

## REGISTRATION

Please photocopy form for each individual

### Course Fees:

Full-time Students:

With EPSRC sponsorship\* £0+VAT  
Without EPSRC sponsorship £500+VAT

Professionals £750+VAT

\* EPSRC scholarships may be available for up to 15 candidates. More information in March 2006.

### Accommodation:

We are aiming to try and provide full board accommodation on campus. Information available on request.

We can also provide a list of hotels and B&Bs in the area – please phone 0115 951 3640 or email [sue.muggridge@nottingham.ac.uk](mailto:sue.muggridge@nottingham.ac.uk) for details/booking.

Surname:	
First Name:	
Affiliation:	
Address:	
Tel.:	
Fax:	
Email:	

- Please send invoice
- I enclose cheque payable to "University of Nottingham"
  
- EPSRC full time student
- Non-EPSRC full time student
- Professional

## GENERAL INFORMATION

The University of Nottingham has identified CFD as a key area. This course therefore benefit from the experience of the staff involved in multiple numerical and fluid mechanics courses at graduate and post-graduate levels. The organisers are also running regular seminars and evening lectures on various CFD topics and applications. Recent speakers include representatives from ANSYS-CFX, CD Adapco, Rolls Royce, HSE, Corus, MMI Engineering as well as numerous academics. This experience was recognised by EPSRC, supporter of the summer school.

The city of Nottingham is located on the North bank of the River Trent (the second longest river in the UK). It is famous (or infamous!) for Robin Hood and his Merry Men. There is still a Sheriff, and even a pub in the City which Robin may have visited. The City centre has many interesting sites including the Courts of Justice, the Tales of Robin Hood, St. Mary's Church and caves under the shops and streets. The shopping areas are close together and very comprehensive. Nottingham has a lively club scene for those wanting to stay up late.

Nottingham is about 1hr 45mins by train from London (St. Pancras station), or about 2hrs 30mins by car. Our local airport is Nottingham East Midlands which can be reached directly through Amsterdam, Brussels, Dublin, Glasgow and Paris. Birmingham airport is one hour away and has many more international connections. You can find more details of how to find us on our web site.

Further details are available on the website [www.nottingham.ac.uk/cfd](http://www.nottingham.ac.uk/cfd)

Please send registration form and payment to:  
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University Park  
Nottingham NG7 2RD

Tel: 0115 951 3904  
Fax: 0115 951 3898  
Email: [sue.muggridge@nottingham.ac.uk](mailto:sue.muggridge@nottingham.ac.uk)

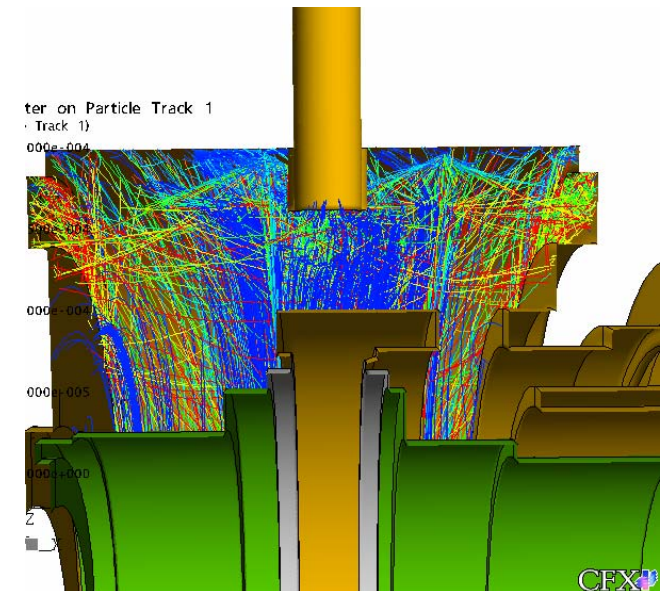


The University of  
**Nottingham**

**EPSRC University of Nottingham**

**CFD Summer School**

**Foundation and Advanced Lectures**  
**19<sup>th</sup> June – 23<sup>rd</sup> June, 2006**  
*Venue: University of Nottingham, UK*



*Supported by*

**EPSRC**

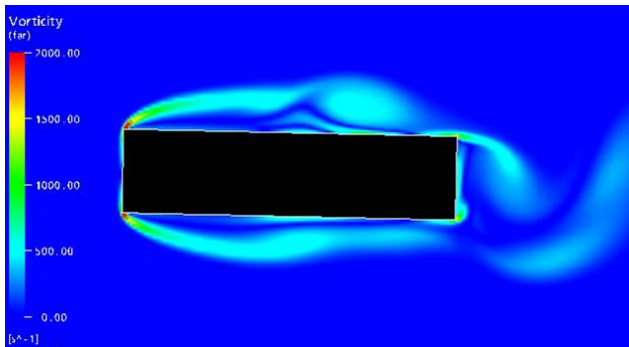
Engineering and Physical Sciences  
Research Council

## COURSE PROGRAMME

June 19<sup>th</sup>- 23<sup>rd</sup> 2006:

The aim of the first two days is to introduce the students to the mathematical equations and techniques. This involves an overview on integration and discretisation techniques, at a conceptual and numerical level, linking with practical options available in commercial CFD codes. It leads on to the essential issue of initial and boundary conditions on Day 2, followed by an overview of numerical solution techniques used in contemporary CFD. Day 3-5 focus on physical models and their numerical formulation; this is an essential component of the course for most users of commercial CFD codes. Day 5 will discuss result interpretation before closing on trust and quality issues in numerical predictions. Students are expected to attend the full week. Each day has a practical session scheduled. Industrial guests will intervene during the course to put CFD into context.

Day 1	Day 2	Day 3	Day 4	Day 5
Navier-Stokes Equations Spatial and Numerical Discretisation (inc. meshing)	Boundary and Initial Conditions.  Equation Solution	Turbulence Modelling	Multiphase Modelling	Introduction to Reactive Flows  Numerical Quality Assurance
Practical	Practical	Practical	Practical	



Fluid Structure Interaction Model

## COURSE OBJECTIVE

The objective of the proposed summer school is to address the needs identified in the EPSRC call for summer schools on "Mathematics for Engineers" through the continuation of the provision of a novel Computational Fluid Dynamics (CFD) course.

This course will provide understanding of the mathematical foundation and focus on a detailed overview of the physical models necessary for research in Chemical, Civil and Environmental and Mechanical Engineering amongst other fields of engineering and science.

The course will prepare future users of CFD to make the best possible usage of the available technology through an emphasis on fluid mechanics and potential applications of the constitutive models as well as the understanding of the mathematical foundations.

Two thirds of the course will be lecture based, and the remaining third will be "hands-on" practicals using popular commercial CFD codes.

The course builds on the experience gained at the University of Nottingham with its Applied CFD course, on last year's successful EPSRC Summer School in Industrial CFD and the CFD@Nottingham Seminar and Lecture Series. The University of Nottingham's breadth of researchers, with track records in theory and applications, makes the proposed course particularly strong.



June 2005 Summer School Practical Session

## ORGANISING COMMITTEE University of Nottingham

**HP Morvan** is the **course director** and will be teaching on the numerical foundation, quality assurance and turbulence. His background is in modelling environmental flows such as turbulent channel hydrodynamics and wind flows.

**H Power** is a specialist in numerical methods, BEM in particular.

**K Simmons** has experience in multiphase flows in mechanical engineering applications. She will co-lead the multiphase course.

**P Matthews** is an applied mathematician with interests in convective flows and numerical methods.

**S Hibberd** research interests are in the numerical modelling of film flows and is involved with CFD calculations of multiphase flows in industrial situations, particularly within aero-engine transmission systems

**B Azzopardi** is a specialist in multiphase flows and chemical engineering applications.

**I Lowndes** is a specialist in fire modelling and HVAC applications.

**DM Hargreaves** has expertise in CFD consultancy and will be in charge of the practicals.

**C Lea** is the director of Lea CFD Associates and has significant expertise in industrial CFD. He will co-lead Day 5.

**I Jones** is ANSYS-CFX head of technical services and has over 30 years experience in developing CFD solutions. He will introduce the course on Day 1.

**S Muggridge** is the **course secretary** and will assist with most queries.

**REGISTER NOW:**

[www.nottingham.ac.uk/cfd](http://www.nottingham.ac.uk/cfd)