



SAPIENZA  
UNIVERSITÀ DI ROMA



ANZIO  
Medaglia d'Oro al Merito Civile



School of Engineering

# Summer School of Thermodynamics

## University of Roma "La Sapienza"

### June 20 – July 2, 2011

*A high-profile Course for excellent international students*

The 2011 Engineering Summer School of the University of Roma 1 La Sapienza (UDR1) offers credit courses, with lectures held entirely in English, for both Graduate Students and for eligible Senior year Undergraduates in Mechanical Engineering and related Natural Science or Physics programs. Foreign students from the EU and from UDR1 partner universities outside EU are invited to come to Roma for a 2 weeks period during which they will attend the UDR1 Summer courses listed below. Erasmus exchange students and students enrolled in Italian Universities may also participate, and are eligible for full credit.

#### The CIRCUS Summer School offers:

- Thoroughly edited academic and scientific course contents, available on CD
- High-quality teaching, certified according to EU standards
- Full accessibility of the international Teaching body, consisting of world-renowned international Instructors
- A compact format that combines high efficiency and intensive contact hours with a flexible and student-friendly schedule
- General information about UDR1 and its rich didactic curricula
- Introduction to relevant Italian sponsoring Agencies, Industries and Consulting Firms
- Welcome party for all participants
- Social events in an international, relaxed and notoriously friendly atmosphere



Anzio: Paradiso sul mare

Upon completion of the course requirements, each student is awarded a certificate and ascribed 6 ECTS study credits, which may be transferred to the students current study program.

The costs for the students are 300 € for tuition and 400 € for accommodation (double occupancy rooms). Course material, computer facilities, etc. are included in the tuition fee. Each student should be prepared to cover her/his own living expenses (meals, transportation, extras) of approximately 300 €. Scholarships to cover travel and lodging costs are available.

#### Week 1 (June 20 – 25)

|       | June 20,<br>Mo | June 21,<br>Tu | June 22,<br>We | June 23,<br>Th | June 24,<br>Fr | June 25,<br>Sa*<br>11.30:<br>Panel #1 |
|-------|----------------|----------------|----------------|----------------|----------------|---------------------------------------|
| 9.00  | 501            | 501            | 503            | 503            | 511            |                                       |
| 12.30 | Lunch break    |                |                |                |                |                                       |
| 12.30 |                |                |                |                |                |                                       |
| 14.30 |                |                |                |                |                |                                       |
| 14.30 | 502            | 502            | 507            | 507            | 512            | (on demand) tutoring                  |
| 18.00 |                |                |                |                |                |                                       |

#### Week 2 (June 27 – July 2)

|       | June 27<br>Mo             | June 28<br>Tu | June 29<br>We | June 30<br>Th | July 1<br>Fr<br>10.30:<br>Panel #2 | July 2<br>Sa<br>(on demand) tutoring |
|-------|---------------------------|---------------|---------------|---------------|------------------------------------|--------------------------------------|
| 9.00  | 511                       | 514           | 513           | 504           |                                    |                                      |
| 12.30 | Lunch break               |               |               |               |                                    |                                      |
| 12.30 |                           |               |               |               |                                    |                                      |
| 14.30 |                           |               |               |               |                                    |                                      |
| 14.30 | 512                       | 514           | 513           | 504           | SST-Public Forum                   |                                      |
| 18.00 |                           |               |               |               |                                    |                                      |
| 20.00 | Closing ceremony & Dinner |               |               |               |                                    |                                      |

| Instructor          | Affiliation                         | Course id | Course Title  | Contact hours |
|---------------------|-------------------------------------|-----------|---|---------------|
| Özer Arnas          | West Point Academy, USA             | 511       | <i>The importance of Thermodynamics in Engineering</i>                  | 7             |
| Gian Paolo Beretta  | University of Brescia, Italy        | 507       | <i>Entropy and Entropy Production in Non-Equilibrium Systems</i>        | 7             |
| Richard A. Gaggioli | Marquette U., Milwaukee, WI, US     | 502       | <i>Principles of Exergy Analysis</i>                                    | 7             |
| Hasan Heperkan      | Yildiz University, Istanbul, Turkey | 503       | <i>Principles of Heat and Mass Transfer</i>                             | 7             |
| Sung Jin Kim        | KAIST, Daejeon, S.Korea             | 512       | <i>Heat Transfer and Fluid Flow in Micro-Channels</i>                   | 7             |
| Roberto Melli       | UDR1, Italy                         | 513       | <i>Thermo-Diagnostics</i>   | 7             |
| Vittorio Verda      | POLITO, Italy                       | 513       | <i>Thermo-Diagnostics</i>   | 7             |
| Michael J. Moran    | Ohio State U., Columbus, Ohio, US   | 501       | <i>Principles of Thermodynamics</i>                                     | 7             |
| Tatiana Morozuk     | T.U. Berlin, Germany                | 504       | <i>Thermo-Economics</i>   | 7             |
| George Tsatsaronis  | T.U. Berlin, Germany                | 504       | <i>Thermo-Economics</i>   | 7             |
| Enrico Sciubba      | UDR1, Italy                         | 514       | <i>Green- and Zero-Emission Buildings: energy &amp; exergy Analysis</i> | 7             |
| Ismet Ugursal       | Dalhousie U, Canada                 | 514       | <i>Green- and Zero-Emission Buildings: energy &amp; exergy Analysis</i> | 7             |

**Panel #1:** Importance of the entropy concept in Transport Phenomena

**Panel #2:** Energy Conversion Systems: Monetary costs, Energy costs, Exergy costs, Resource costs

**SST Public Forum:** An open discussion on Thermodynamics with the participation of high school students from the city of Anzio

The brochure, the application form and the Fact-sheet about the CIRCUS Summer School – 2011 can be downloaded

after December 1<sup>st</sup>, 2010, at [www.turbomachinery.it](http://www.turbomachinery.it)

For further information contact:

the Summer School Co-Directors, [roberto.melli@uniroma1.it](mailto:roberto.melli@uniroma1.it) or [enrico.sciubba@uniroma1.it](mailto:enrico.sciubba@uniroma1.it)

or the Events Manager, [claudio.larosa@uniroma1.it](mailto:claudio.larosa@uniroma1.it)