

A Three Day Introductory Training Course on

# **CONTROL DESIGN FOR SERVOMECHANISMS**

**University of Strathclyde, Glasgow  
12 – 14<sup>th</sup> July 2005**

## **Course Overview**

- physical components
- modelling and simulation of servo systems
- classical control design
- digital control
- servo testing and system identification
- extensive hands-on sessions with servo trainer hardware



## **Course Description**

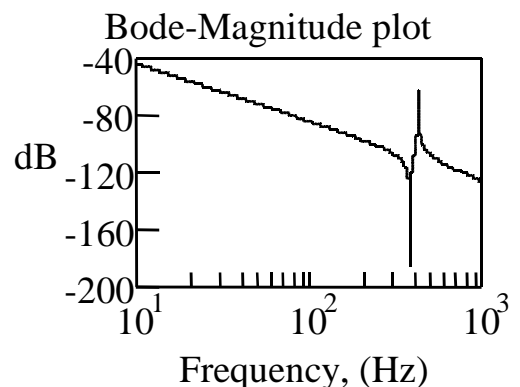
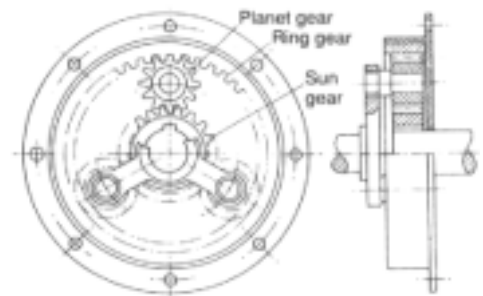
This course has been specifically formulated for engineers who need a basic introduction to the control of servomechanisms. Illustrative examples and hands-on exercises are used extensively to reinforce the underlying control theory presented.

The course will be presented in an informal environment by ACTC Consultants, giving delegates the opportunity to gain from our own practical expertise. Numbers on the course are restricted to ensure that each delegate gets individual attention. Hence, early registration is advisable

The hands-on sessions will use control system design software as well as practical servo hardware.

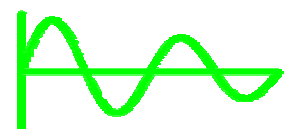
For more information, including on-line registration, please visit our Internet Site:

<http://www.isc-ltd.com/servomech>



**ISC<sup>®</sup>**  
**Superior Control**

Industrial Systems and Control Ltd.



**The Applied Control  
Technology Consortium**

## **COURSE STRUCTURE**

### **DAY 1 – Introduction to Systems and Modelling**

#### Introduction

- The Need for Control

#### Linear Systems and Transfer Functions

- Frequency Response Analysis Techniques
- Linear Modelling and Simulation

#### Introduction to Modelling Servomechanisms

- Hands-on Session - Intro to MATLAB & SIMULINK
- Hands-on Session - Modelling for Control Design

#### Physical Components of Servomechanisms

### **DAY 2 – Classical Control Design**

#### Fundamentals of Control Design

- Hands-on session - control fundamentals

#### Root Locus and Lead-Lag Compensation

- Hands-on Session

#### PID Controlling and Tuning Methods

- Hands-on Session - PID Tuning

#### Implementation Issues and Nonlinearities

### **DAY 3 – Practical Issues in Control**

#### Discrete-Time Systems Modelling and Control

- Hands-on Session

#### Servomechanism Testing

- Mechanism Tests
- System Identification

#### Real-life Design Example

- Control design using servo trainer hardware

ISC reserve the right to modify or cancel training courses, giving adequate notice and refunds to registrants.

## **COURSE DETAILS**

The course will be held at Strathclyde University, in the heart of Glasgow, with excellent transport links, either via air, road or rail. The nearby hotels offer a wide range of accommodation, which we can book on your behalf.

The course will run from 9am to 5pm daily. Registration will be from 8am on the first day.

Full details, including travel and hotel information, will be sent to registrants along with confirmation of their booking.

## **COURSE COST**

£1200 + VAT

**ACTC members can attend free of charge – see the special registration form.**

## **WHAT IS INCLUDED ?**

- all lectures & computer-based training
- lunches and refreshments
- course notes, which will form an invaluable reference
- completion certificate

## **PREVIOUSLY ATTENDED BY:**

BAE Systems Avionics, Thales Optronics, BAE Systems Marine, Omron Electronics, TRW Aeronautical Systems, Ford Motor Company, Dunlop Aviation, Matra BAe Dynamics, Visteon, Raytheon Systems

## **WHO ARE ISC ?**

ISC are control engineering consultants who help clients with specific control problems. Our extensive experience has been used to develop this course and it is one of many that we provide, either centrally or in-house.

ISC also manage the Applied Control Technology Consortium, which provides its member companies with an unparalleled awareness programme in control engineering. Please contact us for more information on the ACTC.

## **CONTACTS**

If you require further information please contact:

Lesley Breen  
Industrial Systems & Control Ltd.  
50 George St., Glasgow, Scotland, G1 1QE  
tel.: 0141 553 1111  
fax: 0141 553 1232  
email: [iscmail@isc-ltd.com](mailto:iscmail@isc-ltd.com)  
<http://www.isc-ltd.com/servomech>

REGISTRATION FORM  
**CONTROL DESIGN FOR SERVOMECHANISMS**  
**12 – 14<sup>th</sup> July 2005, Glasgow**

To register for the course please complete in block letters one form per delegate and send with proof of payment to the address given below. Alternatively, you may register on-line at <http://www.isc-ltd.com/servomech>

Surname (incl. title) : ..... First name(s) : .....  
Company/Organisation : .....  
Job Title : .....  
Address : .....  
.....  
Tel. : ..... Fax : .....  
Email : .....  
Current Area of work : .....  
Special Requirements (e.g. vegetarian) : .....  
Company VAT ID No. (only needed if from an EC country) : .....

Course Fee Per Delegate: £1,200.00 +VAT

DISCOUNTS: Group Bookings: 2 or more delegates registering from the same company qualify for a 5% discount.

Please reserve ..... places on the course. I enclose £..... as the Total Sum Payable.

Additional Names.....

Please indicate method of payment :

- Cheque enclosed payable to Industrial Systems and Control Limited.
- Payment sent by Paypal. ([www.paypal.com/uk/](http://www.paypal.com/uk/))
- Bank transfer to: Industrial Systems and Control Limited

The Royal Bank of Scotland plc, Gordon St, Glasgow, G1 3PL, Scotland  
Sterling Account number: 00644350, Sort Code: 830706.  
Euro Account number: INSYCO-EUR1 837580 10008731, Sort Code: 830706  
*Please include the delegate's names on the bank transfer*

- Purchase order: Please invoice my company/organisation at the address below.

Order Number : .....  
Name (if different to above) : .....  
Address : .....  
Tel : ..... Fax : .....

**IMPORTANT**

Course Fees are payable in advance and must be received two weeks prior to the commencement of the Course. Full Payment, or proof of payment, must accompany all registrations. Your registration is not confirmed until payment is received.

Cancellation: Fees will be refunded, less 10% handling charge, for any cancellation received in writing 14 days prior to the course. For cancellations after this date and no shows, ISC reserve the right to charge the full rate. Substitute delegates are welcome at any time. ISC also reserve the right to modify or cancel training courses, giving adequate notice and refunds to registrants.

VAT: Please note that companies from other EC countries require to pay the amount excluding VAT **only** when the Company VAT ID No has been provided. If this is not provided then the amount including VAT will be charged at the current UK rate of 17.5%. Companies from outside the EC pay the amount excluding VAT.

Industrial Systems and Control Ltd, 50 George St., Glasgow, G1 1QE, Scotland  
Tel.: 0141 553 1111 Fax: 0141 553 1232 Email: [iscmail@isc-ltd.com](mailto:iscmail@isc-ltd.com)

DISCOUNTED ACTC MEMBER REGISTRATION FORM  
**CONTROL DESIGN FOR SERVOMECHANISMS**  
**12 – 14<sup>th</sup> July 2005, Glasgow**

To register for the course please complete in block letters one form per delegate and send with proof of payment to the address given below. Alternatively, you may register on-line at <http://www.isc-ltd.com/servomech>

Surname (incl. title) : ..... First name(s) : .....  
Company/Organisation : .....  
Job Title : .....  
Address : .....  
.....  
Tel. : ..... Fax : .....  
Email : .....  
Current Area of work : .....  
Special Requirements (e.g. vegetarian) : .....  
Company VAT ID No. (only needed if from non-EC country) : .....

**The first ACTC member to register, per company, is FREE thereafter cost per person is: -**

**£300.00 +VAT (ACT CLUB MEMBER DISCOUNTED RATE)**

Please reserve ..... places on the course. I enclose £..... as the Total Sum Payable.

Additional Names.....

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The Royal Bank of Scotland plc, Gordon St, Glasgow, G1 3PL, Scotland  
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Euro Account number: INSYCO-EUR1 837580 10008731, Sort Code: 830706  
*Please include the delegate's names on the bank transfer*

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Name (if different to above) : .....  
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