Studies Plan

EDRS - Robotics, Control, and Intelligent Systems 2023-24

Core courses

Courses				Exam	Credit
Language	*Code*	*Section*	*Teacher*		
Design of experiments (a) - Fall semester *(Next time : Fall 2024)*					
E	*ENG-606(a)*	*EDRS*	*Fuerbringer*	*Project report*	*4*
Dynamic programming and optimal control *(Next time : Fall 2023)*					
E	*ENG-639*	*EDRS*	*Summers*	*Project report*	*1*
Topics in Autonomous Robotics *(Next time: Spring 2025)*					
E	*ENG-615*	*EDRS*	*Alahi Bouri Ijspeert Micera Paik Sakar Shea Zamir*	*Project report*	*4*

Other doctoral courses (EDOC)

Courses				Exam	Credit
Language	*Code*	*Section*	*Teacher*		
Engineering of musculoskeletal system and rehabilitation *(Next time Fall 2024)*					
E	*BIO-687*	*EDBB*	*Antoniadis Crevoisier Favre Goetti Martin Pioletti Terrier*	*Multiple*	*3*
Frontiers of Deep Learning for Engineers *(Doing a PhD in deep learning is a pre-requisite. Next time Fall 2023, max 15 part. Priority to EDCE and EDRS students. Registration link available below under "Notes".)*					
E	*CIVIL-611*	*EDCE*	*Alahi Fink Tuia*	*Oral presentation*	*4*
Linear system theory *(Next time: Fall 2024)*					
E	*EE-611*	*EDEE*	*Müllhaupt*	*Multiple*	*4*
Machine Learning for Engineers *(Next time: Fall 2025)*					
E	*EE-613*	*EDEE*	*Calinon Canévet Odobez Villamizar*	*Multiple*	*4*
Optimal Control for Dynamic Systems *(Next time: Spring 2024)*					
E	*EE-736*	*EDEE*	*Faulwasser Jiang*	*Oral presentation*	*3*
Optimization and simulation *(Next time: Spring 2024)*					
E	*MATH-600*	*EDCE*	*Bierlaire*	*Multiple*	*4*

Master courses

Courses				Exam	Credit
Language	*Code*	*Section*	*Teacher*		
Adaptation and learning					
E	*EE-566*	*EL*	*Sayed*	*Written*	*4*
Advanced control systems					
E	*ME-524*	*GM*	*Karimi*	*Written*	*3*

Advanced machine learning
(Pas donné en 2023-24. Cours donné tous les deux ans.)

E	*MICRO-570*	*MT*		*Oral*	*4*

Advanced probability and applications

E	*COM-417*	*SC*	*Shkel*	*Written*	*8*

Advanced satellite positioning
(Pas donné en 2023-24)

E	*ENV-542*	*SIE*		*During the semester*	*4*

Aerial robotics

E	*MICRO-502*	*MT*	*Floreano*	*Written*	*4*

Applied machine learning

E	*MICRO-455*	*MT*	*Billard*	*Written*	*4*

Basics of mobile robotics

E	*MICRO-452*	*MT*	*Mondada*	*Written*	*4*

Computational motor control

E	*CS-432*	*SV*	*Ijspeert*	*During the semester*	*4*

Computer vision

E	*CS-442*	*IN*	*Fua*	*Written*	*6*

Convex optimization

E	*MGT-418*	*MTE*	*Kuhn*	*Written*	*5*

Deep learning

E	*EE-559*	*EL*	*Cavallaro*	*During the semester*	*4*

Deep learning for autonomous vehicles

E	*CIVIL-459*	*GC*	*Alahi*	*During the semester*	*6*

Distributed intelligent systems
(Pas donné en 2023-24)

E	*ENG-466*	*SIE*		*Oral*	*5*

Dynamical system theory for engineers
(Cours biennal, pas donné en 2023-24)

E	*COM-502*	*SC*		*Written*	*6*

Evolutionary robotics

E	*MICRO-515*	*MT*	*Floreano*	*Written*	*3*

Image analysis and pattern recognition

E	*EE-451*	*EL*	*Bozorgtabar Thiran*	*During the semester*	*4*

Image processing I

E	*MICRO-511*	*MT*	*Unser Van De Ville*	*Written*	*3*

Image processing II

E	*MICRO-512*	*MT*	*Sage Unser Van De Ville*	*Written*	*3*

Industrial automation
(This course can be taken by students of all engineering sections.)

E	*CS-487*	*SC*	*Sommer Tournier*	*Oral*	*3*

Intelligent agents

E	*CS-430*	*IN*	*Faltings*	*During the semester*	*6*

Interaction design

E	*CS-486*	*IN*	*Pu*	*During the semester*	*6*

Lifecycle performance of product systems

E	*ME-516*	*GM*	*Friot*	*During the semester*	*3*

Machine learning

E	*CS-433*	*IN*	*Flammarion Jaggi*	*Written*	*8*

Mathematical foundations of signal processing
(cours pas donné en 2023-24)

E	*COM-514*	*SC*		*Written*	*6*

Mechanical product design and development					
E	*ME-410*	*GM*	*Paik*	*During the semester*	*5*
Micro/Nano robotics					
E	*ME-436*	*GM*	*Sakar*	*During the semester*	*3*
Mobile networks *(pas donné en 2023-24)*					
E	*COM-405*	*SC*		*Written*	*8*
Model predictive control					
E	*ME-425*	*GM*	*Jones*	*Written*	*4*
Multi-agent learning and control					
E	*ME-429*	*GM*	*Kamgarpour*	*During the semester*	*4*
Networked control systems					
E	*ME-427*	*GM*	*Ferrari Trecate*	*Written*	*3*
Optimal decision making					
E	*MGT-483*	*MTE*	*Kuhn*	*Written*	*4*
Robotics practicals					
E	*MICRO-453*	*MT*	*Billard Boero Bouri Dillenbourg Floreano Kneib Micera Mondada Sakar Skaloud*	*During the semester*	*2*
Sensor orientation					
E	*ENV-548*	*SIE*	*Skaloud*	*During the semester*	*4*
Sensors in medical instrumentation					
E	*EE-511*	*EL*	*Chételat Ionescu*	*Written*	*3*
Statistical machine learning					
E	*MATH-412*	*MA*	*Obozinski*	*Written*	*5*
Statistical signal and data processing through applications					
E	*COM-500*	*SC*	*Ridolfi*	*Written*	*8*
System identification					
E	*ME-421*	*GM*	*Karimi*	*Written*	*3*
System programming for Systems-on-chip					
E	*CS-473*	*IN*	*Kluter*	*During the semester*	*6*
Virtual reality					
E	*CS-444*	*IN*	*Boulic*	*During the semester*	*6*