B. M. S. College of Engineering Bengaluru-560019

(Autonomous Institute Affiliated to VTU)

Report on

Two Weeks Value Added Course on

"Hands on Training on Computational tools in Chemical Engineering"

26th Dec. 2022 to 7th Jan.



Organized by

Department of Chemical Engineering B.M.S. College of Engineering Bengaluru-560 019

ORGANISING CHAIR

Dr. Y. K. Suneetha Associate Professor & HOD Ph. D. (VTU), B.M.S. College of Engineering

SPEAKER

Dr. Chetan A. Nayak Assistant Professor Ph.D. (CSIR-CFTRI), B.M.S. College of Engineering

CONVENER

Dr. G. N. Rameshaiah Professor Ph.D. (IITM), B.M.S. College of Engineering

SPEAKER

Dr. Shivakumar. R Assistant Professor Ph.D. (VTU), B.M.S. College of Engineering

COORDINATOR

Dr. Sanjay Kumar Assistant Professor Ph.D. (IITKGP), B.M.S. College of Engineering

SPEAKER

Dr. Hari Prasad U. Assistant Professor Ph.D., B.M.S. College of Engineering

SPEAKER

Dr. Sreelakshmi Diddi Assistant Professor Ph. D. (VTU), B.M.S. College of Engineering

SPEAKER

Mr. Soumen Panda Assistant Professor M.Tech (IITM), B.M.S. College of Engineering

B. M. S. COLLEGE OF ENGINEERING

B. M. S. College of Engineering was established in the year 1946 by Late B M Sreenivasaiah, and nurtured by his illustrious son, Late B S Narayan. BMSCE is the first private sector initiative in Engineering Education in India. BMSCE is in the 75th year of dedicated service in the field of Engineering Education. BMSCE today offers 14 Under Graduate & 15 Post Graduate courses, both in conventional and emerging areas. At present, 15 Departments are recognized as Research Centers offering PhD/MSc Engineering by Research in Science, Engineering, and Management. First Institution in the state bestowed with NBA Accreditation in Tier I Format (Washington Accord).

World Bank funded TEQIP Phase I, Phase II and Phase III Institute and Partner Institution of the Melton Foundation, USA which advocates Global Citizenship. Autonomous Institute (UGC approved) since 2008.

ABOUT THE CHEMICAL ENGINEERING DEPARTMENT

The branch of Chemical Engineering is established in 1995 with an intake of 30 students. Currently the intake has been increased to 60 students. The bright and highly motivated students are the real ambassador of the department. Department has well qualified faculty. In 2013 the department has started post graduate program in Biochemical Engineering, the first course in VTU with the title. The college has laid its focus to impart synergistic education in the field of Chemical Engineering between industry and academia. The institution has thus been able to contribute a large pool of talented Chemical engineers to the industry and also for research.

ABOUT THE WORKSHOP PROGRAM

Process engineering technology has become increasingly more difficult to design or optimize in chemical processes without any efficient software tools. Process simulation software, such as ASPEN PLUS, UNISIM, MATLAB, DoE CHEMCAD or PRO/II, now play a major role in a variety of chemical engineering areas. Many industrial process companies now license at least one of these simulation programs. The workshop aims at providing a detail hand on training on UNISIM MATLAB, DoE software used for design of steady & dynamic systems and also simulate the dynamic systems to get optimum results.

OBJECTIVES AND OUTCOMES OF THE VALUE-ADDED COURSE

Students will learn:

• to understand UNISIM, MATLAB, and DoE while learning multi-engineering courses

• to apply these tools to build process flow diagrams using simulation methods in engineering

applications

• to use collaborative working skills with other students

DATE, TIME & VENUE OF THE VALUE-ADDED COURSE

Date: December 26, 2022 to January 7, 2023

Time: 2:00 to 4:00 PM (1st week online mode) & 4:00 to 6:00 PM (2nd week offline mode)

Venue: P.G. Block, 3rd floor, computer lab

BRIEF SUMMARY OF THE PROGRAMME

ONLINE MODE

1st Day (26/12/2022): Mr. Soumen Panda and Dr. Sreelakshmi Diddi gave a brief introduction

on MATLAB and solved Chemical Engineering Problems using MATLAB. In the introduction

a hands-on experience was provided on building arrays, Matrix, create loops, user defined

functions, plotting data points etc. after the detailed discussion on the MATLAB introduction,

Algebraic equations related to Chemical Engineering problems were solved using numerical

techniques and MATLAB inbuilt function in MATLAB.

2nd Day (27/12/2022): Mr. Soumen Panda and Dr. Sreelakshmi Diddi gave hands-on training

on solving single and simultaneous differential equations using MATLAB. Differential

equations related to Chemical Engineering were solved using numerical methods as well as

MATLAB inbuilt functions in MATLAB.

3rd Day (28/12/2022): Dr. HPU gave a brief introduction on DoE and important terms involved

in DoE with a wide range of applications in perspective of chemical engineering problems.

And also, he explained the theoretical aspects of the factorial design and then solved and

demonstrated some problems in Minitab software, in particularly, 2^k factorial designs with

interpretation of the results. Finally, he gave a brief introduction on Response surface

methodology and the same was continued in the next session.

4th Day (29/12/2022): Firstly, Dr. HPU gave some activity to students to collect the

experimental data on a virtual catapult experiment which was available on the internet. Based

on that information, he asked the students to interpret the data in Minitab software. And then

he solved some problems on central composite design along with interpretation of interaction plots, surface and contour plots. Finally, he gave a brief introduction on Box Behnken design and the same was continued in the online session.

5th Day (30/12/2022): Dr. Shivakumar R

6th Day (31/12/2022): Dr. Shivakumar R

OFFLINE MODE

1st Day (02/01/2023): Session was taken by Mr. Souman Panda & Dr. Sreelakshmi. In online sessions single and simultaneous Algebraic equations related to Chemical Engineering problems were solved using numerical techniques and MATLAB inbuilt function in MATLAB and students were asked to solve assignment problems. An open discussion with students was conducted to clarify doubts.

2nd Day (03/01/2023): Session was taken by Mr. Souman Panda. In the online session single and simultaneous Differential equations related to Chemical Engineering were solved using numerical methods as well as MATLAB inbuilt functions in MATLAB. Students were asked to solve assignment problems and an open discussion with students was conducted to clarify doubts.

3rd Day (04/01/2023): Dr. HPU solved some problems based on Box Behnken design and demonstrated the same in Minitab software and asked the students to solve that problem.

4th Day (05/01/2023): Dr. HPU gave a brief introduction about published journal papers and explained to students what data needs to be used for solving the same in Minitab software. And then he solved the journal paper and compared the regression model equation and surface/contour plots with the literature.

5th Day (06/01/2023): Dr.Chetan A Nayak/Dr. Shivakumar R

6th Day (07/01/2023): Dr. Shivakumar R

LIST OF PARTICIPANTS

	Li	st of Participants Register	ed for the C	ourse	
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	Nagadarshan				Chemical
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	List of Participants	
Sr. No.	Gender	Number
1.	Male	15
2.	Female	17
3.	Transgender	0
	Tota	1 32

SUPPORTING DOCUMENTS

1. Brochures 2. Schedule 3. Attendance Sheet 4. Photographs

B. M. S. College of Engineering Bengaluru-560019

Two Weeks

Value Added Course on

Hands on Training on Computational tools in Chemical Engineering

26th Dec. 2022 to 7th Jan. 2022



Organizers

Department of Chemical Engineering B.M.S. College of Engineering Bengaluru-560 019

B. M. S. COLLEGE OF ENGINEERING

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CHIEF PATRONS

Dr. B. S. Ragini Narayan, Donor Trustee, BMSET

Dr. P. Dayanand Pai, Chairman, BMSCE

PATRONS

Dr. S. Muralidhara, Principal

Dr. Suresh R. Reddy, Vice Principal (Acad.)

Dr. Bheemsha A, Vice Principal, (Admin.)

ADVISORS:

Dr. Sheshachala., Dean (Academic)

Dr Rathanraj K. J., Dean (Student Affairs)

Dr Mamatha M. N., Dean (First Year Students)

Dr. Suma H. N., Dean (Innovation)

ORGANISING CHAIR

Dr. Y. K. Suneetha

Associate Professor

Head, Dept. of Chemical Engineering, BMSCE

CONVENER

Dr. G. N. Rameshaiah.

Professor

Dept. of Chemical Engineering, BMSCE

COORDINATOR

Dr Sanjav Kumar

Assistant Dept. of Chemical Engineering, BMSCE

WHO CAN ATTEND

All engineering scholars can attend this course.

Registration:

Last date and Time for registering Course: 26th Dec 2022, 8.30 am

Registration Fee: Rs 500/-

The payment of the fee needs to be made in favour of "HoD Chemical Engineering", BMSCE payable at Bangalore. Duly filled scanned copy of

the application need to be sent to the coordinator mail id or by postal mail before the last date.

NEFT Details:

Bank Name: Indian Bank Branch: Hanumanthnagar Account No.: 20274185466 IFSC Code: IDIB000B607

HOW TO APPLY

Online URL: https://tinyurl.com/2zxfbzea

Offline filled in application form

CERTIFICATE: On successful completion of the value added course, we will be issuing certificate.

COURSE CONTENT

- UNISIM Simulation tool steady state simulations
- MATLAB
- Design of Experiments using Minitab
- Engineering program specific example and activity using above simulation tools

RESOURCE PERSONS:

Dr R Shivakumar

Dr Chetan A Nayak

Prof. Souman Panda

Dr. Hari prasad Uppara

Assistant Professor's, Dept. of Chemical, BMSCE

Contact for Correspondence

Dr. G. N. Rameshaiah

Professor, Department of Chemical Engineering B.M.S. College of Engineering, Basavanagudi,

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APPLICATION FORM Two Weeks Value Added Course

on

Hands on Training on Computational tools in Chemical Engineering 26th Dec. 2022 to 7th Jan. 2022

26th Dec. 2022 to 7th Jan. 2022 Organized by: **Department of Chemical Engineering**

1. Name:
2. Date of birth:
3. Branch:
4. Institution:
5. Address for communication:
6. Contact No:
7. E-mail ID:
8. Educational qualifications:
9. Area of interest:
DECLARATION
The information furnished above is true to the best of my knowledge. I agree to abide by the rules and regulations governing the course. If selected, I shall attend the course for the entire duration.
Place:
Signature of the applicant
Date:

B.M.S. COLLEGE OF ENGINEERING

Autonomous College, Affiliated to VTU

SCHEDULE OF ACTIVITY OFFLINE

Day	Lecture & Hands on	Program details	Speakers
1	1.	Introduction to MATLAB	Prof. Souman Panda BMSCE
	2.	Hands training in on MATLAB	Prof. Souman Panda BMSCE
	3.	Hands training in on MATLAB	Prof. Souman Panda BMSCE
2	4.	Chemical Engineering Application Using MATLAB	Prof. Souman Panda BMSCE
	5.	Hands training in on MATLAB	Prof. Souman Panda BMSCE
	6.	Hands training in on MATLAB	Prof. Souman Panda BMSCE
3	7.	Basics of simulation tools with their importance	Dr. Shivakumar R, BMSCE
	8.	Development of Process flow diagram for different unit operations: Hands on Session	Dr.Chetan A Nayak, BMSCE
	9.	Separating CO ₂ from Synthesis Gas :Development of flow diagram and Simulation	Dr. Shivakumar R, BMSCE
4	10.	Production of Vinyl Chloride	Dr. Chetan A Nayak, BMSCE
	11.	Hydroalkylation of Toluene to Benzene Using Hydrogen: Development of flow diagram and Simulation	Dr. Shivakumar R, BMSCE
	12.	Simulation of Separation Column for Propylene-Propane Mixture: Development of flow diagram and Simulation	Dr. Chetan A Nayak, BMSCE
5	13.	Introduction of DOE	Dr.Hari Prasad Uppara, BMSCE
	14.	Designing the experiments with simple comparative examples	Dr.Hari Prasad Uppara, BMSCE
	15.	2^k factorial design with examples	Dr.Hari Prasad Uppara, BMSCE
6	16.	Analysis of response surface methods and design	Dr.Hari Prasad Uppara, BMSCE
	17.	Interpreting the results of surface and counter plots obtained from DOE	Dr.Hari Prasad Uppara, BMSCE
	18.	Solving and interpreting the one or two journal research articles	Dr.Hari Prasad Uppara, BMSCE

SCHEDULE OF ACTIVITY ONLINE

Day	Online Meeting	Program details	Speakers
7	1.	Online guidance & training in on MATLAB	Prof. Souman Panda BMSCE
	2.	Online guidance & training in on MATLAB	Prof. Souman Panda BMSCE
	3.	Online guidance & training in on MATLAB	Prof. Souman Panda BMSCE
8	4.	Chemical Engineering Application Uising MATLAB	Prof. Souman Panda BMSCE
	5.	Hands training in on MATLAB	Prof. Souman Panda BMSCE
	6.	Hands training in on MATLAB	Prof. Souman Panda BMSCE
9	7.	Development of Process flow diagram for different unit operations: Hands on Session	Dr. Shivakumar R, BMSCE
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Value A	Value Added Course of Training of 26th Dec 2022 to 7	26th Dec 2022 to 7th jan 2023	jan 2023			
		ist of Participants Registered for the Course	ed for the Course		40000	Signature
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70					Chemical engineering	

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			Department Signature	1	1	Chemical Engineering	Chemical Engineering	+	+	Chemical engineering	Chemical engineering		+	7	+	Chemical engineering	Chemical engineering	Chemical engineering	Chemical Engineering	Chemical Engineering	Chemical Engineering	-4	1	Chemical Engineering		Chemical engineering 5	Chemical engineering	Chemical Engineering	Chemical engineering	Chemical engineering	Chemical Engineering	Chemical engineering	Chemical engineering	Chemical engineering	Chemical engineering	Chemical engineering
ational Tools in Chemical Engineering "		•	Name of the institution	BMSCE	BMSCE	BMSCE		BMSCE				DSCE	BMSCE	DSCE	BMSCE	BMSCE	DSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	BMSCE	SIT	SIT	SIT	
Tools in Chemic	jan 2023	Registered for the Course	Mobile number	8088834774	9740216614	9620890254	7204561769	8197690636	9900174544	8088106478	8147399331	9743463574	9380588028	9113837232	9743354055	8197756026	7338298778	9036232777	9880742197	7619122953	7676032632	9606172575	9538956699	7022850391	6362417311	7899305659	8867189286	8310786805	8310258979	8970802920	6363991501	9632412193	9019853879	8867546088	853115472	
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		26th Dec 2022 to 7th jan 2023	h jan 2023			
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Two Week

Value-Added Course

Hands-on Training on Computational Tools in Chemical Engineering

Organised By

Department of Chemical Engineering

the Value-Added Course on "Hands on Training on Computational Tools in has participated in **Chemical Engineering**" organized by the Department of Chemical Engineering, BMSCE, Bengaluru, during December 26, 2022 to January 7, This is to certify that

Dr. G. N. Rameshaiah Convener Chemical Engineering

Dr. Y. K. Suneetha Head of Department Chemical Engineering

Dr. Muralidhara S Principal BMSCE





