Directorate of Continuing Education

Bangladesh University of Engineering and Technology

Modern civilization continuously strives to discover the truth and thereby increase our knowledge on any discipline of interest. With every new discovery, we acquire new knowledge which many a times increases the span of our knowledge. At times this new knowledge even makes the old knowledge partially obsolete. As time rolls by we acquire new knowledge. Application of this new knowledge broadens the scope and opportunities for the improvement of our living. While practicing engineers and professionals continuously work for ensuring a better life on earth, they must constantly avail the opportunities of learning new things and remain updated. For this purpose, the Directorate of Continuing Education (DCE) of BUET was established in 1995 as a link between the Professionals and the providers of knowledge-the Academicians.

PURPOSE of DCE

- Implement BUET policy and procedures for the establishment of a well-equipped Directorate for conducting Continuing Education programs.

- Enhance and strengthen the continuing education programs for professionals, especially in the field of Science and Technology.

OBJECTIVES of DCE

The objectives of the Directorate of Continuing Education (DCE) of BUET are to assist in and to promote the development, up-gradation and renewal of knowledge and skills, in the field of science and technology of teachers, engineers, scientists, managers, planners, administrators, students and others through-

- *the dissemination of new knowledge and techniques*
- *training in established knowledge and techniques*

Policy of BUET regarding Continuing Education

Realizing the importance of Continuing Education in the promoting development of engineers and other professionals, BUET felt the necessity of establishing a well-equipped Directorate of Continuing Education (DCE) and thereby enhance and strengthen the continuing education program in the county. It was understood that this program will require education and organizational efforts distinct from the degree program offered at BUET. Although the Directorate would be an Academic Center, it will develop the most important interface between BUET and various sectors of development.

In order to achieve its objectives, the activities carried out by DCE are to:

i. establish and promote the linkage of BUET with local and foreign academic and professional institutions, agencies, organizations and industries in respect of continuing education;
ii. organize and implement the objectives of such linkage programs;
iii. plan and organize continuing education courses to be offered by the departments, centers and institutions;
iv. plan and organize interdisciplinary continuing education courses, seminars, conferences, workshops, etc;
v. plan and organize seminars, workshop, sandwich or other curses etc., as and when requested by outside agencies/organizations;

vi. plan and organize for the teachers and the staff of BUET
- *continuing education courses*
- participation, under the rules of the university, in courses, seminars, conferences, workshops etc. offered locally or abroad;
vii. plan and organize post-graduate programs not offered by the departments.
viii. establish and maintain contact with national, regional, and international organizations/ institutions engaged in similar activities;
ix. Design, development and launching of new programs and departments;
x. Developing distance learning programs in collaboration with local and global partners;
xi. Coach and manage entrepreneurship development in the country;
xii. conduct research and publish newsletters, journals and books etc. in the field of continuing education;
xiii. take up such other programs which will facilitate in achieving its aims and objectives.

ACHIEVEMENTS OF DCE

BUET also explored the possibility of developing collaboration with local organizations. As a result of this, a memorandum of understanding was signed between DCE, BUET and LGED under which DCE will meet the continuing education requirement of all the engineers working at LGED. Bangladesh Inland Water Transport Authority also came forward to train their young engineers under a program organized by DCE. Recently, there are collaborations with Bangladesh Fire Service and Civil Defense (BFCD), Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA) regarding continuing education.

The courses offered were chosen from almost all disciplines of engineering. The demand of courses and the number of participants in those courses is increasing remarkably. So far **225** short courses/training workshops have been offered to more than **11500** professionals/individuals.

Ever since its establishment, the DCE has been organizing Seminars, Workshops, Short Courses and Training programs regularly. During the formative stages, BUET had a bilateral agreement with the University of Alberta, Canada under which the Canadian CIDA provided necessary supports to set up the classroom and other logistic support systems of DCE. It also extended its support in the form of resource persons to conduct short courses on various topics like Management, Environmental Issues and Energy. To enrich its programs DCE tried to get resource persons from developed countries under linkage programs. In this context, the linkage program with Delft University of Technology, Netherlands and North Carolina A&T State University, USA may be mentioned.

In addition to catering the needs of various organizations, DCE organizes short courses and workshops on topics which has good demand among the professionals. All intending qualified professionals are allowed to participate in such programs on first come first served basis. More information could be found at the DCE website:

dce.buet.ac.bd

For further information, please contact:

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CONTINUING EDUCATION
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CONTACT

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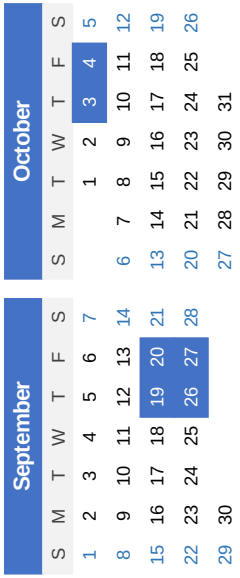

About DCE

DCE established in **1995 at BUET**, a platform for decentralized and adaptive learning to bridge the gap between Professionals and Academicians, promotes pedagogical development with a combined experience of Academicians and Professionals and offers distance training opportunities. So far, **225** short courses/training workshops have been offered to serve more than **11,500** professionals.

Short Course Outcomes

At the end of this course, participants are expected to

- Proficiency in using COMSOL Multiphysics software for simulations.
- Understanding of how COMSOL engineering disciplines.
- Hands-on experience with engineering analysis and simulation.
- Preparedness for participation in research projects involving COMSOL Multiphysics.
- Development of critical thinking and analytical skills.
- Ability to apply COMSOL Multiphysics to real-world projects and challenges.

RESOURCE PERSON

Professor Dr. Sumon Saha
Department of Mechanical Engineering, BUET
Google Scholar: https://rb.gy/4huqd9

LANGUAGE

English and Bangla

CERTIFICATE

A certificate of attendance will be provided.

PARTICIPANT LIMIT

Maximum **40** participants per course.

Short Course On

COMSOL Multiphysics Simulation of Thermofluidic Problems (Basic/Advanced Level)

Basic Level: 19 & 20 September 2024

Advanced Level (Batch 1): 26 & 27 September 2024

Advanced Level (Batch 2): 03 & 04 October 2024

BUET, Dhaka

Organized by
Directorate of Continuing Education (DCE)
Bangladesh University of Engineering and Technology
Dhaka-1000

Finite Element Method (FEM) is a cornerstone of modern engineering practice, enabling the simulation and analysis of complex systems across diverse fields, from structural mechanics to fluid dynamics and heat transfer. This hands-on training in COMSOL Multiphysics simulation is essential for acquiring the necessary skills and knowledge to effectively utilize FEM for modeling, simulation, and design optimization. This course will empower one to tackle real-world engineering challenges with confidence, fostering problem-solving abilities and a deep understanding of mathematical principles applied in practice. Moreover, proficiency in COMSOL Multiphysics software aligns with industry demands, enhancing our graduates' employability and research and collaboration opportunities within the engineering and scientific communities. By offering this course, we ensure our participants are well-prepared for the interdisciplinary, simulation-driven landscape of 21st-century engineering.

Join the official short course on COMSOL Multiphysics Simulation of Thermofluidic Problems (Basic/Advanced Level), presented by DCE, BUET. Don't miss this invaluable learning opportunity.

WHO SHOULD ATTEND?

This short course is suitable for:

- Undergraduate and Postgraduate Students
- Engineering Enthusiasts
- Chemical/Mechanical/Civil Engineers
- Aspiring CFD Researchers, Young Faculties
- Professionals Seeking Skill Enhancement
- Mathematician, Cross-Disciplinary Learners
- Anyone Interested in Engineering Simulation

PROGRAM OVERVIEW

Contents of the Short Course are:

- Introduction to Computational Heat Transfer
- Mathematical Modeling & Dimensional Analysis of Basic and Advanced Thermofluidic Problems
- Introduction to COMSOL Multiphysics Simulation and Solving Different Problems
- Training on Validation, Visualization and Post Processing using Tecplot, xyExtract, MATLAB, Polymath Professional software
- Common/Advanced Natural, Forced and Mixed Convection Problems inside Cavities
- COMSOL Multiphysics Simulation of Forced, Mixed and Natural Convection Inside a Cavity
- Scientific Paper Writing, Completion of Research Project using COMSOL Multiphysics

REGISTRATION FEE

FOR CURRENT BUET STUDENTS- BDT 3,000/- per Person (Tk. Three Thousand Only)*
FOR OTHERS – BDT 5,000/- per person (Tk. Five Thousand Only)*
*FOR EACH COURSE
Fee includes printed lecture instructions, workshop kits, Simulation/Post processing Source files, refreshments, certificates, etc.

PAYMENT PROCEDURE

Registration Fee is to be paid in advance payable through electronically/bank transfer deposited at -

Savings Account No.	**4404034173888**
Routing Number	**200270522**
Account Name:	Director, Directorate of Continuing Education (DCE)
Bank Name:	Sonali Bank Ltd. BUET Branch, Dhaka.

REGISTRATION FORM

Short Course On

COMSOL Multiphysics Simulation of Thermofluidic Problems (Basic/Advanced Level)

DCE, BUET

For registration and Details Please Scan

https://forms.gle/fGy4NBt9Sw2iYPcJ6

Please attach the original copy of the payment and your ID proof during online registration.

SCHEDULE

Basic Level Course: **19 & 20 September 2024**

Advanced Level Course: **26 & 27 September 2024** (Batch 1)

Advanced Level Course: **03 & 04 October 2024** (Batch 2)

VENUE

UG Computer Lab, Room no.- 409, 3rd Floor, ME Building, BUET, Dhaka-1000.

Short Course on
COMSOL Multiphysics Simulation of Thermofluidic Problems (Basic/Advanced)
Organized by: DCE, BUET
19 & 20, 26 & 27 September, 03 & 04 October 2024

COURSE COORDINATOR & INSTRUCTOR

Dr. Sumon Saha

Professor, Department of Mechanical Engineering,
Bangladesh University of Engineering and Technology.
Dhaka-1000, Bangladesh.
Email: sumonsaha@me.buet.ac.bd
Contact: +8801926197002

Biography

Dr. Sumon Saha received his Ph.D. in Engineering from the University of Melbourne, Victoria, Australia, in 2014. He completed his B.Sc. and M.Sc. in Mechanical Engineering from Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh in 2004 and 2007 respectively. His primary field of study is the numerical analysis of thermo-fluidic problems. He is now working as a Professor in the Department of Mechanical Engineering of Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh. He has published over **208 research papers** in International Journals and Conference Proceedings (**22 articles already published in Q1 journals in 2024**). He is the co-author of two books in the engineering field. His fields of interest are turbulent flows, computational fluid dynamics, computational heat transfer, and particle deposition. Dr. Saha is the editor of one international journal and the reviewer of several international conference proceedings and journals. He is a senior member of the International Association of Computer Science and Information Technology (IACSIT), Singapore. Moreover, he is a life member of the Bangladesh Solar Energy Society. He has received many professional awards, including the International Postgraduate Research Scholarship by the Australian federal government, the Melbourne International Research Scholarship by the University of Melbourne, the RHD Studentship by the University of Melbourne, and so on.

Google Scholar: https://rb.gy/4huqd9

Short Course on

COMSOL Multiphysics Simulation of Thermofluidic Problems (Basic Level)

Venue: UG Computer Lab (Room # 409), *3rd Floor, ME Building, BUET*

PROGRAM SCHEDULE

Day	Time	Topics
19 September 2024 Thursday	**9:00 AM- 9:15 AM**	**Registration**
	Module 1: **Computational Heat Transfer and Mathematical Modeling**	
	9:15 AM-10:15 AM	1.1 **Introduction to Computational Heat Transfer and its Modern Trends**
	10:15 AM-10:30 AM	**Tea Break**
	10:30 AM-12:30 PM	1.2 **Modeling and Dimensional Analysis of Thermofluidic Problems**
	12.30 PM-2:00 PM	**Lunch and Prayer Break**
	Module 2: **Hands-on COMSOL Multiphysics Simulation**	
	2.00 PM-3.00 PM	2.1. **COMSOL Multiphysics Simulation, Meshing and Solving Benchmark Problem**
	3:00 PM-4:00 PM	2.2. **COMSOL Multiphysics Simulation (Dimensional vs Non-dimensional Simulation)**
	4:00 PM-5:00 PM	2.3. **Hands-on Training Using COMSOL Multiphysics (Validation and Post Processing) - I**
20 September 2024 Friday	Module 3: **Simulation of Basic Thermofluidic Problems**	
	9.15 AM- 10.15 AM	3.1. **Hands-on Training Using COMSOL Multiphysics (Validation and Post Processing) - II**
	10.15 AM-10.30 AM	**Tea Break**
	10:30 AM-11:30 AM	3.2. **Common Natural, Forced, and Mixed Convection Problems Inside Cavities**
	11.30 AM- 12.30 PM	3.3. **Simulation of Forced Convection Inside a Vented Cavity**
	12.30 PM-2:00 PM	**Lunch and Prayer Break**
	2.00 PM-3.00 PM	3.4. **Simulation of Mixed Convection Inside a Lid-Driven Cavity**
	3:00 PM-4:00 PM	3.5. **Simulation of Natural Convection Inside an Irregular Cavity**
	4:00 PM-5:00 PM	3.6. **Simulation of MHD Convection with Heat Generation and Joule Heating**
	5.00 PM-5:30 PM	**Tea and Prayer Break**
	5:30 PM~	Closing Ceremony and Certificate Distribution

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Short Course on

COMSOL Multiphysics Simulation of Thermofluidic Problems (Advanced Level – Batch 01)

Venue: UG Computer Lab (Room # 409), *3rd Floor, ME Building, BUET*

PROGRAM SCHEDULE

Day	Time	Topics
26 September 2024 Thursday	**9:00 AM- 9:15 AM**	**Registration**
	Module 1: **Mathematical Modeling of Advanced Thermofluidic Problems**	
	9:15 AM-10:15 AM	1.1 **Introduction to Conjugate MHD Convection with Joule Heating and Internal Heat Generation, Double Diffusive Convection, Bio-convection, Marangoni Convection, Convection with Radiation, Unsteady/Oscillating Flow**
	10:15 AM-10:30 AM	**Tea Break**
	10:30 AM-12:30 PM	1.2 **Modeling of Porous Medium Flow, Complex Fluid (Nanofluid, Ferrofluid, Hybrid Nanofluid, Micropolar Fluid, Non-Newtonian Fluid) Flow**
	12.30 PM-2:00 PM	**Lunch and Prayer Break**
	Module 2: **Hands-on COMSOL Multiphysics Advanced Simulation**	
	2.00 PM-3.00 PM	2.1. **Simulation of Unsteady/Oscillating Convective Flow of Ferrofluid in a Cavity**
	3:00 PM-4:00 PM	2.2. **Simulation of Mixed Convective Flow of Ostwald-de Waele Fluid in a Cavity**
	4:00 PM-5:00 PM	2.3. **Simulation of Bio-convective Flow of Micropolar Fluid in a Cavity**
27 September 2024 Friday	Module 3: **Introduction to Post Processing Techniques**	
	9.15 AM- 10.15 AM	3.1. **Hands-on Training Using COMSOL Multiphysics (Advanced Post Processing): Entropy Generation**
	10.15 AM-10.30 AM	**Tea Break**
	10:30 AM-11:30 AM	3.1. **Hands-on Training Using Tecplot: 2D Plotting**
	11.30 AM- 12.30 PM	3.3. **Hands-on Training Using xyExtract, Polymath Professional, MATLAB (3D Plotting)**
	12.30 PM-2:00 PM	**Lunch and Prayer Break**
	Module 4: **Introduction to Scientific/Research Paper Writing**	
	2.00 PM-3.00 PM	4.1. **Finding Research Gap, Selection of a New Problem, Smart Literature Review**
	3:00 PM-5:00 PM	4.2 **Writing a Research Article, Simulation and Post-Processing, Project Assignment of Thermofluidic Problems**
	5.00 PM-5:30 PM	**Tea and Prayer Break**
	5:30 PM~	Closing Ceremony and Certificate Distribution

Short Course on

COMSOL Multiphysics Simulation of Thermofluidic Problems (Advanced Level – Batch 02)

Venue: UG Computer Lab (Room # 409), *3rd Floor, ME Building, BUET*

PROGRAM SCHEDULE

Day	Time	Topics
03 October 2024 Thursday	**9:00 AM- 9:15 AM**	**Registration**
	Module 1: **Mathematical Modeling of Advanced Thermofluidic Problems**	
	9:15 AM-10:15 AM	1.1 **Introduction to Conjugate MHD Convection with Joule Heating and Internal Heat Generation, Double Diffusive Convection, Bio-convection, Marangoni Convection, Convection with Radiation, Unsteady/Oscillating Flow**
	10:15 AM-10:30 AM	**Tea Break**
	10:30 AM-12:30 PM	1.2 **Modeling of Porous Medium Flow, Complex Fluid (Nanofluid, Ferrofluid, Hybrid Nanofluid, Micropolar Fluid, Non-Newtonian Fluid) Flow**
	12.30 PM-2:00 PM	**Lunch and Prayer Break**
	Module 2: **Hands-on COMSOL Multiphysics Advanced Simulation**	
	2.00 PM-3.00 PM	2.1. **Simulation of Unsteady/Oscillating Convective Flow of Ferrofluid in a Cavity**
	3:00 PM-4:00 PM	2.2. **Simulation of Mixed Convective Flow of Ostwald-de Waele Fluid in a Cavity**
	4:00 PM-5:00 PM	2.3. **Simulation of Bio-convective Flow of Micropolar Fluid in a Cavity**
04 October 2024 Friday	Module 3: **Introduction to Post Processing Techniques**	
	9.15 AM- 10.15 AM	3.1. **Hands-on Training Using COMSOL Multiphysics (Advanced Post Processing): Entropy Generation**
	10.15 AM-10.30 AM	**Tea Break**
	10:30 AM-11:30 AM	3.1. **Hands-on Training Using Tecplot: 2D Plotting**
	11.30 AM- 12.30 PM	3.3. **Hands-on Training Using xyExtract, Polymath Professional, MATLAB (3D Plotting)**
	12.30 PM-2:00 PM	**Lunch and Prayer Break**
	Module 4: **Introduction to Scientific/Research Paper Writing**	
	2.00 PM-3.00 PM	4.1. **Finding Research Gap, Selection of a New Problem, Smart Literature Review**
	3:00 PM-5:00 PM	4.2 **Writing a Research Article, Simulation and Post-Processing, Project Assignment of Thermofluidic Problems**
	5.00 PM-5:30 PM	**Tea and Prayer Break**
	5:30 PM~	Closing Ceremony and Certificate Distribution

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