Website: http://bioinformatics.nl/courses/BioSB-AfBN/
Material: http://bioinformatics.nl/courses/BioSB-AfBN/material/

1. Monday	**26-6-2023**	**B0435**	**Networks in biology**
Dick de Ridder	09.00-09.30	Lecture	Introduction and presentation.
Dick	09.30-10.00	Lecture	A brief overview of molecular biology: DNA, RNA, proteins and metabolites. High-throughput measurement techniques and databases available
	10.00-10.15	*Break*	
Dick	10.15-11.00	Lecture	The role of networks in molecular biology. Examples of biological networks. Network descriptions.
	11.00-11.15	*Break*	
Dick	11.15-12.15	Lecture	Network properties, topology and visualization. Network motifs
	12.15-13.15	*Lunch*	
Dick	13.15-15.00	Lab	Graph visualization and properties
	15.00-15.15	*Break*	
Dick/Aalt-Jan	15.15-16.30		Presentations by students on (networks in) their research (5m + questions): present yourself, your project and what you hope to learn in 3 slides
	16.30-?	BioCafé	

2. Tuesday	**27-6-2023**	**B0217**	**Network models and inference**
Edoardo Saccenti	09.00-09.45	Lecture	Network models: ODE based, Boolean, Bayesian and relevance networks
	09.45-10.00	*Break*	
Edoardo	10.00-11.15	Lab	Hands on exploration of some frequently used network models
	11.15-11.30	*Break*	
Edoardo	11.30-12.15	Lecture	Approaches for reconstruction of biological networks from measurement data
	12.15-13.15	*Lunch*	
Edoardo	13.15-14.30	Lab	Hands on building networks from measurement data
	14.30-14.45	*Break*	

Edoardo/Dick	14.45-15.45	Paper reading	
	15.45-16.00	*Break*	
Edoardo/Dick	16.00-17.00	Paper discussion	

3. Wed.	**28-6-2023**	**B0435**	**Network-based data analysis**
Aalt-Jan	09.00-09.45	Lecture	Network clustering, community finding, network alignment.
	09.45-10.00	*Break*	
Aalt-Jan	10.00-11.15	Lab	Network clustering (cytoscape and/or igraph)
	11.15-11.30	*Break*	
Aalt-Jan	11.30-12.15	Lecture	Refresher supervised learning; Network-based stratification. Network-based classification and enrichment testing.
	12.15-13.15	*Lunch*	
Aalt-Jan	13.15-14.30	Lab	Network-based classification
	14.30-14.45	*Break*	
Aalt-Jan	14.45-15.45	Paper reading	
	15.45-16.00	*Break*	
Aalt-Jan	16.00-17.00	Paper discussion	

4. Thursday	**29-6-2023**	**B0435**	**Network integration**
Dick	09.00-09.45	Lecture	Network integration: goals and approaches. Integration as a prediction problem. Probabilities, distances, kernels.
	09.45-10.00	*Break*	
Dick	10.00-11.15	Lab	Network integration
	11.15-11.30	*Break*	
Olga Ivanova	11.30-12.15		Inferring signaling networks with prior knowledge and RNA-seq: TF activity estimation, pathway activity estimation, ILP principles and implementation

	12.15-13.15	*Lunch*	
Olga	13.15-17.00		Practical signaling network inference with DecopleR(Dorothea/Viper), Progeny and Carnival (saez lab tools)
5. Friday	**30-6-2023**	**B0432**	**Network modelling and execution**
Anton Feenstra	09.00-9.45	Lecture	Introduction to executable modelling
	09.45-10.00	*Break*	
Anton	10.00-10.30	Lecture	Petri nets for biological systems
Olga Ivanova	10.30-11.15	Lecture	Exhaustive modeling of epistatic interactions
	11.15-11.30	*Break*	
Olga/Anton	11.30-12.15	Lecture	Validation of logical models of epistasis
	12.15-13.15	*Lunch*	
Anton/Olga	13.15-15.00	Paper discussion	
	15.00-15.15	*Break*	
Anton/Olga	15.15-16.30	Lab	Practical network modeling