

INTRODUCTION

The fast and multidiscipline technological growth has led to large and complex systems development and deployment. Conventional approach to the system design and development does not provide efficient, economical and efficient solution. System made of multiple sub systems employing multiple technologies need global understanding of system requirements and operation in addition to the functioning and interface requirements of the smallest sub-sub systems. The solution lies in Systems Engineering approach at all stages in the entire life cycle of the system.

OBJECTIVE

A brief programme is out lined for practicing Engineers and Scientists to help focus on the Systems Engineering approach that can give a total solution approach for new system development and managing the existing ones more efficiently hence forth.

COURSE COVERAGE:

A 5 day programme will cover a range of high-end Systems Engineering topics as mentioned below:

Introduction to Systems Engineering:

- Definition of Systems Engineering
- Origins of Systems Engineering
- Interfaces
- Complex Systems
- Complexity Theory
- Structure of Complex System
- System Life Cycle
- System Development Process
- Systems Engineering Management
- Systems Engineering Standards

1. Concept Development Stage:

- Needs Analysis
 1. Operations Analysis
 2. Functional Analysis
 3. Feasibility Definition
 4. Needs Validation
 5. Systems Operational Requirements
- **Concept Exploration**
 1. System Requirements Development
 2. Operational Requirements Analysis
 3. Performance Requirements Formulation
 4. Implementation Concept Exploration
 5. Performance Requirements Validation
- **Concept Definition**
 1. System Concept Selection
 2. Performance requirements Analysis
 3. Functional Analysis and Formulation
 4. Concept Selection
 5. Concept Validation
 6. System Development Planning
 7. System Functional Specifications

2. Engineering Development Stage:

- **Advanced Development**
 1. Programme Risks and Reduction
 2. Requirements Analysis
 3. Functional Analysis and Design
 4. Prototype Development
 5. Development Risk Reduction
- **Engineering Design**
 1. Testing Implementation of System Building Blocks
 2. Requirements Analysis
 3. Functional Analysis and Design
 4. Component Design
 5. Design Validation
 6. Configuration Management
- **Integration Testing and Evaluation**
 1. Integrating, Testing and Evaluating the Total System

2. Test Planning and Preparation
3. System integration
4. Development of System Testing
5. Operational Test and Evaluation

3. Post Development Stage:

• **Production**

1. Systems Engineering in the Factory
2. Engineering for Production
3. Technology Transfer and Transition from Development to Production
4. Production Operations
5. Acquiring a Production Knowledge Base

• **Operation and Support**

1. Installing, Operating, maintaining and Upgrading the System
2. Installation and Test
3. In-Service Support
4. Major System Upgrades: Modernisation
5. Operational Factors in System Development
6. Developmental System Testing
7. Operational Test and Evaluation

5. Software Systems Engineering:

- Complexity and Abstraction Management
- Nature of Software Development
- Software Concept Development: Analysis and Design
- Software engineering Development: Coding and Unit Test
- Software integration and Test
- Software Engineering Management

6. Systems Engineering Decision Tools:

- Modelling Throughout System Development
- Modelling
- Simulation
- Trade-Off Analysis

Note: the programme includes case studies and good practices experienced in the Industries and Development centers

METHODOLOGY:

Methodology of the programme includes class room Sessions with Lecture/discussion with audio visual aid, benched marked video shows, Chalk & Talk sessions, group discussions, case studies, debates, sharing of experiences, group activities and exercises etc. All the sessions will be interactive demanding active participation from all the members. Case Method of Instruction (CMI) will be the main method of instruction

PROGRAMME ADVISOR & RESOURCE PERSONS

Faculty consists of experts from industry, research establishments, academia and experts who are into Systems Engineering are included, besides that from ESCI.

TARGET PARTICIPANTS

Scientists, Engineers from Defence Research Laboratories & Industries

BENEFITS

This 5-day programme will equip the Senior Scientists/ Managers with a powerful set of skills and knowledge.

- An appreciation of complex systems and systems of systems, and the issues associated with their design, development, maintenance, upgrade and disposal.
- An understanding of systems engineering lifecycle options and processes.
- Awareness and understanding of the context within which the systems are developed including the economics and organizational limitations.
- Analyze customer needs and develop clear requirements that translate into optimal systems.
- Necessary management skills and an understanding of the relationship between project management and systems engineering.
- Develop innovative approaches for systems design.
- The ability to manage technical risk and creation of robust systems.
- Reduce project and program risks while keeping on schedule and under budget.
- Gain critical skills and techniques to optimize systems development and deployments.
- Acquire useful and practical skills to improve operational efficiency.
- Utilize simulation-based engineering to optimize development and deployment efforts.
- Identify, prioritize and select relevant solutions to solve complex engineering problems.

PROGRAMME VENUE, DATES & TIMINGS

VENUE: Engineering Staff College of India (ESCI) Campus, Old Bombay Road, Gachi Bowli, Hyderabad. 500032. TS, India.

DATES

23-27 October 2017

TIMINGS

On the first day Registration will commence at 0900 h. On all other days the programme timings will be from 0945-1715 h with breaks in between for tea and lunch.

COURSE DIRECTOR



Gp Capt (Retd) BS Phillora BE (ETC), AE (L), MMS (DS), M Phil, FIE, Certified Lead Auditor ISO 9001:2015
Dean of Studies ESCI &
Sr. Faculty, Management & Technology Division and Design & Prototyping Centre, ESCI

COURSE FEE

₹ **30,000/- (Residential Fee)** per participant. Fee includes, course material, course kit, twin-sharing/single AC accommodation as per availability, breakfast, lunch, dinner, tea / coffee and snacks during the actual days of training programme.

DISCOUNTS:

- ❖ **Non-Residential Fee**- 10% discount on course fee is allowed for non-residential participants.
- ❖ **Group Discount:** Additional 10% discount for three or more participants, if sponsored by the same organization.

(All discounts are applicable only if fee is received at ESCI before the commencement of the programme.)

Goods and Service Tax @ 18% is to be paid extra over and above the training fee. PAN Card No AAATT3439Q; **GST No. 36AAATT3439Q1ZV.** (Under commercial training or coaching services).

Programme fee is to be paid in favour of "IE (I)-Engineering Staff College of India" in the form of demand draft payable at Hyderabad at par cheques payable at any Bank Branches.

Alternatively, the payment may be made by Electronic Fund Transfer (EFT) to ESCI - SB A/c No.0432104000039631 with The IDBI Bank Ltd., Gachibowli Branch, Plot No. 2-53/2, JNIBF, IIIT Junction, Gachibowli, Hyderabad-500032 by RTG's/ NIFT / IFSC Code No: IBKL0000432. ESCI PAN No. is AAATT3439Q. **While using EFT/ Draft method of payment, kindly forward a covering letter giving details on the names of the participants, Title and the programme schedule so that proper accounting can be done.**

REGISTRATION:

Online registration shall be available on ESCI website. ([URL:www.escihyd.org](http://www.escihyd.org)), click link

<http://www.escihyd.org/index.php/mt-upcoming-trainings>

To register, manually please send your nominations giving details of name, designation, contact address, email address, mobiles no, telephone and fax number of the participant along with the details of mode of payment of fee, addressed to:

Head, Management & Technology Division

Engineering Staff College of India
Old Bombay Road, Gachi Bowli, Hyderabad 500 032, AP India

Phone : Direct 040 6630 4111 & 6630 4112 &, 6630 4105

Fax : 040-23000336 & 04066304103, **Email:** mt@escihyd.org,

CERTIFICATION

A certificate of participation will be awarded to each participant on conclusion of the programme.

GENERAL INSTRUCTIONS:

- ESCI encourages participants to present case studies from their respective organizations.
- For the convenience of outstation participants, ESCI will facilitate pick-up and drop from Airport / Railway Stations / Bus Stations, if travel plans are received at least 3 days in advance along with mobile number by fax or email. The charges shall be paid by the participant directly to the Cab.
- ESCI provides complimentary accommodation and boarding to the participants one day before commencement (Check-in 1200 h) and one day after conclusion (Check-out 1200 h) of the programme duration. Overstay charges will be applicable as per ESCI rules (subject to availability of accommodation)
- Well developed Information Centre and Internet facilities are available to the participants.

Contact for registration:

Mr. LV Rao

Programme Manager,

Land line 040 66304112

Mob: 0 99491 45865

Nominating authorities are requested to kindly send the contact details of the participants while sending their nomination letter. This will help us in making necessary administrative arrangement for them.