

## Student Assessment

	Theory	PROJECT
Option 1	3 individual written exams 60 %	Team project 40% Controlled model in simulation
Option 2	3 individual written exams 40 %	Team project 60% Controlled model in simulation <b>PLUS: 3D Virtual object of the controlled system</b>
Workshops	Deliver all workshops, 5 pts. for the first or second exam.	



These are the projects suggested for this semester:

Suggested Project		
1	Doble inverted Pendulum	<a href="https://deng-haoyang.github.io/ParNMPC/exp_double_pendulum/">https://deng-haoyang.github.io/ParNMPC/exp_double_pendulum/</a>
2	Segway	<a href="https://people.kth.se/~crro/segway_challenge/model.html">https://people.kth.se/~crro/segway_challenge/model.html</a>
3	Furuta's Pendulum	<a href="https://www.hindawi.com/journals/jcse/2011/528341/">https://www.hindawi.com/journals/jcse/2011/528341/</a>
4	Quadruple Tank Process	<a href="http://article.sciencepublishinggroup.com/html/10.11648.j.ijssam.20160104.11.html">http://article.sciencepublishinggroup.com/html/10.11648.j.ijssam.20160104.11.html</a>
5	Cable-Suspended Parallel Robots	<a href="https://www.semanticscholar.org/paper/Cable-suspended-Parallel-Robot-hanged-on-the-four-%E2%80%93-Filipovic/c53466f14a2edbe3b92f17e110264adc306dc943">https://www.semanticscholar.org/paper/Cable-suspended-Parallel-Robot-hanged-on-the-four-%E2%80%93-Filipovic/c53466f14a2edbe3b92f17e110264adc306dc943</a>
6	Ball and Plate	<a href="https://www.researchgate.net/publication/316628039_Design_and_control_of_ball_on_plate_system">https://www.researchgate.net/publication/316628039_Design_and_control_of_ball_on_plate_system</a>
7	3DOF Helicopter model	<a href="https://www.quanser.com/products/3-dof-helicopter/">https://www.quanser.com/products/3-dof-helicopter/</a>
8	Flexible joint driven by DC motor	<a href="https://www.chegg.com/homework-help/questions-and-answers/figure-1-shows-flexible-joint-driven-dc-motor-angular-position-motor-output-shaft-relative-q35654607">https://www.chegg.com/homework-help/questions-and-answers/figure-1-shows-flexible-joint-driven-dc-motor-angular-position-motor-output-shaft-relative-q35654607</a>
9	Magnetic Levitation model	<a href="https://www.sciencedirect.com/science/article/pii/S1110016817302594">https://www.sciencedirect.com/science/article/pii/S1110016817302594</a>
10	Bicycle model	<a href="https://www.cds.caltech.edu/~murray/amwiki/index.php/Bicycle_dynamics">https://www.cds.caltech.edu/~murray/amwiki/index.php/Bicycle_dynamics</a>

The project must be executed by teams of two (2) students

Example of virtual plant course schedule

<https://recreation.ee/project/control-objects-virtual-reality/>