**CHEM-E5125 COURSE INFORMATION, 2023**

Thin Film Technology (Master’s Level), 5 cr.

Course consists of Teaching, Student activities and Exam.

Course contacts:

Responsible teacher: Jari.Koskinen@aalto.fi

Course Assistant: n.n@aalto.fi

**COURSE GRADING CRITERIA:**

Exam: 40%

Student Activities: 60%

**SECTION EXPLANATION:**

**LECTURES:** live lectures

Lectures will be held as per schedule given below. Course material will be made available on MyCourses in advance. Students are expected to study before they attend the lecture. Every lecture session will start by testing the basics in the form of a simple quiz. You need a laptop for the quiz. The lecture will focus on the main details for selected topic for that day. Students are requested to have the lecture slides with them and ask clarifications during the lecture period.

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| --- | --- | --- | --- |
| **Date** | **Time** | **Place** | **Lecture Schedule** |
| 10/01/2023 | 12.00 – 14.00 | D311 | Introduction  **/** Jari Koskinen |
| 13/01/2023 | 12.00 – 14.00  | D311 | Q1, Vacuum technology/ Jari Koskinen  |
| 17/01/2023 | 12.00 – 14.00 | D311 | Q2, PVD 1 / Jari Koskinen |
| 20/01/2023 | 12.00 – 14.00 | D311 | Q3, PVD 2 / Jari Koskinen |
| 24/01/2023 | 12.00 – 14.00 | D311 | Q4, Characterisation / Jari Koskinen  |
| 27/01/2023 | 12.00 – 14.00 | D311 | Q5, CVD and ALD / Sami Franssila |
| 31/01/2023 | 12.00 – 14.00 | D311 | Q6, Reactors and production methods/ Sami Franssila |
| 3/02/2023 | 12.00 – 14.00 | D311 | Application 1 discussion / Jari Koskinen  |
| 7/02/2023 | 12.00 – 14.00 | D311 | Application 1 Students Walking Gallery  |
| 10/02/2023 | 12.00 – 14.00 | D311 | Application 2 discussion / Jari Koskinen |
| 14/02/2023 | 12.00 – 14.00 | D311 | Application 2 Students Walking Gallery |
| 17/02/2023 | 12.00 – 14.00 | D311 | 5 best VLOG presentations |
| 24/02/2023 | 9.00 – 13.00 | KE2 | Exam  |
|  |  |  |  |
|  |  |  |  |

**STUDENT ACTIVITIES:** Student activities consists of the following:

1. Student must participate in daily quizzes held before the lecture. The quiz will be of 15 min duration and fixed number of questions have to be answered shortly. The quizzes will be graded and will make up 15% of the points for course grade.
2. Student has to make a VLOG (Video log) of maximum 10 min duration and submit to Mycourses on or before 11/02/2023. The topic of the VLOG will be given and is related to the theoretical and practical aspects of the course. You will create your own original video/animations and to find videos from internet and stick them together to make your VLOG. The VLOG will be graded and will make up 25% points for the course grade. Maximum of 5 best VLOGs will be presented in final lecture and bonus points will be awarded to these students.
3. Student has to participate in walking gallery with their group. The group will have application related articles to read previously. At the start of the gallery the group will have 20-30 mins to make their “poster” on paper. At the end of this time the groups will rotate and discuss other posters. Activity points are granted based on walking gallery activity. Walking gallery points form 20% of the points for course grade.

**POINT SCHEME:** The points earned for students in the course is given below.

**EACH QUIZ** \*

|  |  |  |  |
| --- | --- | --- | --- |
| **Student Participation** | Not Attending | Less than half the answers correct | Between half and all the answers correct |
| **Points awarded** | 0 | 2 | 5 |

**VLOG (Video Log)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Student Participation** | No Submission | Acceptable VLOG submitted | VLOG selected as one of best VLOG |
| **Points awarded** | 0 | 0 - 25 | Bonus +5 |

**EACH WALKING GALLERY (group work but individual grading)**\*

|  |  |  |  |
| --- | --- | --- | --- |
| **Student Participation** | Not Attending | Low  | Active  |
| **Points awarded** | 0 | 5 | Maximum 10 |

**MORE DETAILS CAN BE FOUND FROM RELAVENT SECTION IN MYCOURSES.**

**READING/REFERENCE MATERIAL:**

Fundamentals of Vacuum Technology (Leybold ltd):

<https://pdf.directindustry.com/pdf/leybold/fundamentals-vacuum-technology/13869-840981.html>

Plenty of books available to read:

<https://app.knovel.com/kn>

For example:

Materials Science of Thin Films - Deposition and Structure (2nd Edition) by Ohring

Handbook of Plasma Processing Technology - Fundamentals, Etching, Deposition, and Surface Interactions

More titles can be found by going to Aalto library site (<http://lib.aalto.fi/en/> ) and entering search term for example “Thin film process” or “Physical Vapour Deposition”.