UCL Université catholique de Louvain

LMAT1381

2015-2016

Personal project and seminary

7.0 credits	30.0 h	2q

Teacher(s) :	Ponce Augusto ; Gran Marino ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	Site iCampus > http://icampus.uclouvain.be/claroline/course/index.php?cid=MAT1381
Prerequisites :	The following course are required : LMAT1221, LMAT1222, LMAT1231, LMAT1241, LMAT1323. *The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes :	The aim of this activity is to stimulate students into carrying out individual research by helping them to explore a field of mathematics in an active way, and to further their training in written and oral expression. Students are invited to work individually on a subject of their choice so as to produce a mathematical text, and to make an oral presentation on their work to the other students.
Aims :	Contribution of the course to learning outcomes in the Bachelor in Mathematics programme. By the end of this activity, students will have made progress in: - Recognising and understanding a basic foundation of mathematics to be able to : ' Recognise the fundamental concepts of important current mathematical theories. ' Establish the main connections between these theories, analyse them and explain them through the use of examples. - Identifying, by use of the abstract and experimental approach specific to the exact sciences, the unifying features of different situations and experiments in mathematics or in closely related fields (probability and statistics, physics, computing). - Showing evidence of abstract thinking and of a critical spirit to be able to : ' Argue within the context of the axiomatic method Recognise the key arguments and the structure of a proof. ' Construct and draw up a proof independently. ' Evaluate the rigour of a mathematical or logical argument and identify any possible flaws in it. ' Distinguish between the intuition and the validity of a result and the different levels of rigorous understanding of this same result. - Being clear, precise and rigorous in communicating to be able to : ' Write a mathematical text according to the conventions of the discipline. ' Structure an oral presentation, highlight key elements, identify techniques and concepts and adapt the presentation to the listeners' level of understanding. - Learning in an independent manner to be able to : ' Find relevant sources in the mathematical literature. ' Read and understand an advanced mathematical text and locate it correctly in relation to knowledge acquired. Learning outcomes specific to the course. By the end of this activity, students will be able to: - Find, read and understand mathematical texts in an independent way: - perform interdisciplinary bibliographical research - create a summary of documents - interact in an active way with their supervisor. - Write a complete and coherent mathematical text: - write clearly, accurately and pleasingly - give definitions, highlight the main propositions and theorems - illustrate definitions, propositions and theorems by examples and applications - cite sources used and use LaTeX as word processing software. - Make an oral presentation: - choose the important elements and adapt to constraints (audience expectations, time available) - structure an oral presentation, hold the audience's attention, adapt presentation aids to the content - answer questions in a suitable manner *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*

Evaluation methods :	The acquisition of skills will be assessed on the basis of the quality of the written dissertation, of the oral presentation and of the individual assignment. Assessment of the written dissertation will take into account the following elements: - an introduction with reasons, an outline of the dissertation, a conclusion with summary of work and viewpoints - prominence of main results - clarity of and care taken with text, quality of use of LaTeX - mathematical quality of the document (propositions correctly stated, rigorous proofs) and logical connection between the different propositions - relevance and quality of the bibliography used. Assessment of the oral presentation will take into account the following elements: - attention paid to the prerequisites indispensable for an understanding of the subject - suitability of aids employed (board, overhead projector, video projector) - clarity of the presentation and structure of the argument - exposition of a few methods or techniques in the field (for example, a short demonstration or a detailed example) - relevance of replies to questions. The individual assignment will also be assessed by the supervisor on the basis of: - independence, motivation and the student's level of understanding of the subject - originality of the text and summary work in relation to the existing bibliography - respect for the work schedule (diligence, appropriate frequency of meetings, enough reading time for the dissertation) - difficulty of dissertation subject (effort required to absorb material)
Teaching methods :	Students are invited to work individually on a subject of their choice, in such a way as to produce a text individually and to make a presentation on their work. Each student is asked to make contact with a supervisor who will offer a subject with mathematical content, suggestions for work to be done and bibliographical pointers. After studying the recommended material (and possibly other mathematical texts found during bibliographical research) students will move on to the stage of composing the dissertation and preparing the oral presentation. In the talk, students must make a presentation of their dissertation. Students will be asked to give a brief demonstration that highlights the concepts and methods of the chosen subject.
Faculty or entity in charge:	MATH

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Bachelor in Mathematics	MATH1BA	7	LMAT1221 **and** LMAT1222 **and** LMAT1323 **and** LMAT1231 **and** LMAT1241	