



UNIVERSITÀ DEGLI STUDI DI MILANO

THE RECTOR

- considering the Article 4 of the Italian Law N° 210, dated 3rd July 1998;
- considering the Italian Ministerial Decree N° 224, dated 30th April 1999, entitled "Regulation containing rules governing graduate schools";
- considering the Statutes of the University of Milan, issued by a Decree of the Rector on 28th May 1996, and subsequent amendments thereto;
- considering the Regulations governing the University's Graduate School Courses, issued by a Decree of the Rector on 9th October 2006;
- considering the Italian Ministerial Decree N° 270, dated 22nd October 2004, entitled "Amendments to the Regulation containing rules governing the didactic autonomy of Universities", approved by a Decree of the Minister for University and Scientific and Technological Research on November 1999, N° 509";
- considering the Regional Law N° 33, dated 13th December 2004, entitled "Rules governing activities of the Region for the right to study at university", which makes provision for services to facilitate students enrolled in graduate schools;
- considering the Decree of the Rector dated 6th July 2005, which constituted the "Ph.D. School in Physics, Astrophysics and Applied Physics" and relative Regulations;
- considering the decisions made by the Academic Senate and the Administration Board during their meetings on May 25th and June 29th, 2010;
- taking into account the advise of Evaluation Committee of the Università degli Studi di Milano, expressed on July 15th, 2010;

HEREBY DECREES

Art. 1 - Institution of the Course of the Ph.D. School in "Physics, Astrophysics and Applied Physics"

The 2010-2011 Ph.D. Course in Physics, Astrophysics and Applied Physics is established at the University of Milan (XXVI cycle). It includes Departments and Institutes of three Faculties of the Milano University and one of the Brescia University.

The School aims at providing the students with high-level scientific, technological and professional training to research in Physics. The students obtaining the Ph.D. title will be able to spend their careers in different areas of research and development, in public and private institutions, in Italy, in the European Union, or in any other Country.

The School offers courses and seminars given by a high level academic staff, as well as by international visiting professors and researchers, known for their qualification in fundamental, applied and technological research. The School also encourages the student attendance to International Schools within the research area of their interest.

The School has state-of-the-art scientific structures and is connected to a number of high quality scientific groups, institutions and industries, with the purpose of facilitating subsequent postgraduate employment. Stages at world-class research Laboratories, public and private structures and enterprises are envisaged.

The training activity of the School will be evaluated following the method of European Credits, in order to facilitate the acknowledgment of the Ph.D. Title in other European Countries. Agreements with European Universities and high level Research Institutions have been established and more are expected to be soon approved, for activities of common formation, with acknowledgment of the Title from both sides (see the web page <http://phd.fisica.unimi.it/international-network/>). These agreements will encourage the possibility of shared programs ("Cotutelage Thesis") with EU and non-EU Ph.D. Schools. In case of Cotutelage and

other activities planned by formal agreements with other Universities, the student will receive the Doctorate Title by both the University of Milan and by the partner University.

The School's programme lasts 3 years and is directed by Prof. Marco Bersanelli, full professor of the Faculty of Mathematics, Physics and Natural Sciences.

The Ph.D. School includes the following Curricula:

1. Condensed Matter;
2. Nuclear and Elementary Particle Physics;
3. Theoretical Physics;
4. Astrophysics;
5. Applied Physics.

Students that will pass the admission selection will be addressed to one of the above curricula by the School Directive Council, based on the student's research plans.

The above curricula are connected to projects by research groups associated (or in collaboration with) the Ph.D. School; these projects, both theoretical and experimental, cover the following areas:

1. Quantum Optics, Laser, Free Electron Laser, Quantum Information, Optical Techniques, Nanotechnologies, Soft Matter, New Materials, Surface Physics, Molecular Biophysics, Biophysics, Plasma Physics and Controlled Fusion; Superconductivity, Magnetism;
2. Elementary Particle Physics with accelerators (Atlas, Babar), Elementary Particle Physics in underground laboratories, Neutrino Physics (Borexino, Icarus), Heavy Ions Nuclear Physics, Gamma Spectroscopy, Exotic Nuclei (Ganil, GSI, Argonne, Legnaro and Catania Laboratories); Nuclear Reactions of Astrophysical interest (LUNA), Cosmic Ray Physics;
3. String Theory, Elementary Particle Phenomenology, Quantum Field Theory, Statistical Mechanics, Mathematical Physics, Fundamentals Principles of Quantum Mechanics;
4. Cosmic Microwave Background (Planck mission), Galaxies and Star Systems, Dark Matter, Star and Planet Formation, Gravitational Lenses, Astroparticle Physics;
5. Biosensors, Applied Superconductivity, Superconductive Magnets, Vacuum Techniques, Medical Physics, Sanitary Physics, Environmental Physics, Particle Accelerators, Power Electronics, Microelectronics, Electronics Devices, Optoelectronics, Geophysics, Study of the Earth Mantle and of the Ground Water Tables, Cultural Heritage Conservation.

The proposed specific subjects of research projects can be found in the School's website:

<http://phd.fisica.unimi.it/research-projects/>.

The School refers to the following scientific-disciplinary Italian sectors: FIS/01 - FIS/02 - FIS/03 - FIS/04 - FIS/05 - FIS/06 - FIS/07 - FIS/08 - ING-INF/01 - AGR/13 - ING-INF/05 - INF/01 - M-PED/01 - CHIM/03 - M-STO/05 - BIO/10 - BIO/11.

The Administrative Office of the School is located at the Physics Department, Via Celoria 16 - 20133 Milano.

The partners from the University of Milan are the Department of Physics, the Department of Chemistry, Biochemistry and Medical Biotechnology, the Department of Molecular Science Applied to Biosystems; the partner Institution of the Catholic University of Brescia is the Department of Mathematics and Physics.

The number of available positions is 34, out of which **17** are supported financially by a scholarship (see article 10). Positions are distributed among two different groups listed below, each with its own ranking. At most 3 scholarships out of the 17 available ones can be awarded to non-EU citizens who are not Italian residents.

One out of the scholarships is reserved for a non-EU citizen who is not an Italian resident. In order to qualify for this scholarship, the applicant must be ranked within the first 32 places of the "General" ranking list.

The scholarships are distributed as follows:

- 12 **Università degli Studi di Milano** (one of which restricted to non-EU citizens, resident abroad and with condition that he will rank within the first 32 places of the "General" ranking list);
 - 1 **Consiglio Nazionale delle Ricerche (CNR)**
 - 1 **Università Cattolica del Sacro Cuore-Sede di Brescia;**
 - 2 **Istituto Nazionale di Fisica Nucleare (INFN).**
 - 1 additional scholarship for the research topics "**New applications of the biomedical industry**" supported by Ministero dell'Università e Ricerca Scientifica. The activities of this program include four main research lines:

- a) Development of new optical technologies for the measurement of biomolecular interactions;
- b) Development of new optical technologies for the study of the dynamic properties of prokaryotes and/or eukaryotes microorganisms and of the correlation between their dynamics and health state;
- c) New applications of magnetic nanoparticles under consideration of proteins and relative biological systems;
- d) Advanced imaging techniques with LaBr₃:Ce/LaCl₃:Ce scintillators for biomedical applications.

The available positions and scholarships are divided between the following groups, each with its separate ranking:

1. **General:** 32 positions on a free subject, 16 of which are financially supported by the University of Milan, in collaboration with the Catholic University of Brescia, with the CNR and the INFN;
2. **New applications of the biomedical industry:** 2 positions, 1 of which with scholarship on a definite subject, granted by the "Young People Funds" 2009.

The number of scholarships will be increased whether there will be other financings available before the deadline for applications to the Selection.

Art. 2 - Conditions of admission

The candidates who completed their undergraduate study in Italian Universities (either with the "old" 4-year program or with the "new" 3+2 years program) can apply to the Doctorate School if their degree is in one of following classes ex D.M. 270/2004: LM-6 Biologia, LM-7 Biologie agrarie, LM-8 Biotecnologie industriali, LM-9 Biotecnologie mediche, veterinarie e farmaceutiche, LM-17 Fisica, LM-18 Informatica, LM-20 Ingegneria aerospaziale e astronautica, LM-21 Ingegneria biomedica, LM-22 Ingegneria chimica, LM-23 Ingegneria civile, LM-25 Ingegneria dell'automazione, LM-27 Ingegneria delle telecomunicazioni, LM-28 Ingegneria elettrica, LM-29 Ingegneria elettronica, LM-30 Ingegneria energetica e nucleare, LM-32 Ingegneria informatica, LM-33 Ingegneria meccanica, LM-34 Ingegneria navale, LM-35 Ingegneria per l'ambiente e il territorio, LM-40 Matematica, LM-44 Modellistica matematico-fisica per l'ingegneria, LM-53 Scienza e ingegneria dei materiali, LM-54 Scienze chimiche, LM-58 Scienze dell'universo, LM-60 Scienze della natura, LM-71 Scienze e tecnologie della chimica industriale, LM-74 Scienze e tecnologie geologiche, LM-75 Scienze e tecnologie per l'ambiente e il territorio, LM-79 Scienze geofisiche, LM-82 Scienze statistiche.

Non-Italian citizens are eligible to apply for admission to the School if they hold a foreign academic qualification equivalent to the degrees above mentioned, according to the evaluation of the Council of the School (Consiglio Direttivo).

Who will achieve the Master Degree after the deadline and within **October 21th 2010**, can participate to the Selection. In this date the Selection Committee will proceed to the evaluation of the candidates titles. In such case, the participation will be "with reservation" and the candidate will have to notify the achievement of the degree within such date, using Annex A or a certificate released by competent office.

Art. 3 - Application

The deadline for application is not later than **7th October 2010**. The application shall be presented as follows:

- a) **Italian citizens and foreigners who hold an Italian tax code** should make their applications **exclusively** in Internet, directly available on the university's website at www.unimi.it/hpsifa/, via the *SIFA online* facility, or by using the SIFA terminals available to applicants in the locations of the University of Milan.

To access the online application system, go to the *Servizi online SIFA* section and select *Servizi di ammissione*, then select *Ammissione ai corsi post laurea* and follow the instructions step by step. University of Milan graduates can access the service using their matriculation numbers; others should key in their Italian tax codes.

The application may be amended until the deadline set for enrolment and can be printed as confirmation of insertion into the system.

Before the application the candidate must pay, for each Doctorate Course application, an enrolment fee of € 50.00, using the module of payment (code 36) available at the web page

<http://www.unimi.it/ricerca/dottorati/3050.htm>. The Bank will give a receipt with an authorization code. In any case, this fee shall not be refunded.

Candidates with a foreign **university degree** need to send their degree certificate and the applicant's university career (examinations passed, graduation mark) in Italian or English through one of the following:

- via fax to the number +39 02 50313731;
- via email to the address: ufficio.dottorati@unimi.it;
- via mail to the address: Università degli Studi di Milano, Segreteria Studenti - Ufficio Dottorati, via Festa del Perdono 7, 20122 Milano, Italy.
- delivery by hand to the "Dottorati e Master" Office in the Students' Secretariat, in via Santa Sofia 9/1 (open Monday to Friday, from 9.00 to 12.00 am).

b) Foreign Applicants who do not hold an Italian tax code should download the application form available online at www.unimi.it/ricerca/dottorati/15708.htm.

Non-Eu candidates can pay the application fee after the confirmation of their admission to the Doctorate School. EU Citizens must pay the application fee of € 50.00 within **7th October 2010** using the module of payment (code 36) available on the page web <http://www.unimi.it/ricerca/dottorati/3050.htm> or via credit transfer on the Bank Account N° 463971 of the Università degli Studi di Milano (IBAN Code: IT97G0306909400000000463971 - Swift Code: BCITIT33100) motivating as follows: "Application fee - Ph.D. Program in Physics, Astrophysics and Applied Physics (XXVI cycle)". This fee shall not be refunded.

The application with the annexed documents must be received by both the Doctorate Office and the Ph.D. School within the strict deadline of **7th October 2010**, through one of the following ways:

- via fax to the number: +39 02 50313731 (Doctorate Office)
+39 02 50317617 (PhD School)
- via email to the address: ufficio.dottorati@unimi.it
phd@fisica.unimi.it
- via mail to the address: Università degli Studi di Milano, Segreteria Studenti - Ufficio Dottorati via Festa del Perdono 7 - 20122 Milano, Italy;
PhD School in Physics, Astrophysics and Applied Physics - Via Celoria 16 - 20133 Milano, Italy

The application must include these documents:

- The certificates of the University degree and the applicant's university career (examinations passed, graduation mark) in Italian or English;
- Receipt copy of payment application fee of € 50.00 (only for EU candidates);
- Passport copy;
- "Permit of Stay" copy (only for non-EU candidates resident in Italy).

The candidates who will gain a position (with or without scholarship) in more than one pass-lists, will have to make a choice within the matriculation date.

Art. 4 - Facilitations for disabled applicants

In compliance with Article 20 of Italian Law N° 104, dated 5th February 1992, disabled applicants may, if they consider it opportune, request special aids and/or additional time for carrying out the competition for selection. If they wish to make use of this option, they must send by post a doctor's certificate testifying the validity of the request, no later than the deadline for the competition.

Art. 5 - Qualifications

The following elements are taken into account for the admission to the oral examination:

- Degree and/or Master thesis, which can be integrated by an abstract in English (if the thesis is not written in English).
- The student's career (passed exams with their credits, if possible, and marks), final mark for the full university attendance (for degrees from Italian Universities, either the 4 degree or both the 3 and 5 years degrees);
- reference letters by professors of the University where the candidate got his degree, other University or Research Institute (not more than three). The letters should be written using the form in Annex B, and should be sent to the attention of School Director, prof. Marco Bersanelli, to e-mail address of the School Secretariat phd@fisica.unimi.it, within the strict deadline of **7th October 2010**;

- an essay describing a research project worked out directly by the candidate. The future Doctorate activity can be different from this project. The essay should be in the range 3 to 5 pages (approximately 2100 to 3500 words, not including figures and tables). It has to include a general discussion of the scientific subject and a description of the project. This essay aim is an evaluation of the candidate's attitude to the research.
- copy of the scientific publications;
- concise description of professional experiences and other qualifications;

In case of no presentation of the Master thesis (accompanied by an abstract in English language), of the university career (examinations passed, graduation mark), of the Research Plan or letters of reference, the applicant can be excluded from the Selection.

Documents and scientific publications may be in Italian or English. The documents have to be sent in original or in authenticated photocopy. For the authentication, EU citizens may use a declaration on their own responsibility (in accordance with the Italian Presidential Decree N° 445, dated 28th December 2000) according to the guideline in Annex A.

The scientific publications can be provided in copy specifying the web arXiv where the paper is posted or cited. These documents must be delivered in person or sent by registered mail. For applicants who are not EU citizens, submission by e-mail is also allowed. The material should be sent to the Director of the School, Prof. Marco Bersanelli, and should be delivered within 7th October 2010, (Please address your package to the School secretariat, Mr. Andrea Zanzani c/o Dipartimento di Fisica, Via Celoria 16, 20133 Milano, Italy. E-mail address: phd@fisica.unimi.it). This documentation will be kept into account only for candidates who have successfully completed the admission procedure as explained in point 3 above. For foreign candidates or to the Italian candidates non-resident in Italy submission via e-mail is allowed.

Art. 6 - Admission examinations

The admission to the Ph.D. School is carried out in two stages:

I) In the first stage, the Examining Committee evaluates and ranks the applicants' CV and qualifications according to the following criteria

Qualification	Examining Committee Marks
Degree and/or Master thesis, publications, any professional experiences and other qualifications; reference letters (see Art. 5) by professors of the University where the candidate got his degree or other Universities	0-7
Student's university career (certificate of exams passed, marks obtained) (see Art. 5)	0-8
Essay describing a research project worked out directly by the candidate (see Art. 5)	0-5
Total	0-20

Applicants who will achieve a score of not less than 12/20 will be admitted to the oral examination. The list of those admitted will be published online on the Doctorate School's website within the 29th October 2010: <http://phd.fisica.unimi.it/admission/>. The list of successful applicants posted on the School's web site should be considered as a call for the oral examination. Foreign candidates will be informed of the admission by e-mail.

II) The oral examination consists of an interview to evaluate the candidate's scientific background, ability and aptitude for scientific research, as well as a discussion on his/her research project. The interview is only passed if the applicant achieves a mark of not less than 28/40.

The candidate can choose to have the interview in Italian or in English. The knowledge of the English language is required, and a dedicated test will be done if the candidate has chosen the Italian language for the oral examination.

The foreign candidates called for the oral examination may obtain the reimbursement of their travel and lodging expenses for three days in Milan, within the limits of available resources.

Interviews will begin 5nd November 2010 at the Dipartimento di Fisica (Sala Polvani) Via Celoria 16, 20133 Milano.

A detailed schedule of the interviews will be posted on the Doctorate School's website: <http://phd.fisica.unimi.it/admission/> after the evaluation of the documents and CV presented by the candidates. In order to sit for the examination, applicants must show one of the following identity documents: a) identity card; b) passport; c) driving licence (with photograph).

Art. 7 - Examining Committee

The Examination Committee for admission to the Doctorate courses is formed and appointed in accordance to regulations in force.

At the end of each session devoted to interviews, the Committee will prepare the list of applicants examined in that session, indicating the marks achieved by each candidate. This list shall be signed by the Committee Chair and Secretary and posted in the same day on the School notice-board at the Department of Physics and posted in the website <http://phd.fisica.unimi.it/admission/>.

At the end of the examination, the Committee will compile a general classification of merit on the basis of the sum of the marks achieved by the applicants both in the CV evaluation and in their oral examination.

Art. 8 - Admission to the Course

Applicants will be admitted to the Course according to their ranking in the pass-list up to completion of the available positions. Should the results be equal, preference will be given to younger candidates, with exception to the case provided for the attribution of the scholarship (see art. 10 of the present Notice).

The classifications of the qualified applicants will be posted in the University's website: <http://www.unimi.it/hpsifa/>, under the heading of Servizi online SIFA - Servizi di ammissione / Graduatorie ammissioni corsi post laurea / Graduatorie Dottorati di Ricerca and in the School website <http://phd.fisica.unimi.it/admission/>.

Applicants admitted to the courses shall lose their entitlement if they fail to make express acceptance within five (5) days from the date of publication of the pass-lists. In such a case, the position shall be taken by the first applicant in the list, who had not been admitted.

The same will happen also in case someone gives up within the first three months of the Course. In this case the monthly payments already received have to be refunded.

Candidates will be admitted to the Doctorate School, in excess to the position covered by a scholarship, if they have been classified suitable in the general pass-lists, in the following cases:

- a) holders of "assegno di ricerca" at the Universities of the School consortium;
- b) personnel of public and private Institutions, having an agreement with the Milano University, in accordance with the Doctorate School regulations;
- c) the non-EU candidates with a grant similar to the UNIMI scholarships and assigned for the entire duration of the PhD program.

Art. 9 - Matriculation

The enrolment to the doctorate course must be *on line* using "Servizi online SIFA - Servizi di immatricolazione ed iscrizione - Immatricolazione ai Dottorati di Ricerca", no later than the absolute deadline of five (5) days from the date when the result of the selection is published.

The doctorate students, who did not obtain a School scholarship and who are not holder of an "assegno di ricerca", have to pay a contribution of € 908,00 for the admittance to the Doctorate Course; this contribution includes the regional tax for student support, the accident insurance and stamp duty.

This contribution must be paid within three months since the matriculation date, by means a bank form which can be found in the internet site: <http://www.unimi.it/ricerca/dottorati/3050.htm>.

When it is completed on line enrolment procedure, it is obligatory to print the Matriculation form, to sign it and to deliver it within 10 days to the Doctorate Office (Segreteria Studenti, via S. Sofia 9/1; opened to the public from monday to friday 9:00-12:00 a.m.) with:

- a passport photo;
- receipt of payment of € 908,00 for the registration fee, if it is due;
- every document requested for the enrolment or the assignment of the scholarship.

Applicants EU and non-EU citizens who don't speak Italian, will have to send the Matriculation form (available online on <http://www.unimi.it/ricerca/dottorati/18532.htm>) via fax or email (0039 0250313731 - ufficio.dottorati@unimi.it) no later than the absolute deadline of five (5) days from the date when the result of the competition is published. To the filled and signed form, they will have to attach the receipt of payment of € 908,00 for the registration fee, if it is due.

Within December 31st 2010, they will have to deliver to the Doctorate Office, (Segreteria Studenti, via S. Sofia 9/1; opened to the public from monday to friday 9:00-12:00 a.m.):

- a passport photo;
- Italian Fiscal Code copy;

- Permit of Stay copy (if non-EU citizens), to ask within 8 days from arrival in Italy in requested mode by the law.

All candidates obtained Master Degree abroad, within December 31st 2010 have to deliver to Doctorate Office following original documents:

- certificates of University degree translated into Italian by an official translator and certified by the Italian diplomatic representation (Embassy or Consulate) in the country where the qualification has been awarded;
- "declaration of local value" (dichiarazione di valore in loco) to be requested to the same diplomatic representation office.

If the Master Degree was obtained in an European University, it is possible to deliver Diploma Supplement given by competent office as an alternative to the above-mentioned "declaration of local value".

Milan University will ask "declaration of local value" whether there will be doubts about the Diploma validity.

Art. 10 - Scholarships

The Doctorate students EU-citizens or no-EU citizens who, according to article 39, item 5, of decree law n. 286 25th July 1998, modified with article 26 of law n. 189 30th July 2002, attend to Courses of the University at the same condition of the Italian students, whose annual income does not exceed € 15,000.00, are entitled, according to the pass-list, to get a scholarship amounting to € 13,638.47 (gross total) per year. The amount of the scholarship is free from IRPEF, according to article 4 of law n. 476 13th August 1984, and in social security matter, subject to the rules under article 2, item 26 and next of the law n. 335, 8th August 1995.

Should two or more applicants occupy the same place in the classification of merit, priority shall be set according to the applicants' economic situation as established by the Decree of the President of the Council of Ministers issued on 9th April 2001.

The regional study entitlement tax, the accident insurance premium and stamp duty (for a total value of € 122.11 per year) shall be deducted from the scholarship.

The Ph.D. students who are not resident in Lombardy can apply for a financial contribution for lodging and travel expenses, generally supported by the Institutions the Doctorate refers to and according to the levels stated by the Academic Senate.

The Doctorate students can have a teaching duty or tutoring activity for University students, payed according to the rules decided by the Academic Senate and by the Council of the Doctorate School.

More information can be found on the website: <http://www.unimi.it/ricerca/dottorati/2316.htm>.

Art. 11 - Students obligations

Doctorate students are expected to regularly attend the activities provided for their Ph.D. curriculum and to devote themselves to the program proposed by the School Council, to the individual and common study plans and to the development of their research activities.

The PhD activity is usually not compatible with full time jobs. In exceptional and motivated cases, the Academic Senate can authorize the student that makes demand to attend the PhD course in spite of the job activity on condition that his PhD School Council declares the compatibility.

The Doctorate students's activities and duties are published on: <http://phd.fisica.unimi.it/student-vademecum/>.

Art. 12 - Award of the degree

The Doctorate Degree is awarded at the conclusion of the Doctorate Course after passing the final examination where a written dissertation (Ph.D. Thesis), showing original research results, is discussed.

The University will record and will render available online the complete text of the doctorate thesis through the Institutional Archives of Athenaeum (AIR). On motivated request of the Ph.Doctor, and within the requirements of protecting industrial and/or intellectual properties from any exploitation and according to the Tutor's opinion, the thesis could be excluded from the online consultation for a period not longer than 18 months.

For the joint degree from two or more Doctorate Schools, in the frame of "cotutelages" or other international agreements, the thesis discussion will follow the rules agreed among the partner Institutions.

Art. 13 - Treatment and processing of personal information

In accordance with the Regulations issued in application of Italian Legislative Decree N° 196, dated 30th June 2003, the university hereby undertakes to respect the confidential nature of the information provided by the applicants: all the information provided will be processed solely for purposes connected with and instrumental to the selection process and the management of the applicant's relationship with the university, in compliance with the laws currently in force.

Art. 14 - Benchmark legal framework

Any items for which no specific provision has been made in this announcement shall be regulated in accordance with the Italian legislative and regulatory stipulations governing the Doctorate Schools.

Milan, July 29th 2010

THE RECTOR
(Enrico Decleva)
(Signature) Enrico Decleva

Reg. n. 0269350 del 02.08.2010