Master 2 Research & Innovation of Applied and Pure Mathematics in Toulouse – First Meeting –

Guillaume Cébron – Grégory Faye – Maxime Wolff

Université de Toulouse

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Contacts

M2RI-UT:

- Guillaume Cébron: probability, statistics
  (guillaume.cebron@math.univ-toulouse.fr)
- Grégory Faye: analysis, PDEs
  (gregory.faye@math.univ-toulouse.fr)
- Maxime Wolff: algebra, geometry, topology
  (maxime.wolff@math.univ-toulouse.fr)

Masters Mathematics at UT: Clément Pellegrini

INSA:

- Aude Rondepierre

ISAE:

- Michel Fournié: deterministic option,
- Florian Simatos: probabilistic option.

Pedagogical secretariat: Clément Nicolas (clement.nicolas2@utoulouse.fr)

Webpage:
`https://departement-math.univ-tlse3.fr/m2-research-innovation`

Schedule

M2RI semainier 2026-2027

semaine calendaire	Du	Au	
36	31-Aug	04-sept.	S1
37	07-sept.	11-sept.	
38	14-sept.	18-sept.	
39	21-sept.	25-sept.	
40	28-sept.	2-oct.	
41	05-oct.	9-oct.	
42	12-oct.	16-oct.	
43	19-oct.	23-oct.	
44	26-oct.	30-oct.	Holidays
45	02-nov.	6-nov.	
46	09-nov.	13-nov.	
47	16-nov.	20-nov.	Revisions
48	23-nov.	27-nov.	EXAMS S1
49	30-nov.	4-déc.	
50	07-déc.	11-déc.	
51	14-déc.	18-déc.	
52	21-déc.	25-déc.	Holidays
53	28-déc.	1-janv.	
1	04-janv.	8-janv.	S2
2	11-janv.	15-janv.	
3	18-janv.	22-janv.	
4	25-janv.	29-janv.	
5	01-févr.	5-févr.	
6	08-févr.	12-févr.	Revisions
7	15-févr.	19-févr.	Holidays
8	22-févr.	26-févr.	EXAMS S2

semaine calendaire	Du	Au	
9	1-Mar	5-Mar	Internship
10	8-Mar	12-Mar	
11	15-Mar	19-Mar	
12	22-Mar	26-Mar	
13	29-Mar	2-avr.	
14	05-avr.	9-avr.	
15	12-avr.	16-avr.	
16	19-avr.	23-avr.	
17	26-avr.	30-avr.	
18	3-May	7-May	
19	10-May	14-May	
20	17-May	21-May	
21	24-May	28-May	
22	31-May	4-Jun	
23	7-Jun	11-Jun	
24	14-Jun	18-Jun	
25	21-Jun	25-Jun	
26	28-Jun	2-July	

Detailed schedule is available on CELCAT (link on the webpage)

Choice of courses – Semester 1

- A1: Introduction to complex algebraic surfaces (E. Floris)
- A2: An introduction to hyperbolic and translation surfaces (C. Boissy)
- A3: Introduction to representation theory (F. Deloup)
- A4: Uncertainty principles and null-controllability (P. Alphonse)
- A5: Sobolev spaces & Elliptic equations (X. Lamy, M. Maris)
- A6: An introduction to the theoretical and numerical analysis of scalar conservation laws (T. Crin-Barat, C. Negulescu)
- A7: Convergence of Probability Measures and Optimal Transport (M. Pain)
- A8: Stochastic Calculus (S. Cohen)
- A9: Asymptotic Statistics (C. Lalanne, P. Neuvial)

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- A10: Approximation of PDEs @ ISAE (G. Haine, D. Matignon,...)
- A11: Advanced statistical methods @ ISAE (B. Bobbia and F. Simatos)
- A12: An Invitation to Arithmetic Geometry (inverted class, J. Gillibert)
- A13: Controlled Dynamical Systems: Structured Modelling and Numerical Methods @ ISAE (A. Brugnoli, M. Fournié, ...)
- A14: An introduction to nonlinear partial differential equations (F. Filbet)

Complementary informations & Courses @ ISAE

- **To validate Semester 1 you need to choose 4 courses (with at least 3 among A1-A9)**

- Course A9: @ ISAE (10/09, 17/09, 24/09, 1/10, Thursday from 9am to 12pm) and @ UT (from 21/09 on Monday from 7am45 to 9am45)
- Course A10 starts on September 10 (from 9am to 12pm30) @ ISAE
- Course A11 starts in October @ ISAE
- Course A13 starts on September 3 (from 2pm to 5pm30) @ ISAE
- If you are interested by one of these courses, please contact now

  Michel Fournié (Michel.Fournie@isae-supaero.fr)

  to get access and all the information.

Choice of courses – Reading Seminar and Semester 2

Semester 2: Choose 2 courses

- B1: Affine Surfaces, Homogeneous Vector Fields and Germs Tangent to the Identity (X. Buff)
- B2: Rational surfaces and transformation groups (S. Lamy)
- B3: Introduction to micromagnetics (R. Ignat)
- B4: Regularization of Ill-posed Inverse Problems and Applications (P. Maréchal)
- B5: Random walks and graphs (B. Mallein)
- B6: Robust Optimization and Statistical Learning (F. Iutzeler)

Reading Seminar: Choose 1

- C1: Geometric group theory (S. Geninska & M. Wolff)
- C2: Unique continuation for second order elliptic partial differential equations & Introduction to reaction-diffusion equations (J. Dardé & G. Faye)
- C3: Entropy and Large Deviations (C. Pellegrini)

English (and French)

- **English class (mandatory!)**
  Scientific English - 12h
  Internship dissertation will be written in English
  Starts later (probably January)
  (contact: Claire Chaplier, claire.chaplier@utoulouse.fr)

- **French class for beginners**
  On Mondays from 3pm45 to 5pm45 in room U6-211
  Starts on September 14
  If you are interested, just go to the first lecture
  (contact: Céline Dulac, celine.dulac@utoulouse.fr)

Internships

- At least (and usually) 4 months. Typically from March 01 to June 30, with defense early July.
- You have to find an advisor with a subject. It is an opportunity to try the subject you like the most before going to the PhD.
- The courses can help you to know what is your favorite subject (remember that you will see new subjects in December).
- In November, researchers from the institute and outside will propose some internships.
- You can discuss with the researchers and find a subject by any other mean.
- It is good if you have your internship by the end of January.
- We help as much as we can but we do not provide the internship.
- Internships have to be funded, but you do not have to worry now about that.

After the M2RI

Ph.D Thesis

- At the university, in research institutes (ONERA,...) or in private companies.
- Grades for the courses are very important (it is not enough to pass the exams).
- You have to find an advisor and a subject.
- A funding is mandatory (and not always easy to find). It is highly recommended to apply to several positions.
- Some applications have very early deadlines.
- There can be more opportunities in applied mathematics (CIFRE funding).

Others: teaching, positions in private companies, etc...

After the PhD

Academic research

- Temporary positions: Post-doc, ATER,...
- Research positions: CNRS, INRIA,...
- Teaching and research positions, typically at the university.
- Opération Postes (http://postes.smai.emath.fr/current/index.php): lists temporary and permanent positions in France – it gives an accurate vision of the current academic job market.

Teaching

- With the "agrégation": high school or "classes préparatoires" (you can pass the "agrégation" before or after the Ph.D.)
- At the university: PRAG

Positions in private companies (Research and Development,...)

First week

- A1: Tuesday 10am – 3A-G11
- A2:
- A3: Monday – 1pm30 – 3A-G11
- A4: Tuesday – 2pm – 3A-G11
- A5: Wednesday – 8am45 – 3A-G11
- A6: Monday – 4pm15 – 3A-G11
- A7: Friday – 1pm30
- A8: Thursday – 1pm30 – 3A-G11
- A9:

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- A10:
- A11:
- A12:
- A13: Thursday – 2pm – ISAE
- A14: Thursday – 2pm – 3A-G47