MSE-420 **Cementitious materials (advanced)**

Scrivener Karen

| Cursus | Sem. | Type |
|---|---|---|
| Materials Science and Engineering | MA1, MA3 | Opt. |

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|---|---|
| Language of teaching | English |
| Credits | 2 |
| Session | Winter |
| Semester | Fall |
| Exam | During the semester |
| Workload | 60h |
| Weeks | 14 |
| **Hours** | **2 weekly** |
| Courses | 2 weekly |
| **Number of positions** | |


## Summary

Discussion of topical subjects related to the current use of cementitious materials. Through a guided literature survey prepare a presentation in a group on a topical issue


## Content

1. Introduction - overview of structure of cementitious materials, advantages and disavantages.
2. Hydration.
3. Supplementary cementitious materials.
4. Understanding and characterising the pore structure of cementitious materials.
5. Transport properties.
6. Durability issues.
7. Calcium aluminate cements.
8. Ultra high performance concrete.
9. Admixtures and rheology

## Keywords

Cementitious materials, hydratin, durability, characterisation methods

## Learning Prerequisites

### Required courses

MSE 322 - Building Materials and Laboratory work

### Recommended courses

Building materials

## Learning Outcomes

By the end of the course, the student must be able to:

- Explain Chemical and physical processes underlying the behaviour of cementitious materials
- Interpret scientific papers related to cementitious materials
- Analyze appropriatness of different characterisation techniques
- Analyze economic and ecological appropriateness of different materials solutions
- Design lecture on chosen topic

## Transversal skills

- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Evaluate one's own performance in the team, receive and respond appropriately to feedback.
- Negotiate effectively within the group.
- Access and evaluate appropriate sources of information.
- Make an oral presentation.
- Summarize an article or a technical report.
- Write a literature review which assesses the state of the art.

## Teaching methods

Ex cathedra
group discussion of papers from literature

## Expected student activities

attend lectures
find relevant paper from search engines
present summary of findings
prepare lecture in team

## Assessment methods

contribution to discussion sessins throughout course
presentation at intermediate and final stages

## Supervision

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|---|---|
| Assistants | Yes |
| Forum | No |

## Resources

### Bibliography

Via search engines, e.g. scopus

### Notes/Handbook

Handouts for lectures to be annotated by students