Optical Coatings from Design through Manufacture

Full Name (please print)

Preferred first name or nickname for badge

Organization

Address (please print)

Telephone

Fax

E-mail

Refund policy: Fee payment will be refunded in full if the course is oversubscribed or cancelled. Registrations cancelled on or before 18 February 2011 will be refunded less $100 handling charge. Half the fee will be refunded in the case of registrations cancelled after that date. There will be no refund for "no shows." The organizers reserve the right to cancel the course in the event of insufficient registration.

Course Fee $2250

Course Fee is reduced by $250
if payment is received
by 18 February 2011.

The course fee covers all lecture notes, coffee breaks and lunches but not hotel accommodation

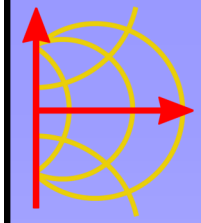
We accept: MasterCard VISA

Optical Coatings from Design through Manufacture

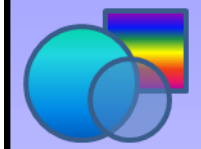
This is our well-known standard course on the whole field of optical coatings with an emphasis on hands-on computer-aided design. The course is a mixture of formal lectures and hands-on tutorials with a computer for each student. It is important not only to know how to use the computer, but also to understand the computed results, and both are covered in detail. Calculation of the optical properties of a given thin-film coating is straightforward. Designing for desired optical properties is rather more difficult. Reverse engineering that attempts to identify the errors responsible for manufacturing failures is similar to design but requires an even greater level of understanding. Computers are absolutely necessary in these tasks and much of the course will involve learning effectively to use powerful computer tools, but knowledge of deposition techniques and thin-film behavior is also necessary for the effective designer. Extensive notes have been specially prepared for the course. They represent a valuable reference source and can not be obtained except by taking the course.

Instructor

Dr Angus Macleod has over 200 publications in the field of optics including the book Thin Film Optical Filters, currently in its fourth edition. He is professor Emeritus of Optical Sciences at the University of Arizona and President of Thin Film Center Inc. For his work in education and research he was presented the 2004 Life for Thin Films Award of the European Vacuum Coaters, the 2002 Nathaniel H Sugerman Memorial Award of the SVC, the 1997 Esther Hoffman Beller Medal of the OSA and the 1987 Gold Medal of the SPIE. He has taught courses in optical topics all over the world to classes from one or two to over two hundred. He specializes in teaching techniques for understanding and logical thinking that avoid complicated theory without oversimplification.

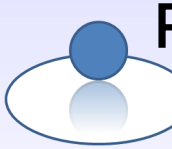


Thin Film Center



Optical Coatings from Design through Manufacture

A short course with hands-on computer-aided design given by



Professor Angus Macleod

21-25 March 2011

Fraunhofer IOF
Jena, Germany

VISIT: www.thinfilmcenter.com
or email info@thinfilmcenter.com

Thin Film Optical Coatings

Modern optical coatings have moved far from the old mysterious, empirical, subject with its apparent unpredictable sensitivity to good fortune and to the weather. Today, we have advanced theoretical models for optical thin films and their behavior that help us enormously in our understanding. Because of the complexity of the phenomena and their accompanying theory, the theory is best employed in the form of powerful computer models. Success in thin films implies not only practical skill and knowledge but also an ability to use and manipulate these computer models to derive designs, manufacturing programs, extraction of material properties, performance predictions and even failure analysis. This course is a mixture of formal lectures and hands-on tutorials with a computer for each student. The objective is for each student not only to know how to use the computer but also to understand the computed results and relate them to real optical coatings. Thus apart from learning how to design, characterize, plan manufacture, reverse engineer, optical coatings using the computer the student will also gain an appreciation of the behavior of real thin films and processes for their manufacture. The computer models that form a major object of the work of the course are firmly connected to reality. We often use the term computer-aided to describe the activity and the term means exactly what it says. The computer aids the operation by performing the enormous volume of required calculations but the user remains firmly in control.

This mixture of lectures and practical tutorials has been found to be a particularly effective teaching tool. The tutorials reinforce the lectures and permit individual instruction, even including aspects of a student's own specific problems.

The software used for the course is the Essential Macleod software, probably the most advanced on the market today. But the lessons learned are applicable to a wide range of software products and it is not necessary to possess the Essential Macleod to benefit from the course. The lecture notes are extensive and have been specially written. Attending the course is the only way in which they may be obtained.

Provisional Syllabus

Day 1 *09.00—16.30*	**Fundamentals** **Materials** **Tutorial on coating design** **Introduction to the software**
Day 2 –Day 4 *09.00—16.30*	**How to design and analyze coatings of all kinds.** **Learn tools for understanding.** **Prepare for and simulate production.** **Understand polarization and oblique incidence, color, short pulse effects.** **How to write scripts.** **Coating manufacture, microstructure, properties and much more.**
Day 5 *09.00—12.00*	**Reverse engineering, n and k extraction.** **Coatings in systems.** **Any topics chosen by class.**

Dates and Times

Registration—08.45 Monday 21st March
09.00 Monday 21st - 12.00 Friday 25th March 2011

Course Location

Fraunhofer Institute for Applied Optics and Precision Engineering

Carl Zeiss Room
Albert Einstein Strasse 7
D-00745 Jena,
Germany

Enquiries

To make a reservation or to ask for further details please write, fax, or call any of the following:

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Web: http://www.pandtconsulting.co.uk

Hotels

Jena has many fine hotels. A list of some that offer a special rate will be supplied on request to registered course participants.

Software

*The **Essential Macleod** software for optical coating design and analysis that will be used on the course is available from **Thin Film Center Inc** in the USA, or its agent listed above. Write, telephone, fax or e-mail for full details of specification and price.*

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