MASTER CURRICULUM – NF – 2023/2024

Compulsory courses NF				
Code	**Course**	**EC**	**Q**	**Timeslot**
3MF513	Homologation for fusion	5	GS1	D
3MF100	Fusion on the back of an envelope	5	GS1	E
3MF110	Magnetic confinement and MHD of fusion plasmas	5	GS2	C
3MF120	Fusion reactors: extreme materials, intense plasma wall interaction	5	GS4	E

Internship & Graduation			
Code	**Course**	**EC**	**Timeslot**
3NFA45	Graduation project Science and Technology of Nuclear Fusion	45	X
3NFA60	Graduation project Science and Technology of Nuclear Fusion	60	X
3NFS15	Internship Science and Technology of Nuclear Fusion	15	X
3NFIDD225	Combined graduation project - Science and Technology of Nuclear Fusion part	22,5	X
3NFIDD30	Combined graduation project - Science and Technology of Nuclear Fusion part	30	X

Free elective				
Code	**Course name**	**EC**	**Q**	**Timeslot**
3MC010	Career development	2,5	GS2+4	D1,C2

NF Track Electives - Science and Technology of Nuclear Fusion - in AP				
Code	**Course**	**EC**	**Q**	**Timeslot**
3MB010	Physics of plasma and radiation	5	GS1	A
3MA010	Computational and mathematical physics	5	GS1	B
3MS010	Advanced fluid dynamics	5	GS1	E
3MA020	Advanced electrodynamics	5	GS2	B
3MP120	Astrophysics	5	GS2	D
3MQ100	Photonics and modern optics	5	GS2	C
3MP140	Accelerators and beams	5	GS3	C
3MF130	Heating and diagnosing fusion plasmas	5	GS3	B
3FSX0	Subatomic physics	5	Q3	D
3MT120	Advanced computational fluid and plasma dynamics	5	GS3	E
3EEX0	Electrodynamics	5	Q3	E
3MP180	Optical diagnostics: techniques and applications	5	GS4	A

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NF Track Electives - Science and Technology of Nuclear Fusion - in EE				
Code	**Course name**	**EC**	**Q**	**Timeslot**
5CSA0	Modelling dynamics	5	GS1	D
5CTA0	Statistical signal processing	5	GS1+GS3	A,B
5LEE0	Electrical power engineering and system integration	5	GS1	D
5SPB0	Microwave engineering and antennas	5	GS2	E2,E3
5AT010	Electrical components	2,5	GS2	C2
5SVA0	High voltage technology	5	GS2	A1
5LMC0	Robust control	5	GS3	E
5LMB0	Model predictive control	5	GS3	A1
5LIJ0	Embedded control systems	5	GS3	E1
5SVB0	Electromagnetic compatibility	5	GS3	E
5APA0	Power electronics	5	Q3	D
5LEG0	Pulsed power technology	5	GS3	D
5LFB0	Terahertz systems	5	GS4	E
5XWA0	Power system analysis and optimization	5	Q4	E

NF Track Electives - Science and Technology of Nuclear Fusion - in WB				
Code	**Course name**	**EC**	**Q**	**Timeslot**
4CM10	System theory for control	5	GS1	B
4CM00	Control engineering	5	GS1,GS3	C,E
4MM10	Advanced computational continuum mechanics	5	GS2	A
4EM70	Sustainable energy sources	5	GS2	A
4CM60	Advanced motion control	5	GS2	B
4SC000	Optimal control and dynamic programming	5	GS2	D
4MM20	Computational and experimental micromechanics	5	GS2	D
4SC010	Control and operation of tokamaks	2,5	GS2	E2,E3
4DM30	Non-linear control	5	GS3	A
4SC030	Control of magnetic instabilities in fusion plasmas	2,5	GS4	B
4MM50	Fracture mechanics	5	GS4	C
4SC020	Mobile robot control	5	GS4	D2,D3

NF Masterclasses (first week of the quarter)				
Code	**Course name**	**EC**	**Q**	**Timeslot**
3MF501	Fusion Masterclass: Smarter than ITER	2,5	GS2	X
3MF504	Fusion Masterclass: Deployment of fusion power	2,5	GS2	X
3MF502	Fusion Masterclass: Computational fusion	2,5	GS3	X
3MF506	Fusion Masterclass: Design of a fusion power plant	2,5	GS4	X
3MF507	Fusion Masterclass: Turbulence and transport in fusion plasmas	2,5	GS3	X