

CT5102	Capita Selecta Materials Science	3
<b>Instructor</b>	Alex Fraaij	
<b>Instructor</b>	Hans Pietersen	
<b>Education Period</b>	4th Education Period	
<b>Exam Period</b>	4th Exam Period, Exam by appointment	
<b>Course Language</b>	English	
<b>Course Contents</b>	<p>This course is for students who want to get their MSc Degree in Mechanics, Materials and Constructions and who want to learn more about some aspects concerning rehabilitation, maintenance and materials control. Topics are: composite materials, coatings and paints, renovation and maintenance of concretes, microscopical techniques in materials control such as petrographic analyses in concrete control and the RILEM method for "Failure and Effect Mode Analyse". The course is especially suited for those students who want to work in the field of consultancy in maintenance and building (construction/material application) problems. The course is meant for students who want to focus on consultancy in the building practice (engineering offices, consultancy offices, contractors).</p> <p>Each year three topics will be offered to the students. Each topic includes theory and a case from the building practice preferentially supported by an expert from the field. For two topics the student will prepare a case and present this to the other students. Examples of possible topics are:</p> <p>Composites in constructions (laminates, fibre reinforced materials): constitutive equations, failure, long-term behaviour and fatigue, durability</p> <p>Coatings and paints in civil engineering practice in protection and maintenance. Special attention will be on failure of coatings</p> <p>Renovation and maintenance of concrete in building practice</p> <p>Microscopic research on materials in the microlab of the Faculty. Special attention will be on petrographic analyses of concrete for consultants in building practice. This topic is coupled with a short laboratory practical in the microlab for exercising the thin-section techniques and optical microscopy</p> <p>Failure and Effect Mode Analyses for the prediction of the long term behaviour of materials in a construction</p>	
<b>Study Goals</b>	<p>After successful completion of the course the student will be able to be an active participant in the discussions with experiments of the field. The student will be able to couple theoretical aspects with practical aspects and the student will have the tools to act successfully as a consultant in the specific field. The student is familiar with petrographic techniques and can prepare samples and analyse the results.</p>	
<b>Education Method</b>	lectures, case study and practical in the microlab of the Faculty	
<b>Literature and Study Materials</b>	<p>syllabus: Lecture notes "Petrographic research" Available at the section secretariat.</p> <p>obligatory other materials: Rilem Method Failure Mode Analyses Available at the section secretariat.</p> <p>recommended other materials: - Powerpoint presentations (from the instructor) - Blackboard Recommended but not obliged: "The petrography of Concrete"</p>	
<b>Assessment</b>	Oral presentation of the case prepared by the student. The practical output will be part of the tentamination.	
<b>Remarks</b>	The cases must be completed and in the possession of the course leader	
<b>Judgement</b>	Average of cases and presentation + discussion after the presentation + practical output	