PhD Program in Mathematical Sciences
Opening day 2020/21

Giovanni Colombo
PhD Program Coordinator
Website: https://dottorato.math.unipd.it

Padova, October 6, 2021

► 15.00 Presentation of the program
► 16:00 Seminario Dottorato: talk by Luca Mastella
► 17:00: welcome toast at the ground floor.
Many thanks to the former coordinator, prof. Martino Bardi, for his really excellent work
Welcome to the Department of Mathematics of the University of Padova, that is named after Tullio Levi-Civita.
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The city of Padova features two items from the UNESCO World Heritage List: the University Botanical Garden and the cycles of frescoes in some churches (in particular Giotto’s Scrovegni Chapel, 5 minutes from here).
Welcome to the new students of XXXVII cycle:
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- Curriculum "MATHEMATICS"

  Baracchini Marco
  Costa Villegas Mariana
  Danesi Elena
  Nguyen Dang Khai Hoan
  Redaelli Davide Francesco
  Sabelli Pietro
  Talamini Luca
  Vanni Pietro
Curriculum "COMPUTATIONAL MATHEMATICS"

Barbieri Sara
Brambilla Chiara
Marini Elisa
Turbian Chiara (Industrial fellowship)
Who’s who in the Program

- Coordinator of the PhD Program (Giovanni Colombo)
- Deputy Coordinator: Martino Bardi
- Delegates for the two curricula: Davide Vittone, Marco Di Summa
- Executive Board ("Consiglio Direttivo"): to be nominated soon.
- Faculty Board of the PhD Programme ("Collegio Docenti"): see next slides.
- Organizers of the Graduate Seminars ("Seminario Dottorato"): C. Marastoni and T. Vargiolu
- Administrative Contact Person of the Doctoral Course (III floor): Loretta Dalla Costa
- Representatives of PhD students in "Collegio": H. Kouhkouh, R. Mastroianni, Y. Nakada, S. Pavon, F. Tedeschi, A. Socionovo.
- Representatives of PhD students in the Department Council: L. Mastella, M. Rossi, A. Socionovo, F. Tedeschi, D. Troletti, M. Zaccaron, A. Zheng.
Research in mathematics in Padova
The Faculty Board: Mathematics

( green = member of the (former) Executive Board )

- Mat/01 Math. Logic: F. Ciraudo, M. E. Maietti, S. Maschio
- Mat/02 Algebra
  - S. Bazzoni, A. Facchini, G. Peruginelli, D. Spirito, A. Tonolo: Ring, module, and category theories
  - A. Lucchini, E. Detomi: Group theory
  - G. Carnovale: Lie groups and algebras
- Mat/03 Geometry
  - B. Chiarellotto, A. Bertapelle: Algebraic and Arithmetic Geometry
  - A. Iovita, M. Longo: Number theory
  - A. Cattaneo, L. Fiorot, R. N. Kloosterman, L. Prelli: geometry of complex varieties, algebraic analysis
  - Paolo Rossi: Symplectic geometry.
The Faculty Board: **Mathematics** continued

- **Mat/05 Mathematical Analysis**:
  - M. Bardi, M. Cirant, C. Marchi, P. Mannucci: Nonlinear PDEs, differential and Mean-Field games
  - G. Colombo, M. Motta, Francesco Rossi: Control Theory, Set-valued analysis
  - D. Barilari, A. Massaccesi, R. Monti, D. Vittone: Geometric Measure theory, Geometric analysis, sub-Riemannian geometry
  - F. Ancona, L. Caravenna, F. Cacciafesta: hyperbolic & dispersive PDE
  - C. Mariconda: integral functionals
  - P. D. Lamberti, P. Musolino: spectral theory
  - A. Languasco: Analytic Number Theory

- **Mat/07 Mathematical Physics**:
  - F. Fassò, C. Efthymiopoulos, M. Favretti, L. García Naranjo: Symplectic Mechanics, dynamical systems
  - G.G. Giusteri: continuum mechanics
The Faculty Board: Computational Mathematics

- **Mat/06 Probability and Statistics**
  - A. Bianchi, M. Fischer: Interacting particle systems, Mean-Field models and games
  - G. Callegaro, C. Fontana, T. Vargiolu: Math. finance

- **Mat/09 Operations Research**
  - M. Di Summa, L. De Giovanni: Integer programming and combinatorial optimization
  - F. Rinaldi, A. Cristofari: Nonlinear optimization

- **Mat/08 Numerical Analysis**
  - M. Putti, A. Larese (Icar/02): Numerical methods for PDEs and applications
  - M. Redivo Zaglia: Numerical linear algebra
  - W. Erb, F. Piazzon: Approximation theory
  - F. Marcuzzi: Numerical problems from industrial mathematics, Mathematical systems modelling from data
SecsS/06 Mathematical Methods for Economics
- M. Grasselli: Mathematical finance
- A. Buratto, L. Grosset, B. Viscolani: dynamic games, marketing models

Prof. at T.U.M., Germany: Massimo Fornasier, image processing, numerics of PDEs, high-dim. optimization.
1. Activities of the Program

- Research
- Seminars
- Courses
Research

This is the most important part of your work as a Ph.D. student.

- **First year students:** propose a thesis supervisor(s) and write with her/him a program by the end of November, the Faculty Board takes a decision by mid December. Begin early to work on your thesis!

- Attend regularly the [seminars](#)
  - of your field of research, and participate in discussions.
  - Graduate seminars (see next slide)
  - Department Colloquia also planned for PhD students and young researchers.

- Keep **frequent contacts with your supervisor**, informing him/her of both progresses and difficulties. Plan activities with him/her: attending meetings/courses, applying for periods of study abroad,....
The Seminario Dottorato (Graduate Seminar) is a series of lectures by and for the Ph.D. students and post-docs in Mathematics and Computational Mathematics. PhD students have the opportunity to communicate their research to an audience of educated mathematicians who are not specialists in their field. Occasionally the seminar hosts senior researchers who will speak along the same line. Seminario Dottorato is open to the Department.

The seminar is normally held twice a month (usually on Wednesday afternoon), by alternating lectures in Pure and Computational Math.

Sign the participation list at the beginning of the seminar to get credit for the participation. Learn how to deliver a general lecture on your research in the Colloquia of the Department.
Courses

- Each year the Department offers courses and publishes a catalogue with programs and schedules (see requirements).

- Besides the courses related to your research topics, introductory courses on other subjects are highly recommended.

- Calendar online

- Not all students enter the Doctoral Course with the same background. In some cases the supervisor may recommend attendance to courses of the Master Degree in Mathematics, which are all open to Ph.D. students.
Requirements to meet

A) **Courses.** Students are required, within the first two years, to follow and pass the exam of

- At least 2 courses of the Program (≈ 24 hours each);
- other courses, in addition to the two above, chosen from the catalogue, with total commitment of at least 56 hours.
- Credits may also be assigned for courses taken in other departments or universities, on a case-by-case basis, upon request. **You need to apply.**
- Credits for exams of Master’s Courses will be quantified on a case-by-case basis by the Faculty Board, upon request. **You need to apply.**
- "Soft skills courses" are recommended and at least one is mandatory.

New entries: 1) participating in popularization activities (KidsUniversity, VenetoNight, ...); 2) preparing an academic CV; 3) preparing an application for a post doctoral position.

**Note:** A half of the requirements is due within the first year. Plan to follow courses even without taking the final exam!
Please note:

- **Online registration** through the Course’s webpage is **strictly required**, independently of the intention to take the exam or just attend the lectures. For the courses starting in the first semester please register as soon as possible. For other courses planned for the year 2022, the deadline for registration is **December 30th**.

- Students are expected to attend regularly the activities of the courses they are registered to.

  **Remark**: follow your taste, but also discuss with your supervisor the choice of the courses to take.

- **Seminars** do not appear in the Catalogue of the Courses, even when they are meant for Ph.D. students and young researchers. You may receive announcements for these seminars from your research group, but also check regularly the web page of the department.
B) **Annual report.** By the end of August of each year PhD students must write a report indicating the activities done (courses taken, exams passed, participation to conferences...) and the status of your thesis. 
Learn how to upload your papers on the web site IRIS.

C) **Thesis.**
Within the end of the third year, on the basis of a draft of the thesis (due by the end of August), your final three year report, and a report of your supervisor, the Faculty Board decides on the admission to the **Final evaluation**, consisting of two steps:
report of two external referees,
and defense of the thesis in front of a committee.

**The deadline of 3 years is sharp, extensions are not allowed!!**
Conferences, schools, visits abroad...

You are encouraged to participate in Conferences and Schools, and/or to spend periods of research in foreign institutions (from the 2nd year for up to 18 months). The PhD Programme co-finances these activities: each student has \( \sim 3000 \) e. for travels.

- Plan these activities with your supervisor.
- Long (\( \geq 20 \) days) visits to foreign institutions are supported by the University (\( +50\% \) of fellowship). The PhD Programme contributes to travel costs and may contribute to lodging costs.

- For these visits you need:
  - To obtain the authorization from the Executive Board.
  - To apply for the increase of the fellowship contact Mrs. Dalla Costa and Ufficio Dottorato e Post Lauream. The application form must be signed by the Coordinator.

- Well before the beginning of the trip, contact the administration office of the Department (III floor), and fill out the appropriate forms.
Offices

- For the **desk** assignment, keys of office, forms for requests of extension of fellowship and teaching activities, refer to the Secretary of the Doctoral Course Mrs. Loretta Dalla Costa, 3rd floor.

- **Covid rules**
  1. Book your daily presence in the "Covid 19 Presenze TA online system"
  2. Having the Green Pass with you is mandatory to access all University buildings (including the canteen). Current regulations impose sample checks: anyone found without the green pass will be sent outside the building.
  3. At all times in the Department building you shall **wear a face mask** covering your mouth and nose.

  SPEND TIME HERE!
Accounts on our server, PCs

- For computer accounts refer to Mr. L. Cappello (who also manages the web page) or A. Talami, 3rd floor.

**IMPORTANT:**
- get immediately your account of the Department’s server;
- check regularly your email on this account: all messages concerning the doctoral program will be sent to that address!

- Do you need a PC? Ask for a (used) one to the "Tecnici informatici", 3rd floor. But some students at the end of their PhD are trying to organize buying some laptops with the travek money they could not use during Covid time.
We have an excellent library on floor -1, Stair A.

We subscribe to most mathematical journals, many are also available online from your new account ....@math.unipd.it or ...@unipd.it (from home you have to use a proxy).

The Library Committee has a representative of Ph.D. students: Luca Mastella
Teaching and tutoring

Doctoral students are allowed to do either one of the following activities, for which they can get an additional salary:

► support teaching ("didattica di supporto") for undergraduate courses (up to 40 hours per academic year), under a contract with our Department;

► Tutoring ("Tutorato", e.g., Math-4U) for undergraduate courses (25 hours in class + 75 hours to prepare the class), under a contract with the University.

You first need permission of the Executive Board after the recommendation of the supervisor to apply for it (usually not during your first year).

Teaching that gives credit to students ("didattica integrativa") is not allowed by our University.
Other general suggestions

▶ When you write a paper or give a presentation to a Conference, do not forget to indicate you affiliation to the Department of Mathematics and to acknowledge the financial support received.

▶ For foreign students: check that all bureaucratic requirements have been met.
Refer to: Loretta Dalla Costa and Ufficio Dottorato e Post Lauream.
Special event for the 800 years of the University of Padova and the 100 years of the Italian Mathematical Union (U.M.I.)

Our University will host an international conference, with distinguished speakers (May 23-27, 2022) on this occasion: International conference 100UMI-800UNIPD
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The First UMI meeting of PhD students will take place within the 100UMI-800UNIPD Conference: PhD fellows graduating with a Ph.D. thesis in Mathematics during years 2019-20-21-22, may submit an abstract in order to give a talk. More information will be provided soon.
Questions?

For questions or problems contact

▶ Your supervisor (once you have it....)
▶ Giovanni Colombo, Coordinator of the Doctoral Course
▶ Martino Bardi, Vice-coordinator
▶ the delegate for your Curriculum: Davide Vittone "Mathematics", Marco Di Summa, “Computational Mathematics”,
▶ Loretta Dalla Costa, Administrative Contact Person (the Angel of the hearth) of the Doctoral Course

My best wishes to all of you!
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