Two days National Workshop

On,

ADVANCED OPTIMIZATION TECHNIQUES IN CHEMICAL PROCESS INDUSTRIES

(18/4/2015 & 19/4/2015)

Under,

Technical Education Quality Improvement Program

(TEQIP-II)

Coordinators

Dr. N. Selvaraju
Assistant Professor, CHED

&

Dr. Shiny Joseph
Associate Professor, CHED

Organized by,

Department of Chemical Engineering,

National Institute of Technology Calicut
Kozhikode, Kerala - 673601.
About the Institute:

NITC has fourteen departments and six centers. It offers ten undergraduate, twenty-four postgraduate programmes apart from Ph.D. The institute has good infrastructure in computing, information technology, laboratories and central library including digital library. Calicut is a major knowledge Hub of Kerala and is the hometown of institutions of national importance including NITC, IIMK, NIELIT, CWRDM, IISR etc. Calicut is connected by direct trains/road/air to all major cities in India. NITC is located about 22 kilometers north-east of Calicut City. Calicut, also known as Kozhikode, is known as the city of spices. Kozhikode beach, Kappad beach where Vasco De Gama landed first, Kadalundy bird sanctuary, Tusharagiri Waterfalls, Pazhassiraja Museum, Tali Temple and Kuttichira Masjid are some of the local attractions.

About the Department:

Department of Chemical Engineering offers regular undergraduate and doctoral degree programmes. It also offers part time doctoral degree programmes, mainly meant for those employed in industries and academic institutions. It offers a number of continuing education programmes too, for industry personnel. Summer/Winter schools sponsored by the AICTE/ISTE have also been organized by the Department. The faculty provides guest lectures also for many of the neighboring institutions. Besides teaching, the members of the faculty are involved in consultancy work, sponsored research work (sponsored by DST, KSCSTE etc.), and product development.

About the Program:

The Workshop aims to open insight to UG/PG and PhD on advanced optimization techniques in process industries using MATLAB. It is, therefore, expected that participants will be able to meet and discuss their optimization skills in chemical industries with colleagues. We strongly believe that their attendance at the workshop will boost their interest in their area of optimization.
The workshop will be a starting platform to explore the possibilities of interdisciplinary research works that will focus on developing optimization based methods on chemical process industries. Besides technical sessions, the workshop will also provide a unique opportunity for teachers to have hands on experience using MATLAB.

The participants will have an opportunity to familiarize themselves with method/ tools/ software’s/ databases from the laboratories of the invited experts.

Course Content:

<table>
<thead>
<tr>
<th>Session</th>
<th>Detail</th>
<th>Duration</th>
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<tr>
<td><strong>Day 1</strong></td>
<td>9:00 am to 4:45 pm</td>
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<tr>
<td>Inauguration</td>
<td><strong>Inaugural Session</strong></td>
<td>10 min</td>
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<tr>
<td>Lecture 1</td>
<td>Basics and Introduction to Optimization Techniques</td>
<td>50 min</td>
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<td>Lecture 2</td>
<td>Basics concepts in Linear and Non-linear programming</td>
<td>60 min</td>
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<td>Lecture 3</td>
<td>Boiler/ Turbo Generator system optimization problem</td>
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<td>Lecture 4</td>
<td>Non linear regression to fit vapor-liquid equilibrium data</td>
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<td><strong>Lunch Break (1:00 pm to 1:45 pm)</strong></td>
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<tr>
<td>Lecture 5</td>
<td>Use of linear programming to optimize a separation train</td>
<td>60 min</td>
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<td>Lecture 6</td>
<td>Examples of optimization problems in process control</td>
<td>90 min</td>
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<tr>
<td><strong>Resource Person:</strong></td>
<td><strong>Prof. M Chidambaram (Former Director of NIT Trichy)</strong></td>
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<tr>
<td></td>
<td>Professor, Department of Chemical Engineering,</td>
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<td>IIT Madras</td>
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<td>Lecture 7</td>
<td>Formulation of chemical reactor optimization problems I</td>
<td>60 min</td>
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<td><strong>Day 2</strong></td>
<td>9:00 am to 4:45 pm</td>
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<td>Lecture 8</td>
<td>Multi objectives optimization problem</td>
<td>60 min</td>
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<tr>
<td><strong>Resource Person:</strong></td>
<td><strong>Prof. M Chidambaram , IIT Madras</strong></td>
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Lecture 9 | Application of Optimization in chemical process industries | 60 min
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**Resource Person:-**
**Dr. Raj Mohan B**
Associate Professor, Department of Chemical Engineering
National Institute of Technology Karnataka, Surathkal

Lecture 10 | Formulation of chemical reactor optimization problems II | 60 min

Lecture 11 | Use of differential calculus in reactor optimization | 60 min

**Lunch Break (1:00 pm to 1:45 pm)**

Lecture 12 | Use of linear programming to optimize reactor operations | 60 min

Lecture 13 | Solution of an Alkylation process by sequential quadratic programming | 60 min

Discussion | Discussions on various problems related to optimization | 40 min

Closure | **Summary and Feedback** | 20 min

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**Program Faculty:**
The resource persons for the program shall include faculty from host institute and other prestigious institutes.

**Eligibility for Participation:**
The Workshop is open only to faculty members, research scholars, UG and PG students of NIT Calicut. Total Number of participants will be 50. Selection will be based on First come- First serve basis. Hard copy of the duly filled and signed registration form should reach the coordinator **on or before 17.04.2015**. List of selected participants will be informed on 17.04.2015. Scanned advanced copy of registration form may be sent through email **(selvaraju@nitc.ac.in)** for early registration.
REGISTRATION FORM FOR FACULTY MEMBERS

TEQIP sponsored - Two days Workshop on,

“ADVANCED OPTIMIZATION TECHNIQUES IN CHEMICAL PROCESS INDUSTRIES”

April 18 & 19, 2015

Organized by Department of Chemical Engineering, NIT, Calicut – 673601

Full Name (in BLOCK letters, as desired on certificate)
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Designation: _______________________ Affiliation: -
Qualification: --------------------------- Experience: ---------------------------
Address for correspondence:
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Mobile: ___________________ Email ID: ______________________________
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Signature of applicant

Endorsement of Head of Department/Institute

Address for correspondence
Dr. N Selvaraju
Assistant Professor, Department of Chemical Engineering, National Institute of Technology, Calicut – 673601, Kerala, India
Phone: (0495) 2285400(O); Email ID: selvaraju@nitc.ac.in
For more details visit www.nitc.ac.in
REGISTRATION FORM FOR STUDENTS

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Full Name (in BLOCK letters, as desired on certificate)

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Roll Number _______________________ Semester: ------------------------------

Name of the Department -----------------------------------------------

Address for correspondence:

____________________________________________________________________

____________________________________________________________________

Mobile: _______________________ Email ID: ____________________________

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Signature of applicant

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Endorsement of Head of Department/Institute

Address for correspondence
Dr. N Selvaraju
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For more details visit www.nitc.ac.in