

Certificate in CHEMICAL ENGINEERING AND PLANT DESIGN

**LIVE,
INTERACTIVE
CLASSES OVER
THE INTERNET**

Presented by

**N.S.
Nandagopal**

B.Sc (Chem Eng), M.Sc, P.E.



INCLUDES
4 FREE REFERENCE MANUALS
VALUED AT OVER **US\$400**
OVER 1400 PAGES OF VALUABLE
REFERENCE MATERIAL



*Technology Training
that Works*

AUSTRALIA • CANADA • INDIA
IRELAND • MALAYSIA • NEW ZEALAND
POLAND • SINGAPORE • SOUTH AFRICA
UNITED KINGDOM • UNITED STATES • VIETNAM

12 MODULES OVER 3 MONTHS

Commencing on
3 May 2010

WHAT YOU WILL LEARN:

- Fundamentals of chemical engineering
- Simple process calculations including mass and energy balances
- Develop Process Flow Diagrams (PFDs)
- Contribute to process design activities
- Simple specifications of pumps and heat exchangers
- Mass transfer phenomena
- Process drawings and link them to plant operation
- Apply safety guidelines to a process or chemical plant
- Basic chemical engineering jargon and terminology
- Plant layout fundamentals and procedures
- Terminology and symbols used in plant layout
- Equipment used in process plants
- Piping design and engineering principles
- Terminology, symbols and abbreviations in piping design
- Documents (bill of materials, equipment specifications) and drawings (PFDs, P&IDs) used in plant layout and piping design
- 3D modeling of plants and piping systems

REGISTER TODAY

BENEFITS OF E-LEARNING

- Upgrade your skills and refresh your knowledge without having to take valuable time away from work
- Receive information and materials in small, easy to digest sections
- Learn while you travel - all you need is an Internet connection, microphone and speakers
- Have constant support from your course instructor and coordinator for the duration of the course
- Interact and network with participants from around the globe and gain valuable insight into international practice
- Receive a certificate of completion for CPD purposes

PRESENTATION FORMAT

The certificate program is conducted by E-Learning, and features real-world applications using a multi-pronged approach involving self-study, interactive on-line webcasts and homework assignments with a mentor on call.

The course consists of 12 modules over a period of 3 months. All modules involve a practical component or group activity. For each module there will be an initial reading assignment along with course work or problems to be handed in. Participants will have ongoing support from their instructor via phone, fax and e-mail. Course reading material will be delivered in electronic (PDF) format in advance of on-line presentations.

Presentations and group discussions will be conducted using a live interactive software system. Assignments will be submitted via e-mail. You will receive 4 technical manuals in hard copy upon completion.

LIVE WEBCASTS

During the program you will participate in 6 live interactive sessions with the instructor and other participants from around the world.

Each webcast will be scheduled at 2 varying times, so you can select one that is most convenient for you. All you need to participate is an adequate Internet connection and a headset with a microphone.

During the live webcasts you will have the opportunity to learn and discuss the techniques and procedures used in the design and engineering of complex process plants and piping systems.

The software package and setup details will be sent to you prior to the course. Session times to be confirmed upon registration.

HARDWARE AND SOFTWARE REQUIREMENTS

All you need to participate is an adequate Internet connection, PC, speakers and a microphone. The software package and setup details will be sent to you prior to the course.

PRESENTED BY

N.S. NANDAGOPAL P.E.

B.Sc (Chem Eng), M.Sc, P.E.

Nanda has over twenty five years of industry and academic experience in the area of process plant layout and piping design.

His experience includes work in the areas of process design, plant design, pipe stress analysis and piping engineering and design. While at Brown & Root, Nanda designed and engineered major piping systems for offshore platforms including high temperature and high-pressure lines. He has served on the Board of Directors of Society of Piping Engineers and Designers (SPED) and is constantly in touch with the trends and current practices in process plant and piping design.

Nanda has extensive experience in teaching short, intense, review courses for engineering license exams in the USA and is a registered Professional Engineer (P.E) in the State of Texas, USA. He is a passionate presenter who truly enjoys conveying complex technical concepts in a practical, down to earth manner. An effective communicator, Nanda receives excellent reviews from course participants.



12 MODULES OVER 3 MONTHS

OVERVIEW

Process plants such as refineries and petrochemical plants are complex facilities consisting of equipment, piping systems, instruments, electrical systems, electronics, computers and control systems. The design, engineering and construction of process plants involves multidisciplinary team effort. Process design, plant layout and design of piping systems constitute a major part of the design and engineering effort. The objective is to design safe and dependable processing facilities in a cost effective manner. There are few formal training programs with a comprehensive coverage of all three major topics of process design, plant layout and design of piping systems. Therefore, most of the required skills are acquired while on the job, reducing productivity and efficiency.

This course provides you with the basic knowledge and skills in the disciplines of chemical engineering and plant design to facilitate faster learning curves while on the job. It covers the fundamental principles and concepts used in process design and plant design. Upon completion of this course, you will have a clear understanding of the design and engineering principles used in the design of process plants.



INCLUDES 4 FREE
REFERENCE MANUALS
VALUED AT OVER US\$400

(RECEIVED UPON COMPLETION)

- Practical Fundamentals of Chemical Engineering
- Fundamentals of Process Plant Layout and Piping Design
- Practical Process Control
- Practical Instrumentation for Automation and Process Control



COURSE OUTLINE

MODULE 1: INTRODUCTION TO PROCESS PLANT LAYOUT AND PIPING DESIGN

MODULE 2: INTRODUCTION TO CHEMICAL PROCESSING

- Unit operations
- Unit processes
- Process Flow Diagrams (PFDs)

MODULE 3: MASS AND ENERGY BALANCES

- Physical quantities
- Units and dimensions
- Process stoichiometry
- Mass balances
- Energy balances

MODULE 4: THERMODYNAMICS

- Ideal Gas Law
- I and II Laws,
- Applications to pumps, turbines and compressors
- Vapor - liquid equilibrium

MODULE 5: FLUID MECHANICS

- Continuity equation
- Velocity
- Laminar and turbulent flows
- Friction factor
- Pressure drop
- Pump sizing and performance curves
- Pump data sheet
- Flow meters
- Layout and piping for pumps

MODULE 6: HEAT TRANSFER

- Principles of conduction
- Convection and radiation
- Heat exchangers
- Heat exchanger data sheet
- Layout and piping for heat exchangers

WHO SHOULD ATTEND:

This course is designed for personnel who want to understand the basic principles involved in the design and engineering of process plants and facilities, including:

- Personnel from EPC companies
- Chemical (Process) Engineers
- Process Development Engineers
- Chemists and Food Scientists
- Plastics and Material Engineers
- Environmental Engineers and Technicians
- Mechanical Engineers
- Piping Designers and Piping Engineers
- Project Engineers
- Personnel providing CAD support for plant design and engineering
- Personnel involved in instrumentation and control of process plants
- Equipment, Structural and Electrical Designers and Engineers
- Consulting Engineers
- Plant Operations and Maintenance Personnel

MODULE 7: PRINCIPLES OF MASS TRANSFER

- Distillation
- Absorption
- Evaporation
- Layout and piping for a distillation unit

MODULE 8: CHEMICAL KINETICS AND REACTOR DESIGN

- Chemical reactors
- Reactor design
- Layout and piping for reactors

MODULE 9:

- Process Control and Instrumentation
- Piping and Instrumentation Diagrams (P&IDs)

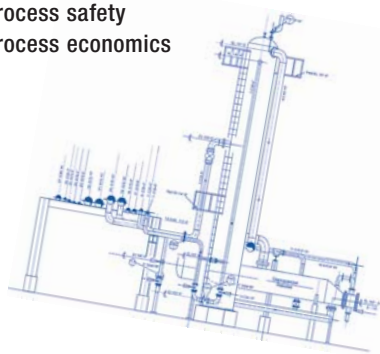
MODULE 10: MATERIALS AND MATERIALS SPECIFICATIONS FOR PIPING AND EQUIPMENT

MODULE 11:

- Plot Plans
- 3-D Models
- Drawings and documents used in plant design

MODULE 12: PIPING SYSTEM COMPONENTS

- Pipes
- Fittings
- Flanges
- Valves
- Process safety
- Process economics

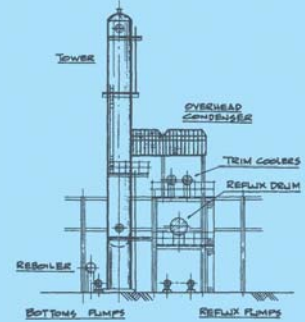


PRACTICAL EXERCISES

Throughout the course you will participate in hands-on exercises, which will help you put theory to practice immediately!

ENTRANCE REQUIREMENTS

Some practical work experience in some of these topics would obviously be advantageous.



CERTIFICATION

Participants completing all the assignments, and achieving 60% or more for their final mark, will receive the IDC Certificate in Chemical Engineering and Plant Design.



ON-SITE TRAINING

All IDC Technologies Training Workshops are available on an on-site basis, presented at the venue of your choice, saving delegates travel time and expenses, thus providing your company with even greater savings.

For more information or a **FREE detailed proposal** contact **Kevin Baker** via e-mail: training@idc-online.com

IDC TECHNOLOGIES' ACCREDITATION STATUS

The Engineering Institute of Technology is an internationally endorsed engineering training provider.

It is very important to us at EIT to ensure that our clients can confidently attend our workshops knowing that the professional development they are receiving is of a credible standard and will provide them with personal, measurable, productivity gains and the opportunity for career advancements.

To date EIT has received endorsement from the following authorising bodies:

The Institution of Engineering and Technology, which has more than 150,000 members worldwide - the largest professional engineering society in Europe and the second largest of its type in the world.

The Institute of Measurement and Control in the United Kingdom, which is Britain's foremost professional body for the Automation Industry.

The Project Management Institute in the USA, which has more than 265,000 members in over 170 countries.

The Training Accreditation Council in Australia, which is the national leader in the strategic management of the recognition and quality assurance of training.

Engineers Australia, which is the national peak body for all engineering disciplines. It represents 80,000 members.

South Africa - IDC Technologies has obtained validation for CPD Points from the SAIMechE (South African Mechanical Institute), COET (Chamber of Engineering Technology) and SAIEE (South African Institute of Electrical Engineers), who are Voluntary Associations recognised by ECSA (Engineering Council of South Africa). To view our list of validated workshops, visit ECSA's website www.ecsa.co.za and refer to the CPD Activities.

IEEE Education Partner - The IEEE is the world's leading professional association for the advancement of technology, with more than 375,000 members in more than 160 countries.



REGISTRATION FORM: Certificate in Chemical Engineering and Plant Design

Commencing on 3 May 2010

1. DELEGATE DETAILS

CONTACT: _____

COMPANY NAME: _____

COMPANY ADDRESS: _____

CITY: _____ STATE: _____ ZIP CODE: _____

PHONE: () _____ FAX: () _____

E-MAIL: _____

PARTICIPANT NAME: MR/MS: _____ JOB TITLE: _____

AREAS OF INTEREST (please tick)

- | | | |
|--|---|---|
| <input type="checkbox"/> Data Communications & Networking | <input type="checkbox"/> Electrical | <input type="checkbox"/> Electronics |
| <input type="checkbox"/> Instrumentation, Automation & Process Control | <input type="checkbox"/> Information Technology | <input type="checkbox"/> Project & Financial Management |
| <input type="checkbox"/> Mechanical Engineering | <input type="checkbox"/> Chemical Engineering | <input type="checkbox"/> Civil Engineering |

Should you have more people interested in attending this course, please contact us via e-mail: idc@idc-online.com

2. PAYMENT DETAILS

Full payment is required prior to the commencement of the course.

YES, I WOULD LIKE TO ATTEND THIS COURSE: \$ _____ x _____ delegates = \$ _____

TOTAL DUE = \$ _____

I wish to pay by: **CHECK**, made payable to **IDC Technologies**

COMPANY ORDER NUMBER: _____

Please charge my:

MASTERCARD VISA AMEX

PLEASE NOTE: payment by AMEX attracts a 5% surcharge

CARDHOLDER'S NAME: _____ CARDHOLDER'S SIGNATURE: _____ EXPIRY DATE: ____/____/____

On the reverse of your card, above the signature, is a 7 digit security number. In order to authorise your card transaction, we require the last 3 digits:

If the Cardholder's address is not the same as shown above please check this box:

3. ON-SITE TRAINING & CONSULTATION

YES, I would like to find out more about the **IDC Technologies** on-site training and consultation services:

- Certificate in Chemical Engineering and Plant Design
- Other IDC Technologies workshops IDC Engineering Consultancy Services

BOOKING CODE: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

ABOUT IDC TECHNOLOGIES

IDC Technologies is internationally recognised as the premier provider of practical, technical training for engineers and technicians. We specialise in the fields of industrial data communications, tele-communications, automation and control, and are continually adding to our portfolio of over 300 different workshops.

Our instructors are highly respected in their fields of expertise and in the last 16 years have trained over 300,000 engineers, scientists and technicians worldwide. With offices conveniently located worldwide, IDC Technologies has an enthusiastic team of professional engineers, technicians and support staff who are committed to providing the highest quality of training and consultancy.

CERTIFICATE COURSE DETAILS

- The course fees are per delegate and include 4 reference manuals, 6 webcasts, assignments and ongoing support.
- Full payment is required prior to the commencement of the course.

CANCELLATION

A fee of 20% will apply for written cancellations received 7-14 days prior to the commencement of the course. Cancellations received less than 7 days prior to the course are not refundable however substitutes are welcome.

CONFIRMATION

Full confirmation details and course instructions will be sent to you upon receipt of booking.

PLEASE NOTE

IDC Technologies has no affiliation with suppliers or manufacturers and therefore presents a completely unbiased factual view of the industry.

PRIVACY INFORMATION

If your address details are incorrect, or you wish to remove your name from our mailing list, please contact us by phone, fax or e-mail (see below). At times we make use of lists that cannot be crosschecked against our own database and you may receive a duplicate. If so, please pass this on to an interested colleague.

ENQUIRIES

For further information, please phone Toll Free 1800 324 4244.

INCLUDES

4 FREE REFERENCE MANUALS
VALUED AT OVER **US\$400**

HOW TO REGISTER:

Complete this form and fax it to your nearest IDC Technologies office.

For all office locations and contact details, please visit our website www.idc-online.com or contact us on idc@idc-online.com