. S. Hira, "Operations Research", New Delhi: Sultan Chand Publications,
- F.S. Hiller & Hiller, "Introduction to Management Science" Tata McGraw Hill
- Hamdy Taha, "Operations Research" 8th Ed. Pearson 2007.
- Haruly M. Wagner, "Principles of Operations Research with Application to Managerial Decisions", New Delhi: Prentice Hall of India Pvt. Ltd, 2nd Ed., 1996.
- C. R. Kothari, "Quantitative Techniques", Delhi: Vikas Publications.



A
Major Project Report
On
"Report On AXIS BANK "

Submitted for partial fulfillment of requirement for the award of degree

Master of Business Administration

OF

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Submitted by
SANSKAR THAKUR
MBA IV Semester
Subject Code: 576422(76)
Session April – May 2024

Approved By
Dr. Jayesh Karia
Director

Supervised By
Mr. Sujit Dey
Associate Professor



FACULTY OF MANAGEMENT

RAIPUR INSTITUTE OF TECHNOLOGY

(Under the aegis of Mahanadi Education Society)

NAAC A+ Accredited Approved By AICTE, New Delhi & Affiliated to CSVTU, Bilal (C.G.)



CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

MBA SEM III

576312(76): ORGANIZATIONAL DEVELOPMENT (New)

CREDITS: 4

LECTURE SCHEME: (L-3; T-1; P-0)

Min. No. of CTs: 2

OBJECTIVES

The objective of this course is to familiarize with basic organizational processes to bring about organizational development.

COURSE CONTENTS

UNIT I	⇒ The organization and its environment: An overview of Organizational structure, Behavioral implication of organizational structure, factors influencing design/designing of organizational structure. ⇒ Organizational Effectiveness: Approaches, need and significance.
UNIT II	⇒ Organizational development: Definition, Assumptions, goals, process, objectives; Strategies: Diagnostics Activities, Team Building, Survey Feedback, Process Consultation, Planning & Goal setting, OD interventions. ⇒ Organizational change: Basic Concept and definition; Nature of Organizational Change (Need, factors influencing change); Types of Change; Process of change, Models, Change agent (Roles and responsibilities, Resistance to change); Overcoming resistance (Strategies & Techniques); Planned Change.
UNIT III	⇒ Organizational conflicts: Causes, nature, measures to resolve organizational conflicts; Inter Group behavior and collaboration; Laboratory learning techniques; Managerial Grid; Sensitivity training; Transactional analysis; Inter-group and team building interventions.
UNIT IV	⇒ Organizational Culture and Climate: Organizational learning, power and politics in the organization, Cross culture dynamics.
UNIT V	⇒ The process of Empowerment, Management of gender Issues, Creativity in organization.

The examination paper will include question from each unit. The list of cases / specific references including recent articles will be announced and discussed in the class.

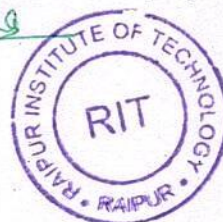
TEXT BOOKS

- French and Bell, Organisational Development, Pearson Education
- D.R. Brown, An Experimental Approach to Organization Behavior, Pearson Education
- Carol P Harvey and M.June Allard, Understanding and managing diversity, PHI India
- F. Luthans , Organisational Behaviour TMH, New Delhi

REFERENCE BOOKS

- S.P.Robbins, "Organisational Behaviour", Pearson Education
- Prasad, Organisation Development for Excellence, McMillan, India.
- Madhukar Shukla, Understanding Organization : Organization Theory and Practices in India, PHI

[Handwritten signature]



A
PROJECT REPORT
ON
TRAVELS AND TOURS WEBSITE

A Dissertation submitted in partial fulfillment of the requirements for the award of degree of

MASTER OF COMPUTER APPLICATIONS

Of

Chhattisgarh Swami Vivekanand Technical University

By

Awantika Tiwari

(Enrollment No. - CC3667)



Under the Guidance of

Ms. Rinki Kaur

Assistant Professor

DEPARTMENT OF COMPUTER APPLICATIONS

RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

(Under the aegis of Mahanadi Education Society)

A+ NAAC Accredited Approved By AICTE, New Delhi & Affiliated to CSVTU, Bilai (C.G.)

Session 2022-2024



CERTIFICATE OF APPROVAL

This is to Certify that the project the entitled "TRAVELS AND TOURS WEBSITE", carried out by "Awantika Tiwari" a student of fourth semester, M.C.A. at Raipur Institute of Technology (RITEE), Raipur, is hereby approved after proper examination and evaluation as a creditable work for the partial fulfillment of the requirement for awarding the degree of Master of Computer Applications (M.C.A) from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G)

(Internal Examiner)

Name: Bhupesh Mankane

Designation: Asst. Prof.

College Name: RITEE, Raipur

Date: 30/07/2024

(External Examiner)

Name: Shweta Singh Rathore

Designation: Asst. Prof.

College Name: SSIPMT.

Date: 30/07/24





Bits World iTech

The World of Innovative Technologies

Consultant in Information Technology Services (Computer Software, Hardware & Web, etc.)

Phone #: (+91) - 902 902 0101

Mobile #: (+91) - 98271-09218

e-Mail: bitsworlditech@yahoo.in

Website: www.bitsworlditech.com

Date: 13 July 2024

CERTIFICATE

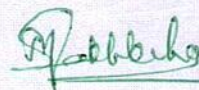
This is to certify that **Ms. Awantika Tiwari**, D/o Mr. D.P. Tiwari, student of RIT Raipur, has successfully completed four month internship in Web Development from March-2024 to June-2024 in our company.

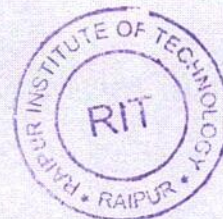
During the internship, she participated in the training of HTML, CSS, JavaScript and Front-end Web Development. Further in the same duration she designed and developed **Travels & Tour Website** using HTML, CSS, JavaScript & PHP, under the guidance of Mr. Kuljeet Arora. During the period we found her keen on acquiring insights into organizational systems and procedures. She is sincere, hardworking and result oriented person.

We wish her all success in her future endeavors.

Regards,

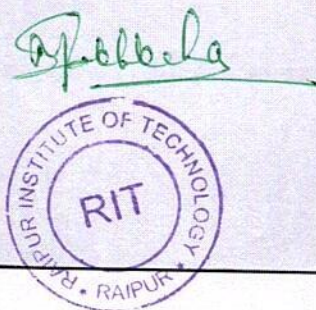

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Kuljeet Arora No.: (+91) 98271-09218
Proprietor & Staff Consultant 0101
Raipur
Bits World iTech www.bitsworlditech.com





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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: I

Subject: Advance Database Management System

Total theory periods: 40

Total marks in End Semester Exam: 100

Minimum no. of Class tests to be conducted: 02

Branch: Computer Application

Subject Code: 5021172(021)

Total Tutorial periods: 10

Course Objectives:

1. To understand basic concepts of designing and building a database management system.
2. To familiarize student with syntax and implementation of Structured Query Language (SQL).
3. To make students understand the relational model and design relational database management system.
4. To provide detailed knowledge of transaction, concurrency and recovery strategies of DBMS.
5. To impart significance of normalization in DBMS and different normalization techniques.

Course Outcome:

1. Students will be able to design a database based on the given requirements.
2. Students will be able to make projects with knowledge of subject provided to them.
3. Students will be able to write Standard Query Language statements.
4. Students are expected to apply normalization techniques on given database

- UNIT-I Basic concepts, Database & Database Users:** Characteristics of the Database approach, Advantages of using DBMS. Data Models, Schemas & Instances. DBMS Architecture & Data Independence. System Architecture for DBMS and Data Dictionary, Database Users Data Base languages & Interfaces. Data Modeling using the Entity-Relationship Model – Entity types, Entity Sets, Attributes and Keys, Relationship, Relationship Types, Weak Entity Types, Structural Constraints, Enhanced ER Model- Specialization Generalization, Constraints on Specialization Generalization.
- UNIT-II Relational Model, Languages & Systems:** Relational Data Model Concepts and Constraints. Relational Algebra – select, project, set theoretic, join operations. Overview of Relational Calculus. SQL - A Relational Database Language. Data Definition commands, View and Queries, transaction commands, Specifying Constraints & Indexes in SQL.
- UNIT-III Relational Data Base Design:** Function Dependencies & Normalization for Relational Databases. Informal design guidelines for relation schemas, Functional Dependencies. Normal forms based on primary keys (1NF, 2NF, 3NF & BCNF). Lossless join & Dependency preserving decomposition. Multivalued dependencies, join dependencies (4NF & 5NF), Denormalization.
- UNIT-IV Advanced Transaction Processing:** Basic concept; ACID properties; transaction state; implementation of atomicity and durability; Nested and Multilevel Transactions, Compensating Transactions and Saga, Long Duration Transactions, Weak Level of Consistency, Transaction Workflows, Transaction Processing Monitors.
- UNIT-V Trigger in SQL, Event Constraint and Action: ECA Rules, Query Processing and Concurrency Control, Compensation and Databases Recovery. WEB Database: Accessing Databases through WEB, WEB Servers, XML Databases. Data Warehousing: Data Warehousing Architecture, Multidimensional Data Model, Update Propagation OLAP Queries.**

Text Books:

1. Elmsari and Navathe, "Fundamental of Database System", Addison Wesley. New York.
2. H.Korth & A. Silberschatz, "DATABASE SYSTEM CONCEPTS", TMH.

References:

1. Date. C.J., "An Introduction to Database System", Narosa Publishing House. New Delhi.
2. Desai, B., "An Introduction to Database Concepts", Galgotia Publications. New Delhi.
3. Ullman. J.D., "Principles of Database Systems", Galgotia Publications, New Delhi
4. R. Ramakrishnan, "Database Management Systems", 1998, McGraw Hill International Editions



A
PROJECT REPORT

ON

"ONLINE EVOTING MANAGEMENT SYSTEM"

A Dissertation submitted in partial fulfillment of the requirements for the award of degree of

MASTER OF COMPUTER APPLICATIONS

Of

Chhattisgarh Swami Vivekanand Technical University

By

JAYANT YADU

(CC3669)



Under the Guidance of

Bhojesh Maskare

Asst. Professor

DEPARTMENT OF COMPUTER APPLICATIONS

RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

(Under the aegis of Mahanadi Education Society)

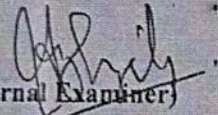
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Session 2022-2024



CERTIFICATE OF APPROVAL

This is to Certify that the project the entitled "ONLINE EVOTING MANAGEMENT SYSTEM", carried out by "Jayant Yadu" a student of fourth semester, M.C.A. at Raipur Institute of Technology (RITEE), is hereby approved after proper examination and evaluation as a creditable work for the partial fulfillment of the requirement for awarding the degree of Master of Computer Applications (M.C.A) from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G)

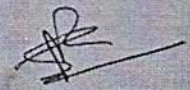

(Internal Examiner)

Name: Bhupesh Markare

Designation: Asst. Prof.

College Name: RITEE

Date: 30/07/2024

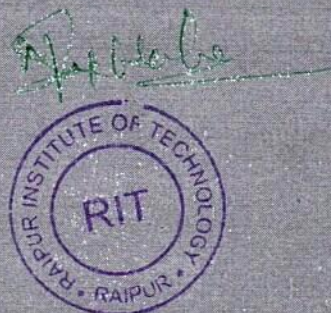

(External Examiner)

Name: Shweta Singh Rathore

Designation: Asst. Prof.

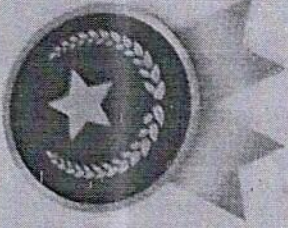
College Name: SSIPMT

Date: 30/7/24



CERTIFICATE

OF ACHIEVEMENT



This is to certify that

Jayant Yadu

has successfully completed Internship training for 120 days in

Yashvitech IT Solution Pvt. Ltd. during 06-03-2024 to 06-07-2024

We appreciate his/her work and contribution, we wish you a bright future.



[Signature]

SIGNATURE

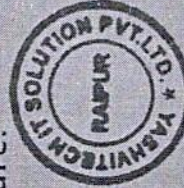
DIRECTOR OF YASHVITECH

06-07-2024

DATE

BEST REGARDS

YASHVITECH IT SOLUTION PVT. LTD.



CONTENTS

1. INTRODUCTION

PROJECT DESCRIPTION
COMPANY PROFILE

(1-3 pages)
(1-2-3 pages)

2. SYSTEM STUDY

EXISTING AND PROPOSED SYSTEM
FEASIBILITY STUDY

(2-7 pages)
(8-9 pages)

TOOLS AND TECHNOLOGIES USED

(10-11 pages)

HARDWARE AND SOFTWARE REQUIREMENTS

(11 page)

3. SOFTWARE REQUIREMENTS SPECIFICATION

USERS

(13 page)

FUNCTIONAL REQUIREMENTS

(13-14 pages)

4. SYSTEM DESIGN (various design diagrams according to project)

SYSTEM PERSPECTIVE

(16 pages)

CONTEXT DIAGRAM (DFD)

(17-18 pages)

USE CASE DIAGRAM

(19 pages)

ACTIVITY DIAGRAM

(20 pages)

DATABASE DESIGN (ER and/or Conceptual schema)

(21 pages)

6. IMPLEMENTATION (full code or code snippet may be included)

SCREEN SHOTS

(23-55 pages)

7. SOFTWARE TESTING (Test cases etc.)

(56-60 pages)

8. CONCLUSION

(61-63 page)

9. FUTURE ENHANCEMENTS

(64-65 page)

Appendix A BIBLIOGRAPHY

Appendix B USER MANUAL



Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program : Master of Computer Applications (MCA)
Subject : Management Information System (Elective -I)
Total Theory Periods: 40
Class Test : Two (minimum)
Maximum Marks : 100

Semester: II
Subject Code: 5021285(076)
Total tutorial periods: 10
Assignment: Two (minimum)
Minimum Marks: 40

Course Objective:

1. The objective of this course is to make the student aware about the MIS and role, impact of MIS.
2. To explain the student decision making concept method and tool.
3. Explain to students the concept of system and planning control.
4. The course also includes DSS and Expert system concepts.
5. Identify the major management challenges to building and using information systems and learn how to find appropriate solutions to those challenges;

Course Outcome

1. Understand the basic concepts and technologies used in the field of management information systems.
2. Will able to make decision using DSS tool.
3. Have the knowledge of the different types of system and the concept of planning.
4. Develop an understanding of how DSS and Expert system work.
5. Understand the processes of developing and implementing information systems.

UNIT-I Introduction: Introduction to MIS, definition, Role, impact, subsystems of MIS, structure of MIS, MIS and computer, Executive information system, Transaction processing, Office Automation and Information processing control functions.

UNIT-II Conceptual Foundations: Decision making concept, method, tools, procedures, MIS and Decision making, Concept of information- mathematical definition, classification, methods of collection, value, age of information, Human as an information processor.

UNIT-III Systems, Planning and Control: System concept – definition, General model of system, types, subsystems, preventing system entropy, system stress and system change, system concept applied to MIS. Concept of planning and computational support for planning, characteristics of control.

UNIT-IV DSS and Expert Systems: Concept and philosophy, characteristics, structure of decision making, classes of DSS, users of DSS, support for decision making process, AI systems, Knowledge based Expert systems, semantic networks, MIS and role of DSS

UNIT-V Development and Implementation: Development of long range plans, ascertaining the class of information, determining the information requirement, Development and implementation of MIS, management of quality in MIS, organization for development of MIS, factors of success and failure of MIS

Text Books:

1. Godon B. Davis & Margrethe H. Olson, "Management Information Systems", TMH (2nded) .
2. W.S. Jawadekar 'Management Information Systems' TMH.

Reference Books:

1. S. Sadagopan 'Management Information Systems' PHI.
2. Jerome Kanter 'Managing with Information' PHI(4th edition).
3. James A. Senn 'Analysis and Design of Information systems ' MC Graw-Hill, International Edition.



A
PROJECT REPORT
ON
PROJECT TITLE

A Dissertation submitted in partial fulfillment of the requirements for the award of degree of

MASTER OF COMPUTER APPLICATIONS

Of

* Chhattisgarh Swami Vivekanand Technical University

By

DEVENDRA SAHU

(CC3664)



Under the Guidance of

RINKI KAUR

ASSISTANT PROFESSOR

DEPARTMENT OF COMPUTER APPLICATIONS

RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

(Under the aegis of Mahanadi Education Society)

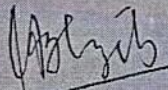
A+ NAAC Accredited Approved By AICTE, New Delhi & Affiliated to CSVTU, Bilai (C.G.)

Session 2022-2024



CERTIFICATE OF APPROVAL

This is to Certify that the project, the entitled "Medical Store Management System", carried out by "Devendra Sahu" a student of fourth semester, M.C.A. at Raipur Institute of Technology (RITEE), Raipur, is hereby approved after proper examination and evaluation as a creditable work for the partial fulfillment of the requirement for awarding the degree of Master of Computer Applications (M.C.A) from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G)



(Internal Examiner)

Name: Bhujesh Maske

Designation: Asst. prof.

College Name: RITEE Raipur

Date: 30/07/2024



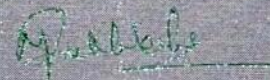
(External Examiner)

Name: Shweta Singh Rathore

Designation: Asst. Prof.

College Name: SSIPMT

Date: 30/7/24



1 Introduction

1.1 PROJECT DESCRIPTION

Pharma the complete medical store management software is so designed as to ease the work load of medical shop professionals. The main feature includes invoicing, inventory and stock control, accounting, client and vendor management. This software helps you to track all the profits, loss, profitable clients and products of medical shop moreover it's a medical shop accounting software. Flexible and adaptive software suited to medical shops or stores or pharmacies of any size.

In the era of globalization and computerization which its first features are appearing in the middle of the last century, the digital information has become a crucial element in almost all areas and aspects of modern life. Many areas are impacted by computerization, which in turn has had a great impact on the social and cultural consequences of society, and contributes with the globalization to the emergence of the so-called information society and the knowledge economy. In the information society, the creation, distribution, use, integration and manipulation of information is a major activity and the primary objective of this society is always to get a competitive advantage internationally, by the use of information technology (IT) in a creative and productive way.

The mediation approach is to develop an application responsible to act as an interface between databases and applications used by users. A mediator helps to resolve conflicts between the models of data sources; it generates an execution plan between users and those sources. In addition, it simplifies and describes the distributed data.

1.2 OBJECTIVE OF PROJECT ON MEDICAL MANAGEMENT SYSTEM

The main objective of the "SAHU MEDICAL" Project on Medical Shop Management System is to manage the details of Sells, Medicines, Stocks, Company, Inventory. It manages all the information about Sells, Medical Shop, Inventory, Sells. The project is totally built at administrative end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Sells, Medicines, Medical Shop, Stocks. It tracks all the details about the Stocks, Company, Inventory.

The researchers specifically aim the following objectives:

1. To eliminate the manual methods and paper works involved in managing a medical store.
2. To automate medical store's data recording and storing.
3. To allow medical stores to electronically conduct stocks inventory to monitor stock supplies in the store.
4. To ease up report generation about the store's stocks, medicine information, customer billing, recording of purchases, and sales of the store.



Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program : Master of Computer Applications (MCA)
Subject : Supply Chain Management (Elective -I)
Total Theory Periods: 40
Class Test : Two (minimum)
Maximum Marks : 100

Semester : II
Code : 5021282(076)
Total tutorial periods: 10
Assignment : Two (minimum)
Minimum Marks: 40

Course Objective:

1. To provide student Basic Concepts of Supply chain management.
2. To give knowledge about implementation of supply chain to actual organization
3. To introduce with the concept of role of technology in supply chain management.
4. To study an overview about cases effective in supply chain management and its implementation.
5. To study role of information technology in supply chain management.

Course Outcome:

1. Demonstrate knowledge of the functions of logistics and supply chain management.
2. Illustrate the concepts and activities of the supply chain to actual organizations.
3. Analyze the role of technology in logistics and supply chain management.
4. Evaluate cases for effective supply chain management and its implementation.
5. Analyse the role information technology in bringing transparency and execute smart contracts to maintain relationship management.

UNIT-I Introduction to Supply Chain Management:

Supply chain – objectives – importance – decision phases – process view – competitive and supply chain strategies – achieving strategic fit – supply chain drivers – obstacles – framework – facilities – inventory – transportation – information – sourcing – pricing.

UNIT-II Designing the supply chain network: Designing the distribution network – role of distribution – factors influencing distribution – design options – e-business and its impact – distribution networks in practice – network design in the supply chain – role of network – factors affecting the network design decisions – modeling for supply chain.

UNIT-III Designing and Planning Transportation Networks.: Role of transportation- modes and their performance - transportation infrastructure and policies - design options and their trade- offs – Tailored transportation.

UNIT-IV Sourcing and Pricing: Sourcing – In-house or Outsource – 3rd and 4th PLs – supplier scoring and assessment, selection – design collaboration – procurement process –sourcing planning and analysis. Pricing and revenue management for multiple customers, perishable products, seasonal demand, bulk and spot contracts.

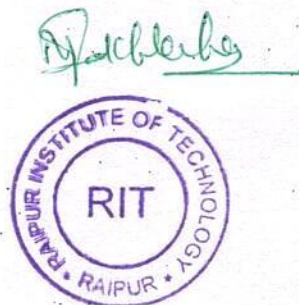
UNIT-V Information Technology in the supply chain: IT Framework – customer relationship management – Internal supply chain management – supplier relationship management –transaction management – future of IT.

Text Books:

1. Sunil Chopra and Peter Meindl, Supply Chain Management – Strategy, Planning and Operation, Pearson/PHI, 3rd Edition, 2007.
2. Coyle, Bardi, Longley, The management of Business Logistics – A supply Chain Perspective, Thomson Press, 2006.
3. Supply Chain Management by Janat Shah Pearson Publication 2008.

References:

1. Donald J Bowersox, Dand J Closs, M Bixby Coluper, Supply Chain Logistics Management, TMH, Second Edition, 2008.
2. Wisner, Keong Leong and Keah-Choon Tan, Principles of Supply Chain Management A Balanced Approach, Thomson Press, 2005.
3. David Simchi-Levi et al, Designing and Managing the Supply Chain – Concepts, ISBN-13: 978-0072357561.



A
PROJECT REPORT
ON
RESTAURANT BILING SYSTEM

A Dissertation submitted in partial fulfillment of the requirements for the award of degree of

MASTER OF COMPUTER APPLICATIONS

Of

Chhattisgarh Swami Vivekanand Technical University

By

UMESH LAHRA

(Enrollment Number – CC3665)



Under the Guidance of

Miss. Barkha Gaherwal

Asst. Professor

DEPARTMENT OF COMPUTER APPLICATIONS

RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

(Under the aegis of Mahanadi Education Society)

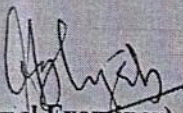
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Session 2022-2024



CERTIFICATE OF APPROVAL

This is to Certify that the project the entitled "Restaurant Billing System", carried out by "Umesh Lahra" a student of fourth semester, M.C.A. at Raipur Institute of Technology (RITEE), Raipur, is hereby approved after proper examination and evaluation as a creditable work for the partial fulfillment of the requirement for awarding the degree of Master of Computer Applications (M.C.A) from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G)

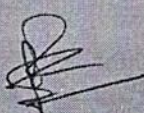

(Internal Examiner)

Name: Bhujesh Mankare

Designation: Asst. Prof.

College Name: RITEE, Raipur

Date: 30/07/2024


(External Examiner)

Name: Shweta Singh Pathare

Designation: Asst. Prof.

College Name: SSIPMT

Date: 30/7/24



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Ref. No. - TECHONET/RT/DC/2024/06/3602

Date - 24/06/2024

CERTIFICATE — OF COMPLETION —

This is to certify that **Mr. Umesh Lahra**, S/o Mr. Rakesh Lahra, has successfully completed three month internship in Web App Development in our Company from March 2024 to June 2024. During the internship, he has developed the project "Restaurant Billing System" in Python Technology.

During the period we found him keen on acquiring insights into organizational systems and procedures. He is sincere, hardworking and result oriented person. We wish all success in his future endeavors.



Mr. Kailash Kumar Patel

Manager, Training & Development,

TECHONET®



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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: I

Subject : Mathematical Foundations of Computer Science

Total Theory Periods : 40

Total Marks in End Semester Exam : 100

Minimum no. of class tests to be conducted : 2

Branch : Computer Applications

Subject Code : 5021174(021)

Total Tut Periods : 10

Course Objectives:

1. To make student learn the logical structure of statement, Boolean algebra and its valid applications.
2. To make students learn concepts of relations and functions.
3. To make students learn Cartesian product of sets and grammars
4. To make students understand the concepts of graphs and their matrix representation.
5. To make students learn the basic concepts of Graph theory and its application in coding.

Course Outcome:

1. Students will be able to analyze the logical structure of statements symbolically including the proper use of logical connectives, applications of Boolean algebra in circuits and karnaugh map.
2. Students will be able to determine whether a relation is reflective, symmetric and transitive. They will be able to apply the different types of functions and Hash diagram.
3. Students will be able to construct inductively defined sets and recursive function. Also they will construct the grammars.
4. Student will be able to understand the basics of Graph Theory and trees.
5. Student will be able to understand the basics of Group Theory and coding.

UNIT-I Mathematical Logic & Boolean Algebra: Statements & Notations, Connectives, Normal Forms, Basic concepts of Boolean Algebra, Boolean functions, Applications of Boolean Algebra in Switching Circuits, Logic circuits, Karnaugh maps, methods for simplification of Boolean expressions.

UNIT-II Ordered Structures, Relations & Functions: Tuples, Lists, Strings & Languages, Numerals, Relations, Properties of Relations, Partial order Relation, Lattices. Functions, Properties of Functions, Composition of Functions, The map function & some useful functions.

UNIT-III Construction Techniques & Grammars : Inductively defined sets, Numbers, Strings, Lists, Binary Trees, Cartesian product of sets, Recursive functions and Procedures, Grammars.

UNIT-IV Graph Theory : Basic concepts of Graph Theory, Paths and Circuits, Trees and Fundamentals Circuits, Matrix Representation of Graphs, Directed Graphs.

UNIT-V Group Theory & Coding: Basic concepts of Group Theory, Homomorphism & Isomorphism of Groups, Cosets and Lagrange's Theorem, Elements of Coding Theory, Group codes, Decoding, Hamming Matrices, Parity check & Generator Matrices.

Text Books:

1. Discrete Structure, and Logic and Computability, James L. Hein, Narosa Pub. House. 3rd Edition.
2. Discrete Mathematical Structures with Applications to Computer Science, Trem blay, J.P. & M anohar .R., Tata M cG raw Hill. 2000

Reference Books:

1. Discrete and Combinatorial Mathematics, Ralph, Grimaldi, Pearson Education. 5th edition.
2. Graph Theory with Applications to Engineering & Computer Science, N. Deo, Prentice Hall. 2004.
3. Discrete Mathematical Structures, Kolman, B, Busby, R.C. Ross, S.C. Pearson Education. 2006.
4. Elements of Discrete Mathematics, Liu, C.L. 2006 Tata McG raw Hill, 2nd edition.

[Handwritten Signature]



A
PROJECT REPORT
ON
HALL BOOKING FOR MEETING

A Dissertation submitted in partial fulfillment of the requirements for the award of degree of

MASTER OF COMPUTER APPLICATIONS
Of
Chhattisgarh Swami Vivekanand Technical University

By
Naiema Begam
(Enrolment No.CC3742)



Under the Guidance of
Mr.Bhojesh Maskare
Assistant Professor

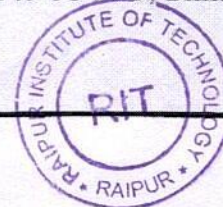
DEPARTMENT OF COMPUTER APPLICATIONS

RAIPUR INSTITUTE OF TECHNOLOGY, RAIPUR

(Under the aegis of Mahanadi Education Society)

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Session 2022-2024



CERTIFICATE OF APPROVAL

This is to Certify that the project the entitled "HALL BOOKING FOR MEETING", carried out by "Naiema Begam" a student of fourth semester, M.C.A. at Raipur Institute of Technology (RITEE), Raipur, is hereby approved after proper examination and evaluation as a creditable work for the partial fulfillment of the requirement for awarding the degree of Master of Computer Applications (M.C.A) from Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G)

(Internal Examiner)

Name: Mr. Balrajesh Maskare

Designation: Assistant Professor

College Name: RITEE

Date: 30-07-2024

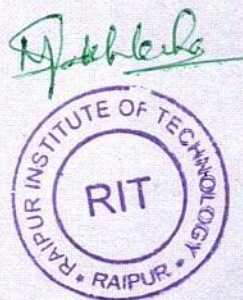
(External Examiner)

Name: Shweta Singh Rathor

Designation: Assistant Professor

College Name: SS IPMT

Date: 30-07-2024



CERTIFICATE

OF ACHIEVEMENT



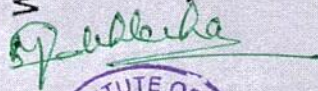
This is to certify that

Naïema Begum

has successfully completed Internship training for 120 days in

Yashvitech IT Solution Pvt. Ltd. during 11-03-2024 to 10-07-2024

We appreciate his/her work and contribution. we wish you a bright future.




SIGNATURE

DIRECTOR OF YASHVITECH

10-07-2024
DATE

BEST REGARDS



YASHVITECH IT SOLUTION PVT. LTD.

1.1 INTRODUCTION:-

Booking a hall for an Meeting involves several steps to ensure everything goes smoothly. Here's a general guide to help you with the process:

1. Determine Your Requirements

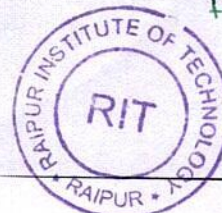
- **Date and Time:** Choose a specific date and time for your meeting.
- **Number of Attendees:** Estimate the number of participants to find a hall that fits your capacity needs.
- **Type of Meeting:** Identify the nature of the meeting (e.g., conference, seminar, workshop) to determine any specific requirements.
- **Facilities and Equipment:** Note any necessary equipment or facilities, such as audio-visual equipment, stage, seating arrangements, etc.
- **Budget:** Establish a budget for the hall rental and other related expenses.

2. Research Potential Venues

- **Location:** Choose venues that are conveniently located for your attendees.
- **Size and Capacity:** Ensure the venue can comfortably accommodate the expected number of attendees.
- **Amenities:** Check for amenities such as parking, catering services, restrooms, and Wi-Fi.
- **Reviews and Recommendations:** Read online reviews and ask for recommendations from colleagues or friends.

3. Visit and Inspect Venues

- **Schedule Visits:** Arrange visits to the shortlisted venues for an in-person inspection.
- **Check Condition:** Evaluate the venue's cleanliness, maintenance, and overall condition.
- **Ask Questions:** Inquire about venue policies, available dates, and any restrictions they may have.



Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of Program : Master of Computer Applications (MCA)
Subject : Computer Graphics and Image Processing
Total Theory Periods: 40
Class Test : Two (minimum)
Maximum Marks : 100

Semester: III
Subject Code: 5021371(021)
Total tutorial periods: 10
Assignment: Two (minimum)
Minimum Marks: 40

Course Objectives:

1. To give an understanding of fundamentals algorithm for output primitive
2. To make students learn what type of operation can be applied on graphical object and how they are applied
3. To give an understanding of surface rendering for realistic images for developing graphical application
4. To give learner an understanding of basic Knowledge of image processing for computer vision.
6. To give an understanding about finding of different research areas in Image Processing and compression techniques.

UNIT- I Fundamentals of Computer Graphics: Concepts and applications, Random and Raster scan devices, input-output devices: CRT, LCD, laser printer. Output primitives: Line drawing algorithm: DDA and Bresenham's; Circle generating algorithm: Bresenham's, Midpoint algorithms, Antialiasing techniques: super sampling, pixel weighting, area sampling, pixel phasing Area filling: boundary fill algorithm, flood fill algorithm: Scan-line Polygon Fill Algorithm.

UNIT- II Transformation, viewing, Clipping: 2-D Transformation: Translation, scaling, rotation, reflection, shear, matrix representation of all homogeneous coordinates, composite transformations. Two-dimensional viewing: Viewing pipeline Window-to viewport transformation. Clipping operations: Line Clipping: Cohen Sutherland, and Liang-Barsky, Polygon Clipping: Cohen-Sutherland-Hodgeman and Weiler -Atherton Polygon clipping.

UNIT- III 3D Transformation, Visible Surface Detection and curves: Visible Surface detection Algorithm: Object based and image-based methods, depth comparison, A-Buffer, Back face removal, Scan-line method, Depth Sorting Method, Area subdivision method. 3-D Transformation: translation, scaling, rotation, reflection. Three- dimensional object representations 3-D Viewing Projections -parallel and perspective projection. Curved lines and Surfaces: Spline representations, Interpolating and approximation curves, continuity conditions Bezier curves: concept and characteristics; B-Spline curves: concept and characteristics.

UNIT- IV Introduction to image processing Origin of Image Processing, Application of Image Processing, fundamentals of Image Processing, components of DIP system, Image formation model, Spatial & Gray level resolution, Image enhancement in special domain: Piecewise transformation functions, Histogram equalization, Histogram specification, image averaging. spatial filters- smoothing and sharpening, Laplacian filter, image sampling and quantization, some basic relationships between pixels.

UNIT- V Image Compression: Data compression: storage space, coding requirements. Source, entropy and hybrid coding some basic compression technique: run length code, Coding redundancy- Huffman coding, LZW coding, run length coding, Lossy compression- DCT, JPEG, MPEG, video compression.

Text Books:

1. Computer Graphics by Donald Hearn & M. Pauline Baker PHI
2. Multimedia Computing communication & applications "By Ralf Steimnety & Kerla Neshtudt. Prince Hall.

