COURSE INFORMATION

The course is given by the **Department of Biomedical Engineering** (IMT).

The lectures, lessons and assignments will be given at campus Valla.

Course Code: TBMI26
Credits: 6 hp

Course book: There is no dedicated book that is followed in the course. Links to recommended online reading material is found in the document called *Lecture Plan and Recommended Reading Material.*

Student Groups: The lessons and the assignments are divided into two different groups. Please sign up to either Group A or Group B **here**.

Teacher Team:

Magnus Borga	Examiner & Lecturer	**E-mail**
Ola Friman	Lecturer	**E-mail**
Anette Karlsson	Lessons & Assignments	**E-mail**
Thobias Romu	Lessons & Assignments	**E-mail**
Mariana Bustamante	Lessons & Assignments	**E-mail**
Martin Hultman	Assignments	**E-mail**

LECTURES

Prior each lecture, lecture notes will be presented under Course Documents/Lectures. Links to recommended reading is found in the document “lecture plan and recommended reading material”.

Lecture 1: Introduction

Lecture 2: Supervised learning – Linear classification

Lecture 3: Supervised learning – Neural Networks

Lecture 4: Supervised learning – Ensemble learning & Boosting

Lecture 5: Supervised learning: Deep Learning

Lecture 6: Unsupervised learning: Dimensionality Reduction

Lecture 7: Kernel Methods

Lecture 8: Clustering & Genetic Algorithms

Lecture 9: Reinforcement learning

LESSONS

Each Lecture is followed by a lesson. A lesson compendium is found under Course Documents/Lessons and contains all material for the lessons. As there are many students, you are only allowed to join the lesson for your group (A or B).

Lesson 1:	Introduction	Thobias Romu
Lesson 2:	Supervised learning – Linear classification	Thobias Romu
Lesson 3:	Supervised learning – Neural Networks	Thobias Romu
Lesson 4:	Supervised learning – Ensemble learning & Boosting	Anette Karlsson
Lesson 5:	Recap session	Thobias/Anette
Lesson 6:	Unsupervised learning: Dimensionality Reduction	Anette Karlsson
Lesson 7:	Kernel Methods	Anette Karlsson
Lesson 8:	Clustering & Genetic Algorithms	Mariana Bustamante
Lesson 9:	Reinforcement learning	Mariana Bustamante

ASSIGNMENTS

There are 4 assignments, A1 to A4, that must be completed to pass the course. Assignment 1, 2 and 4 will be examined via written reports. A3 will be examined on any computer session.

You can work alone or in pairs, larger groups are not allowed.

The assignments are solved using Matlab. A quick reference with common Matlab commands is available **here**. More Matlab help is found **here**.

SUPPORT AND HELP

There are four scheduled 4h sessions for each of the groups were you can get help and support with the assignments. All times are between 17.15 and 21.00.

	Group A session Times:	**Group B session Times:**
1	Wednesday January 25	Thursday January 26
2	Wednesday February 8	Thursday February 9
3	Wednesday February 15	Wednesday February 22
4	Wednesday March 1	Wednesday March 8

ATTENDANCE AND REPORTING

The reports are uploaded using LISAM. If you are working in pairs, then you need to create a group and perform a group submission via LISAM. The reports are assessed on contents and less on layout/form. Please answer the stated questions and include the requested figures. In addition you also have to send the relevant Matlab code you have written to solve the assignments. Please do not include the code within the report! Put it in whole as an appendix. Note that there are four 4h sessions scheduled where you can get help with the assignments. Attendance to these sessions is not mandatory, but **strongly recommended.** Note also that different assignmnents will require different amount of effort.

Listed below are the deadlines for submitting the reports in LISAM:

Assignment 1:	February 8, at 11.30 pm
Assignment 2:	February 22, at 11.30 pm
Assignment 3:	March 13, at 11.30 pm

ASSIGNMENT INSTRUCTIONS

The instructions for all assignments are found under course documents/assignments