

**CHAITANYA BHARATI INSTITUTE OF TECHNOLOGY**

**DEPARTMENT OF CHEMICAL ENGINEERING**

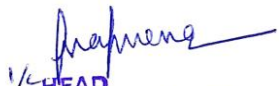
**Stake holder involvement in Curriculum Development**

**AY 2017-18**

**Action taken and implementation in Curriculum**


**INDEX**

| <b>S No</b> | <b>Name of the stake holder</b> | <b>Page No.</b> |
|-------------|---------------------------------|-----------------|
| 1           | Students                        | 2-5             |
| 2           | Teachers                        | 6-9             |
| 3           | Employers                       | 10-12           |
| 4           | Alumni                          | 13-17           |

  
1/c HEAD  
Dept. of Chemical Engineering  
Chaitanya Bharathi Institute of Technology  
Gandipet, Hyderabad-75.

## 1) Students

| S.no. | Suggestions & opinion  | Actions Taken   |
|-------|--|---|
| 1     | To organise invited guest lectures on recent trends of the field | Arranged as part of curriculum                                  |
| 2     | To organise Industry exposure related workshops                  | Arranged as part of the curriculum to strengthen the curriculum |
| 3     | To introduce computer related subjects as electives              | Introduced as per the suggestions                               |

  
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## 1) Students (Proof)

/



Chemical HEAD <hod\_chem@cbit.ac.in>

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### Guest Lecture - Semicontinuous Distillation

1 message

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Pranav B Madabhushi <mpranavb@live.com>  
To: "hod\_chem@cbit.ac.in" <hod\_chem@cbit.ac.in>


Wed, Jan 17, 2018 at 10:58 AM


Sir:

As requested by you during my visit to CBIT, I would like to deliver a lecture on my thesis topic - Semicontinuous Distillation on Monday, 22 Jan, 2018 at 9:40 AM.

Thanks and Kind Regards,  
Pranav Bhaswanth, Madabhushi

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 cv\_2.pdf  
87K

  
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## Speakers-reg

4 messages

**Chemical HEAD** <hod\_chem@cbit.ac.in>  
To: dayakarr@drreddys.com

Sat, Jan 27, 2018 at 2:11 PM

Sir,  
pl.see attachment and kindly advice.

--  
Thanks and regards,

-----  
**Dr.B.Sreedhara Rao**  
PhD (NIT-W)  
Assoc.Professor & HOD,Chemical Engg.  
CBIT, Hyderabad-075  
Ph: +918466997206



dr\_reddyIMG\_20180125\_124809.jpg  
4316K

*Sreedhara Rao*  
1/2 HEAD  
**Dept. of Chemical Engineering**  
**Chaitanya Bharathi Institute of Technology**  
**Gandipet, Hyderabad-75.**

16CS O 03

**IoT AND APPLICATIONS**  
(OPEN ELECTIVE II)

|                 |                  |
|-----------------|------------------|
| Instruction     | 3 Hours per week |
| Duration of SEE | 3 Hours          |
| SEE             | 70 Marks         |
| CIE             | 30 Marks         |
| Credits         | 3                |

**Course Objectives:** The main objectives of this course are:

1. Impart necessary and practical knowledge of components in Internet of Things.
2. Understand working of IOT Systems.
3. Develop skills required to build IOT based systems.

**Course Outcomes:** On Successful completion of this course, student will be able to

1. Understand Internet of Things and its hardware and software components.
2. Interface I/O devices, sensors & communication module.
3. Remotely monitor data and control devices.
4. Develop real time IOT based projects.
5. Advance towards research based IOT.

**UNIT-I**

**Introduction to IoT:** Sensors, Types of sensors and Transducers, Actuators and Types of Actuators.

**UNIT-II**


**Basics of Networking:** Functional Components of IoT, IoT interdependencies, IoT Service oriented architecture, IoT categories, IoT gateways, IoT and associated technologies, Key technologies for IoT, IoT challenges.

**UNIT-III**

**IoT Hardware Components:** Computing (Arduino/Raspberry Pi), Communication, Sensors, Actuators, I/O interfaces, Programming API's (for Arduino/ Raspberry Pi).


**UNIT-IV**

**IoT Application Development:** Solution framework for IoT applications- Implementation of Device integration, Data acquisition and integration, Device data storage- Unstructured data storage on cloud/local server, Authentication, Authorization of devices

  
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## 2) Faculty

| S. no | Suggestions/Feedback   | Action Plan  |
|-------|--|--|
| 1     | Under CBCS curriculum (R16), there should be six course outcomes for Chemical Reaction Engg subject.   | Modifications made   |
| 2     | For basic core subject like Material and Energy Balances should have six course outcomes that represent every unit of the syllabus                 | The COs are written accordingly  |
| 3     | The course outcomes for the subject Chemical Engineering Thermodynamics – I should represent unit wise topics and written as per Bloom's Taxonomy. | Accordingly the changes are made.<br><br>However, the same has been applied to all the chemical engg subjects under CBCS curriculum (R16). |

  
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## Faculty (Proofs)

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16CH C06

### CHEMICAL REACTION ENGINEERING – I

|                                |                  |
|--------------------------------|------------------|
| Instruction                    | 3 Hours per week |
| Duration of End Examination    | 3 Hours          |
| Semester End Examination       | 70 Marks         |
| Continuous Internal Evaluation | 30 Marks         |
| Credits                        | 3                |

**Course Objectives:** This course helps the students to understand the:


1. Classification of reactions, rates and forms of rate expressions.
2. Procedure to interpret the data relating moles, concentration, extent of reaction and conversion.
3. Experimental kinetic data and reaction mechanisms and concepts of non-ideal reactors.
4. Factors to choose applicable reactor among single, multiple, recycle reactors etc.

**Course Outcomes:** At the end of the course, the students will be able to:

1. Derive performance equations of batch, and continuous reactors from general material balances.
2. Analyse reactor performance for homogeneous and heterogeneous reactions.
3. Apply the concepts of heat effects on reactions.
4. analyse multiple reactions.
5. Design different types of chemical reactors for batch and continuous operation like CSTR and Tubular.
6. Determine reactor behavior for non-ideal flow.

### UNIT – I

**Introduction:** Classification of Reactions, Definition-Variables affecting the rate of reaction. The rate equation and Stoichiometric relations for a single phase reaction  $aA + bB \rightarrow rR + sS$ . Single and multiple reactions, Elementary and non-Elementary reactions, Molecularity and order of Reaction, Specific reaction rate constant, Testing kinetic models – Steady

  
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**MATERIAL AND ENERGY BALANCES**

|                                |                  |
|--------------------------------|------------------|
| Instruction                    | 3 Hours per week |
| Duration of End Examination    | 3 Hours          |
| Semester End Examination       | 70 Marks         |
| Continuous Internal Evaluation | 30 Marks         |
| Credits                        | 3                |

Course objectives: This course helps the students to understand the:

1. fundamental aspects of chemical engineering problem solving.
2. mass and energy balance relations for chemical processes.
3. mass balance of unit operations and processes without and with chemical reactions.
4. energy balance over different unit operations.

Course Outcomes: At the end of the course, the students will be able to:

1. differentiate between mass and volume relations.
2. develop material balance equations for the processes involving unit operations.
3. write material balance equations for the process involving chemical reactions.
4. develop material balance equations for recycle and bypass operations.
5. write energy balance equations for chemical processes.
6. apply this knowledge to solve advanced chemical engineering problems.

**UNIT – I**

Basic concepts - Mass and volume relations, Stoichiometric and composition relations - Ideal gas law, partial pressure - Vapor pressures of pure components, Raoult's law and Henry's law, Vapor pressure of miscible and immiscible liquids and solutions.

**UNIT – II**

Material Balance Without Chemical Reaction Solubility and crystallization (single solute systems) – Material balance in Unit Operations like absorption, distillation, evaporation, crystallization, leaching, extraction, drying and mixing units under steady state conditions.



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16CH C05

With effect from the academic year 2017-18

**CHEMICAL ENGINEERING THERMODYNAMICS – I**

|                                |                  |
|--------------------------------|------------------|
| Instruction                    | 3 Hours per week |
| Duration of End Examination    | 3 Hours          |
| Semester End Examination       | 70 Marks         |
| Continuous Internal Evaluation | 30 Marks         |
| Credits                        | 3                |

**Course Objectives:** This course helps the students to understand the:

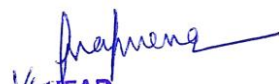
1. basic thermodynamic laws and principles.
2. concept of energy conservation through the study of the first and second laws of thermodynamics.
3. concept of entropy and its importance in energy conversion.
4. identify, formulate and solve chemical engineering problems involving various types of systems and processes.

**Course Outcomes:** At the end of the course, the students will be able to:

- 1 use the fundamentals and differentiate between relations of measurable nature of P, V, T and the un-measurable nature of H, U, A, G.
- 2 estimate thermodynamic properties of real gases using equations of state, correlations and tables.
- 3 analyze processes involving ideal gases, such as isothermal, isobaric, isentropic, cyclic.
- 4 reiterate the first and second laws of thermodynamics and apply their practical implications in engineering design.
- 5 apply energy balances to open and closed systems and to evaluate the thermodynamic efficiency of nozzles, compressors, turbines.
- 6 analyze steam power cycles; refrigeration cycles and liquefaction and calculate relevant system efficiencies for the processes.


**UNIT – I**

**The First Law and Other Basic Concepts:** Joule's Experiments - Internal Energy - Formulation of the first law of the thermodynamics - the thermodynamic state and state functions - Enthalpy - The steady state flow processes; equilibrium - the phase rule - The Reversible process - Constant V and constant P processes and heat capacity. Volumetric Properties of

  
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### 3) Employers

| S.No | Suggestions  | Action Taken  |
|------|--|---|
| 1.   | Scheme can be revised to accommodate more software related courses to provide employment | These are included in the syllabus<br>Problem solving course was already introduced |
| 2.   | New electives can be introduced  | Suggestions are implemented   |
| 3.   | Software related courses can be introduced   | These suggestions are implemented in the scheme                                     |

  
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# Employers proof

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16CS C01

with effect from the academic year 2016-17

## PROGRAMMING AND PROBLEM SOLVING

|                             |         |                  |
|-----------------------------|---------|------------------|
| Instruction                 | 3L + 1T | Periods per week |
| Duration of End Examination |         | 3 Hours          |
| End Examination             |         | 70 Marks         |
| Sessional                   |         | 30 Marks         |
| Credits                     |         | 4                |

### Course Objective:

1. To acquire problem solving Skills.
2. To be able to write Algorithms.
3. To understand structured programming Approach.
4. To understand Memory structure.
5. To implement I/O Programming.
6. To be able to write program in C Language.

### Course Outcomes: Student will be able to:

1. Develop algorithms for scientific problems.
2. Explore algorithmic approaches to problem solving.
3. Understand the components of computing systems.
4. Choose data types and structure to solve mathematical problem.
5. Develop modular programs using control structure, arrays and structures.
6. Write programs to solve real world problems using structured features.

### UNIT – I

**Introduction to Computers:** Computer Systems, Computing Environments, Computer Languages, Creating and Running Programs, Software Development, Flow charts.

**Introduction to C Language:** Background, C Programs, Identifiers, Data Types, Variables, Constants, Input / Output Statements

**Arithmetic Operators and Expressions:** Evaluating Expressions, Precedence and Associativity of Operators, Type Conversions.

### UNIT – II

**Control Statements:** Bitwise Operators, Relational and Logical Operators, If, If-Else, Switch-Statement and Examples. Loop Control Statements: For, While, Do-While and Examples. Continue, Break and goto statements.

**Functions:** Function Basics, User-defined Functions, Inter Function Communication, Standard Functions, Parameter Passing-Call-by-value, call-by-reference, Recursion.

### UNIT – III

**Storage Classes:** Auto, Register, Static, Extern, Scope Rules, and Type Qualifiers.

**Arrays:** Concepts, Using Arrays in C, Array Applications, Two- Dimensional Arrays, Multidimensional Arrays.

**Searching and Sorting:** Linear and Binary Search, Selection Sort and Bubble Sort.

### UNIT – IV

**Pointers:** Introduction, Pointers to Pointers, Compatibility, Arrays and Pointers, Pointer Arithmetic and Arrays, Passing an Array to a Function, Memory Allocation Functions, Array of Pointers, Programming Applications, Pointers to void, Pointers to Functions, Command-line Arguments.

**Strings:** Concepts, String Input /Output Functions, Arrays of Strings, String Manipulation Functions.

### UNIT – V

**Structures:** Definition and Initialization of Structures, Accessing Structures, Nested Structures, Arrays of Structures, Structures and Functions, Pointers to Structures, Unions, Type Definition (typedef), Enumerated Types.

**Input and Output:** Introduction to Files, Modes of Files, Streams, Standard Library Input/output Functions, Character Input/output Functions

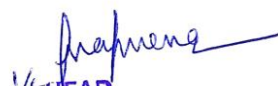
**Preprocessors:** Preprocessor Commands.

### Text Books:

1. Pradipt Dey and Manas Ghosh "Programming in C 2/c" Oxford University Press , 2<sup>nd</sup> Edition 2011.
2. B. W. Kerrighan and D.M. Ritchie, "The 'C' Programming Language" Prentice Hall India, 2<sup>nd</sup> Edition, 1990.
3. B.A.Forouzan and R.F. Gilberg A Structured Programming Approach in C, Cengage Learning,2007.

### Suggested Reading:

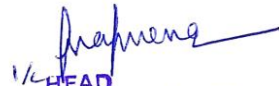
1. Rajaraman V. "The Fundamentals of Computers" 4<sup>th</sup> Edition, Prentice Hall of India, 2006.
2. R S Bichker "programming in c" University Press ,2012.

  
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### SEMESTER – IV


| S.No.             | Course Code | Title of the Course                           | Scheme of Instruction |          | Scheme of Examination    |               |            | Credits   |
|-------------------|-------------|---|-----------------------|----------|--------------------------|---------------|------------|-----------|
|                   |             |   | Hours per week        |          | Duration of See in Hours | Maximum Marks |            |           |
|                   |             |   | L/T                   | P/D      |                          | CIE           | SEE        |           |
| <b>THEORY</b>     |             |   |                       |          |                          |               |            |           |
| 1                 | 16CH C05    | Chemical Engineering Thermodynamics - I       | 3                     | -        | 3                        | 30            | 70         | 3         |
| 2                 | 16CH C06    | Chemical Reaction Engineers - I               | 3                     | -        | 3                        | 30            | 70         | 3         |
| 3                 | 16CH C07    | Material Science for Chemical Engineers       | 3                     | -        | 3                        | 30            | 70         | 3         |
| 4                 | 16CH C08    | Mechanical Unit Operations                    | 3/1                   | -        | 3                        | 30            | 70         | 4         |
| 5                 | 16CH C09    | Process Heat Transfer                         | 3/1                   | -        | 3                        | 30            | 70         | 4         |
| 6                 | ---         | <b>Elective - I</b>                           | 3                     | -        | 3                        | 30            | 70         | 3         |
| <b>PRACTICALS</b> |             |   |                       |          |                          |               |            |           |
| 7                 | 16CH C10    | Fluid Mechanics Lab                           | -                     | 3        | 3                        | 25            | 50         | 2         |
| 8                 | 16MT C07    | Programming Laboratory for Numerical Methods  | -                     | 2        | 2                        | 15            | 35         | 1         |
| 9                 | 16EG C03    | Soft Skills and Employability Enhancement Lab | -                     | 2        | 2                        | 15            | 35         | 1         |
| <b>Total</b>      |             |   | <b>20</b>             | <b>7</b> | <b>-</b>                 | <b>235</b>    | <b>540</b> | <b>24</b> |

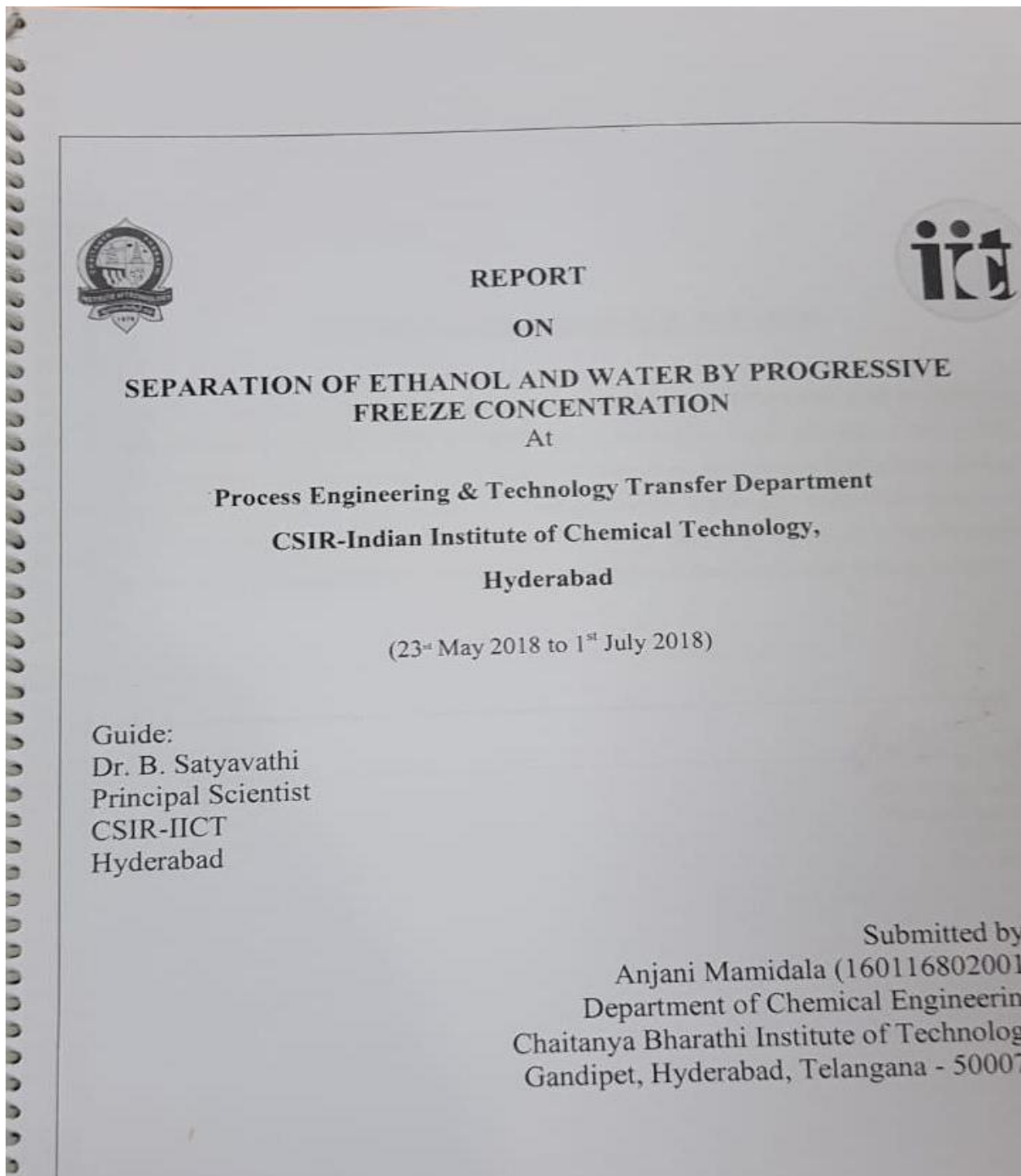
| S.No. | Elective-I Course Code | Title of Elective-I Course (Inter Disciplinary and program specific Elective options) |
|-------|------------------------|---|
| 1.    | 16CY E01               | Advanced Organic Chemistry  |
| 2.    | 16MT E01               | Numerical Techniques and Statistical Methods  |
| 3.    | 16CH E01               | Fertilizer Technology   |


  
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#### 4) Alumni

| S.no. | Suggestions & opinions  | Action taken   |
|-------|---|--|
| 1     | To include at least one 'Industrial visit' per semester and encourage summer internships in core industries during vacation for students.   | Students are undergoing internship training during summer break. The department is organizing industrial visits every year |
| 2     | Industrial exposure is more needed in the form of industrial visits. Credits may be awarded for this  | The suggestions are implemented in the curriculum  |
| 3     | Industry related problems to be undertaken as part of curriculum thorough projects or guest lectures. Should be made must in the curriculum | Students are taking up industry projects as part of curriculum   |

  
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Dr. Reddy's Laboratories Ltd.  
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Sangareddy District,  
Telangana - 502 325, INDIA.

Tel : 08458 - 283500  
www.drreddys.com


June 29 , 2018

**TO WHOMSOEVER IT MAY CONCERN**


This is to certify that **Ms.M Srilekha**, student of Chaitanya Bharathi Institute of Tech, CBIT Campus, Gandipet,, Kokapet, RR District, Hyd - 500 075 has undergone training in our organization from **11.06.2018 to 29.06.2018**. She has completed her project work on **Condenser Designing** with the **MSAT (Process Engineering) department, CTO Unit II** at Dr. Reddy's Laboratories Limited.

Her conduct during the training period was satisfactory and we wish her all success in future endeavors.

With best regards,  
For Dr.Reddy's Laboratories Ltd.,

  
29/06/18  
Authorized Signatory

Registered Office : B-2-337, Road No. 3, Banjara Hills, Hyderabad - 500 034, Telangana, India.  
Tel : +91 40 4900 2900, Fax : +91 40 4900 2999 Email : mail@drreddys.com  
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Government of India  
Department of Atomic Energy  
**NUCLEAR FUEL COMPLEX**

### BONAFIDE CERTIFICATE

This is to certify that K.B.MAHALAKSHMI has done her Project Work under my guidance during the period from 11-06-2018 to 12-07-2018 on the topic entitled ZIRCONIUM OXIDE PRODUCTION AND EXPERIMENTAL STUDY ON FILTRATION AND EVAPORATION OF SODIUM NITRATE ALONG WITH EVAPORATOR DESIGN FOR THE PROCESS with reference to the Zirconium Oxide Plant of Nuclear Fuel Complex.

It is ensured that the report does not contain classified or Plant operational live data in any form.

Signature: 

Name: ARUN ANAND

Desgn. Of Guide: S/D

Plant: ZOP

Hyderabad

Date

13/07/2018

Approved by

जॉनसन डिसूजा/JOHNSON D'SOUZA  
वरिष्ठ प्रबंधक, जेडओपी/Sr. Manager ZOP

  
HEAD

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Chaitanya Bharathi Institute of Technology  
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## Industrial visit of students-reg.,

9 messages

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**manager\_hrd@man.hwb.gov.in** <manager\_hrd@man.hwb.gov.in>

Tue, Sep 25, 2018 at 10:16 AM

To: hod\_chem@cbit.ac.in

Cc: DGM\_ES <dgm\_es@man.hwb.gov.in>

महोदय Sir,

Received your mail. You can plan your industrial visit on 4th October-2018. However we have to take approval of the date from our Management for the same. You can be provided accommodation subject to availability of rooms, in our guest house. You please provide the list of students and faculty for further n.a at our end. It may be noted that you plan the visit in such a way to leave on the same day i.e., on 4th.. The receipt of the mail may be acknowledged.

सादर Regards

पी. जे. वी. सुधाकर P J V Sudhakar


प्रबंधक (एच.आर.डी) Manager (HRD)

भापासंम HWPM

इंटरकॉम Intercom: 4472/4872

मोबाईल Mobile : 9490146536

ई-मेल email: [manager\\_hrd@man.hwb.gov.in](mailto:manager_hrd@man.hwb.gov.in)

  
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