

# Tunnelling and Tunnel Boring Machines

**VIII Edition 2011/2012**



**POLITECNICO  
DI TORINO**

I Facoltà di Ingegneria

Gestito da:



The Second Level International Post Graduate Master Course in “**Tunnelling and Tunnel Boring Machines**” is proposed by the First School of Engineering of Politecnico di Torino (Italy) and managed by COREP. COREP is a no-profit consortium created in 1987 on the initiative of the three Piedmont Universities – Polytechnic of Turin, University of Eastern Piedmont “A. Avogadro” – local bodies and important Italian industries and associations. One of the main goals of COREP is to provide high qualifying training services to young graduates in order to facilitate their entrance in the labour market, promoting the cooperation between universities and socio-economic actors. As a guaranty of reliability and professionalism, some COREP's branches are certified for education and training activities by Regione Piemonte (for details and updates visit the web site [www.corep.it](http://www.corep.it)).

The Master is endorsed by :



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**Educational Project Manager:** Prof. Sebastiano Pelizza, Emeritus Professor, Politecnico di Torino.

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*The postgraduate Master course is established by the First School of Engineering of the Politecnico di Torino*

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## **1. WHY THIS MASTER?**

The need of experts involved in D&B and in TBM tunnelling as well as tunnel work site management is rapidly increasing throughout the world. The necessary qualifications to cover these roles cannot be supplied by the first and second level University Courses, but a specially drawn up course is needed.

In this course University lectures are merged with lectures and presentations by experts from construction companies, machines producers, design companies and professional to provide the multidisciplinary knowledge that is necessary to work in the tunnelling sector.

### **...IN OTHER WORDS**

- ☐ Tunnelling
- ☐ Shields
- ☐ Advanced Studies
- ☐ Innovative excavation tools
- ☐ Teaching in English
- ☐ Design and management of job sites
- ☐ Metro, railways and road tunnels
- ☐ Microtunnelling
- ☐ Experience Shipyard
- ☐ Innovative excavation tools
- ☐ Training with international teachers

## **2. JOB OPPORTUNITIES**

The students who followed the Post-graduate Master Course are of interest for the design firms, the construction companies involved in tunnelling and for the tunnelling tools suppliers as well as the producers of tunnel boring machines.

The Public Administration and the tunnel owners can also find interest in the skills gained during the Course

## **3. ADMISSION REQUIREMENTS**

Graduate MSc in Engineering and Geology, Company and Public Administration Employees involved in tunnelling design and management of job sites.

A maximum number of **20 participants** is foreseen. The Master Course will be activated on condition that there are **at least 10 students and foreseen sponsorships have been confirmed**.

Professionals interested in specializing competences in this field can subscribe to single training modules.

The Course working language is English.

However, since this is a postgraduate Master Course (Master di II livello), students without a proper title to obtain the "Master di II livello", may be allowed to participate only as "admitted for frequency", without the right of obtaining credits (CFU) nor the right to obtain the title of "Master di II livello": admitted with frequency will instead obtain a Certificate of Attendance. For further information, please visit the section "Certification".

## **4. SELECTION OF APPLICANTS**

The selection of the students is based on the analysis of their curricula. Among the criteria, particular attention will be made to the place of residence (based on the HDI-Human Development Index), the

graduation mark, the connection of the Degree with the Course topic, the relevance of professional experience and other training activities with the Course.

Selection will be made by a Selection Committee composed by Prof. Daniele Peila, Prof. Sebastiano Pelizza and Ing. Monica Barbero. The selection of the students is based on the analysis of their curricula.

**Participation by foreign students is well encouraged, therefore:**

- **N.5 places will be reserved to NOT Italian candidates until the 10<sup>th</sup> July 2011.**

In order to assign those 5 places, a ranking list of foreign students who sent their application by the above mention deadline will be published on the **20<sup>th</sup> July 2011**: the best students "admitted" will have to confirm or refuse to participating to the Course by the 26<sup>th</sup> July 2011, h. 12:00 a.m. (CET).

In case some of the "admitted" to the Course will refuse to participate in it, COREP Secretary's Office will contact the "Reserve" foreign candidates following the ranking table: the contacted candidates will have to confirm or refuse to participating to the course by the 16<sup>th</sup> September 2011.

Those applicants "Reserve" that will not be contacted, will compete in the final ranking list published on the 28<sup>th</sup> September 2011.

**Final deadline for application: 23<sup>rd</sup> September 2011.**

A final ranking list will be published on the **28<sup>th</sup> September 2011**, including:

- Italian applicants;
- Foreign applicants who applied before the 10<sup>th</sup> July 2011 but were not assigned the 5 places reserved to NOT Italian students;
- Foreign applicants who sent their application after the 10<sup>th</sup> July but before the 23<sup>rd</sup> September 2011.

Up to the available places, the best candidates will be "admitted" to the Course: they will have to confirm or refuse to participating to the Course by the 3<sup>rd</sup> October 2011, h. 12:00 a.m. (CET).

In case some of the "admitted" to the Course will refuse to participate in it, COREP Secretary's Office will contact the "Admitted conditionally" candidates following the ranking table, starting from the 03<sup>rd</sup> October 2011, h. 12:00 a.m. (CET): the contacted candidates will have to confirm or refuse to participating to the course by the 6<sup>th</sup> October 2011.

All Admitted candidates (Italian and Foreign) after confirming their participation to the Course, must pay the first instalment payment **by the 11<sup>th</sup> October 2011.**

## **5. PERIOD AND VENUE**

The course will be held from **November 2011 to November 2012** in COREP - Corso Trento 13, Torino, Italy.

Lectures will be held **from Monday to Friday** mainly from 9.00 to 12.30 and from 14.30 to 17.30. In exceptional cases, some lectures may be foreseen on Saturdays morning.

Stage location: Italy and/or abroad

## **6. PROGRAMME**

The Post-Graduate Master Course in "Tunnelling and Tunnel Boring Machines" will be held from November 2011 to November 2012.

The Course is worth a total of 60 credits (CFU - Crediti Formativi Universitari), for a total amount of 1.500 hours, divided as follows: 460 hours of lectures, exercises and technical visits; 350 hours of Stage, including the preparation and final dissertation of the Master Thesis; 690 hours of Individual Study

The programme is structured as follows:

LECTURE	CREDITS (CFU)	HOURS
<b>Cycle 1: TUNNEL DESIGN AND CONSTRUCTION METHODS</b>		
Tunnel Construction	8	80
Rock Mass Characterization and "geo" investigations	6	60
Ground reinforcing and conventional tunnelling	4	40
<b>Cycle 2: MECHANIZED TUNNELLING</b>		
General Aspects of mechanized tunnelling and Rock TBM	7	70
Soft rock and ground mechanized tunnelling	8	80
Microtunnelling	4	40
<b>Cycle 3: MANAGEMENT AND SAFETY OF JOB SITES</b>		
Safety of work sites and equipment	4	40
Tunnelling environmental issues and contractual aspects	5	50
<b>STAGE</b>	<b>14</b>	<b>350</b>
<b>TOTAL (LECTURES + STAGE)</b>		<b>810 (460 h. lectures + 350 h. stage)</b>
<i>Individual Study</i>		<i>690</i>
<b>TOTAL</b>	<b>60</b>	<b>1.500</b>

The class lessons last 6/8 hours a day, 5 days a week. **The official language of the course is English.**

The Stage will take place in a construction site or in a tunnelling design company.

A postgraduate Master Diploma (II Level) is released by the Politecnico di Torino, on condition that 2/3 of the lessons are followed (certificated by signature), after completion of the whole Stage and positive results gained in all foreseen examinations and final thesis dissertation.

## **7. STAFF**

**Director:** Prof. Daniele Peila, Dipartimento di Ingegneria del Territorio, dell'Ambiente e delle Geotecnologie, Politecnico di Torino.

**Educational Project Manager:** Prof. Sebastiano Pelizza, Emeritus Professor, Politecnico di Torino.

**Organizational Supervisor:** Dr. Chiara Cerato, Corep.

**The Tunnelling Coordinator:** Ing. Ignazio Savino, Corep.

## **8. HOW TO APPLY**

### **INSTRUCTIONS FOR SUBMISSION OF THE APPLICATION FORM ON-LINE**

**Final deadline for application: 23<sup>rd</sup> September 2011**

**Participation by foreign students is well encouraged, therefore:**

- **N. 5 places will be reserved to NOT Italian candidates until the 10<sup>th</sup> July 2011.**

**The application is unbinding.** It only aims to be admitted to the selection.

To register for the Master, please fill in all parts of the on-line form, **active until the expiry date for entries**, which can be accessed **at the bottom of this section**.

Before proceeding, please read carefully this section, which contains information relevant to the proper filling of the on-line form and the proper management of the documents to attach.

**Citizens of countries outside the European Union who are resident abroad**, in addition to the online form, must send their applications also through the diplomatic or consular Italian representation operating in their country of residence within the deadlines established annually by ministerial regulations regarding the access of foreign students in Italian universities (for further information, please consult <http://www.study-in-italy.it/> ).

### **GUIDELINES TO FILL IN THE APPLICATION FORM**

It is highly recommended, before you begin, **to make sure to have all the information and documents** listed below (see section: Documents to attach) necessary to complete the application form (including a personal e-mail address to send any communications and a mobile phone number).

If you have all the required data, the time for filling in the form is **about 20 minutes**.

At the end of the application form, once all the data have been saved and attachments included, click on **"Go to next step"**: a preview of the form will be displayed.

It is very important **to make sure that all the information entered are correct**.

If you want to save and store on your PC the preview of the online form, please select from the File Menu of your browser **"Save As"**.

Similarly, if you want to print the document, please select from the File Menu of your browser **"Print"**.

Once **verified the correctness of the data entered**, please click on **"Complete the registration"** so that the procedure is over.

At the end of the procedure, the **confirmation of the successful submission of the form and an identification code (ID code)**, composed by the Postgraduate Course acronym followed by 5 numbers (e.g.: tunnel94361 - seeds59885 - etc ...), will be displayed.

Candidates are asked to **save, carefully store and if necessary print this identification code (ID code)** that will be associated to each user for the identification during the steps of the selection and the publication of the ranking lists.

To save on your PC and store the page with the confirmation of the successful submission of the application with the ID code, please select from the File Menu of your browser **"Save Page As"**.

The notification of the proper submission of the form and the ID code will be also sent automatically to users via SMS to the phone number stated in the online form.

**It should be noted that the procedure can be considered completed only after the display / receiving of the confirmation of successful submission of the application form and the ID code.**

In case of non-receipt of SMS and/or no display of the ID code, for information on forms submitted or problems encountered during the online registration form

**You can contact COREP staff:**

Tel. +39. 011 19742401

E-mail: [iscrizioni@corep.it](mailto:iscrizioni@corep.it)

## **DOCUMENTS TO ATTACH**

**Following documentation must be provided in attachment.**

**The required documents will be sent through the online form after scanning them** (suggested format: **JPG or PDF**) and attaching the corresponding files (maximum file size: **1 Mbyte** per file).

Before filling in the online form, **you are kindly suggested to have** the required **documents in the electronic format** above mentioned.

In exceptional cases only, whether interested parties would not have the possibility to scan the documents, it will be possible to send them:

- by fax at the following nr.: +39 011/19742419

- directly to the COREP Secretary's Office: Corso Trento, 13 – 10129 Torino, Italia

- by mail to: Segreteria Master COREP (Corso Trento, 13 – 10129 Torino, Italia).

In all cases, it is necessary to indicate the name of the candidate, the ID Code received at the end of the application, the title of the Postgraduate Course.

Please note that the **Curriculum Vitae must be attached in electronic format.**

- **ALL STUDENTS** must enclose:

- Copy of the MSc (or MSc equivalent) degree together with the transcript of records of the sustained examinations

For final year student it is sufficient a certificate of exams with marks.

Only for students with Italian degree, the self declaration ex art. 445/2000, articles 46-47 is also accepted. **Download the model.**

However, the degree certificate must be transmitted to the secretary before the dates of selection.

- Curriculum Vitae according to the European standard **Download the model.**
- It must include the authorization to the treatment of the personal data (Italian DL 196/2003).
- Title of the MSc (or MSc equivalent) final project together with a short summary of its contents (max one page)
- Copy of a passport or identity card valid
- Copy of "Codice Fiscale" (Italian individual tax code)

It is obtainable at the "[Agenzia delle Entrate](http://www.agenziaentrate.it)" local office (Italian Internal Revenue Service) by presenting a document of identification (foreigners must present Passport or Permit of Stay).

Residents abroad can refer also to Italian Consulates.

**For further information** (link a

<http://www.agenziaentrate.it/ilwcm/connect/Nsi/Servizi/Codice+fiscale+-+Tessera+Sanitaria/Codice+fiscale+faq/>)

- 1 passport photo with name and surname reported on the back (photography is not mandatory for the registration, but it must be given in case of selection. If the selection takes place through videoconference, the photo will be delivered, if admitted to the master, together with the formalization of confirmation)
- Declaration of veracity and completeness of the data declared in the online form. **Download the model.**

- **STUDENTS WITH FOREIGN DEGREE** must also enclose:

- Declaration of value and certificate with the translation of all the passed exams.



This declaration must be requested to the Italian Consulate in the country where the student had the degree.

- **FOREIGN STUDENTS FROM COUNTRIES INDICATED IN THE VISA SYSTEM AND THE ENTRY OF ALIENS INTO ITALY AND THE SCHENGEN AREA ([www.esteri.it/visti/home.asp](http://www.esteri.it/visti/home.asp)) LIVING IN ITALY** must also enclose:
  - Entry Visa and residence permit

Incomplete application forms won't be considered as valid.

The application form and the attachments must be received **no later than the specified deadlines.**

### **CONFIRMATION OF REGISTRATION**

According to the Selection procedure described in the section "WHO CAN ATTEND", following the publication of the ranking lists, eligible candidates will be proposed to regularize the registration through the apposite form ("Confirmation of registration").

Please consider that:

- STUDENTS WITH ITALIAN DEGREE will have to deliver an original copy of their "Tesi" Degree.
- FOREIGN STUDENTS FROM COUNTRIES INDICATED IN THE VISA SYSTEM AND THE ENTRY OF ALIENS INTO ITALY AND THE SCHENGEN AREA ([www.esteri.it/visti/home.asp](http://www.esteri.it/visti/home.asp)) must give to the Master Secretariat, within the expiration date, the Visa of entrance for study reason type D with multiple entrances and the residence permit, before confirming the registration with the form "Confirmation of registration".

Further information about documents for foreign students are available on the site:  
[www.esteri.it/visti/home.asp](http://www.esteri.it/visti/home.asp)

**Personal data will be used by COREP according to Italian laws (Article n. 13 Legislative decree n. 196/03).**

For the proper display of the documents in .doc format it is recommended to use a version of Microsoft Office more recent or equal than 2003 version. Previous versions may not allow the proper display of the document (e.g.: COREP logo not in evidence), but this does not affect its validity for registration purposes.

For the .pdf format, we recommend the use of an Adobe Acrobat version more recent than 9.3. Click here to download: <http://get.adobe.com/uk/reader/>

## **9. TUITION FEES AND CONDITIONS FOR THE MASTER TO BE ACTIVATED**

### **Tuition Fee**

The tuition fee is **5.000,00 Euro** (including university fees).  
Participants are responsible for the journey and accommodation while in Torino.

The Master Course will be activated on condition there are **at least 10 students and foreseen sponsorships have been confirmed.**

All Italian students (students with Italian citizenship only) enrolled in the Post-Graduated Master Courses managed by COREP can get an **"ad honorem loan" for an amount of 5.000 Euro** per year given by UniCredit Bank. Further information are available on the Course website.  
For further information to apply for the Loan, please contact the COREP Secretary's Office.

### ***Scholarships covering tuition fees***

Scholarship to cover tuition fees are offered by:

- **Autostrade per l'Italia SpA** is offering 2 scholarships, each of 5.000,00 Euro to cover tuition fee for 2 students;
- **Geodata SpA** is offering 1 scholarship of 5.000,00 Euro to cover tuition fee for a student;
- **SIG (Italian Tunnelling Association)** is offering 1 scholarship of 5.000,00 Euro to cover tuition fee for a student;
- **Officine Maccaferri SpA** is offering 1 scholarship of 3.000,00 Euro to partially cover tuition fee for a student.

**The Society offering the scholarship(s) will make a direct evaluation of the Curricula and assign the scholarship(s).** Scholarships will be assigned between the admitted students before the beginning of the Course.

Further Scholarships are available through the **ITACET Foundation** granting scholarship to applicants from emerging countries accepted to one of the ITA endorsed Master Course.

## **10. ATTENDANCE, EVALUATION AND DEGREE AWARDING**

A Master Thesis followed by a discussion concludes the course and finally leads to the award of the **Master degree (Master di II livello) by Politecnico di Torino**.

In order to get the Master Degree the participants have to attend at least to **2/3** of the lectures hours (certificated by signature), to pass all foreseen examinations and to successfully conclude the stage and Thesis activities.

To be entitled to obtain the University Master Degree, Italian students must comply to the Italian requirements stated by the law on education T.U. of 1933 art. 142 (simultaneous enrolment in other universities courses, doctorates, etc... is not admitted).

Participation as "Admitted only for frequency" does not allow acquisition of CFU (ECTS). At the end of the Course, participants who were admitted only for frequency will obtain a Certificate of attendance.

## **11. APPLICATION TO SINGLE TRAINING MODULES**

Professionals interested in specializing competences in this field can subscribe to single training modules.

Further information will soon be available.

## **12. PARTNER AND SPONSORS**

**This Post Graduated Master Course is sponsored by:**

**Golden Sponsor:**



**Sponsor:**

