

Programme of the 6th Karlsruhe International School on Fusion Technologies



Monday 03/09/2012

09:00-09:30	Opening of the summer school, overview on the lectures, organisational matters	B. Keim	
Topic 1: Introduction to fusion			
9:30-10:30	Future energy and the role for fusion	D. Ward	
10:30-10:45	coffee break		
10:45-11:30	Fusion and the characteristics of fusion power plants	D. Ward	
11:30-12:15	Basic physics of a tokamak	D. Ward	
Topic 2: Safety, Socioeconomics and Waste			
13:45-15:15	General safety analysis approach and techniques	L. Di Pace	
15:15-15:30	coffee break		
15:30-16:30	The economic, safety and environmental attributes of fusion power plants	W. Gulden	

Tuesday 04/09/2012





Topic 3: Introduction to plasma physics			
9:00-10:30	Core Physics	B. Pégourié	
10:30-10:45	coffee break		
10:45-11:30	Edge Physics and Plasma-wall interactions	B. Pégourié	
Topic 4: Plasma heating technology and plasma diagnostics			
11:30-12:15	Gyrotrons	S. Kern	
13:45-14:15	ECRH upper port plugs and diamond window technology I	D. Strauß	
14:15-14:45	ECRH upper port plugs and diamond window technology II	T. Scherer	
14:45-15:15	ECRH upper port plugs and diamond window technology II	S. Schreck	
15:15-15:30	coffee break		
15:30-16:15	Introduction to neutral beam injection technology	I. Day	

Wednesday 05/09/2012






9:00-10:30	Wendelstein 7-X and steady state plasma heating	R. Wolf	
10:30-10:45	coffee break		
10:45-12:15	Plasma diagnostics in fusion devices	S. Hacquin	
Topic 5: Technology of magnetic confinement			
13:45-15:00	Structural materials at cryogenic temperatures	K.-P. Weiss	
15:00-15:15	coffee break		
15:15-16:30	Cryogenics	H. Neumann	

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Thursday 06/09/2012

09:00-10:30	Superconductivity and magnet technology	K.-P. Weiss	
10:30-10:45	coffee break		
10:45-12:15	Visit to TOSKA + CultKA	S. Drotziger	
13:45-15:00	High temperature superconductivity	M. Vojenciak	
15:00-15:15	coffee break		
15:15-16:30	Manufacturing of superconducting magnets	E.Theisen	

Friday 07/09/2012







Topic 6: The fuel cycle of a fusion reactor			
09:00-10:00	Tritium Handling	D. Demange	
10:00-11:00	Tritium plant of a Fusion Reactor	D. Demange	
11:00-11:15	coffee break		
11.15-12:45	Visit to TLK	D. Demange	
13:45-15:00	ITER fuelling system	S. Maruyama	
15:00-15:15	coffee break		
15:15-16:30	Vacuum pumping systems	C. Day	

Sunday 09/09/2012

Excursion to Speyer
11:30-22:00









Monday 10/09/2012






Topic 7: Neutronics and activation analysis			
9:00-10:30	Fusion neutronics - methods, data, applications- Lecture I+II	U. Fischer	
10:30-10:45	coffee break		
10.45-11:30	Fusion neutronics - methods, data, applications- Lecture III	U. Fischer	
Topic 8: Materials development for fusion reactors			
11.30-12:15	Structure and texture of metallic solids	M. Rieth	
13:45-14:30	High temperature materials	M.Rieth	
14:30-15:15	Interaction of neutron radiation and fusion materials	M. Rieth	
15:15-15:30	coffee break		
Topic 9: Divertors			
15:30-16:15	Divertors	J. Reiser	

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Tuesday 11/09/2012

9:00-10:00	Manufacturing processes for High Heat Flux Components	E. Visca	
10:00-11:00	Fabrication of divertor cassettes for ITER	G. P. Sanguinetti	
11:00-11:15	coffee break		
Topic 10: Blankets			
11:15-11:45	Basics of breeding blanket technology	L.V. Boccaccini	
11:45-12:45	Solid breeder blanket	L.V. Boccaccini	
13:45-15:15	Liquid metal blanket	I. Ricapito	
15:15-15:30	coffee break		
15:30-16:30	Magnetohydrodynamics of liquid metals	L. Bühler	




Wednesday 12/09/2012

9:00-10:00	Water cooled Plasma facing components	R. Mitteau	
10:00-10:15	coffee break		
10:15-12:00	Visit to HELOKA facilities	F. Arbeiter/ B. Ghidersa	
Topic 11: Remote handling, maintenance scheme			
13:15-14:45	Remote handling maintenance scheme	E. Villedieu	
14:45-15:30	Assembling of Tokamak components	E. Bogusch	
15:30-15:45	coffee break		
15:45-16:30	Availability considerations for future fusion power plants	E. Bogusch	












Thursday 13/09/2012

Topic 12: Operating and planned facilities			
9:00-9:45	Tore Supra	J. Bucalossi	
9:45-10:30	JT-60SA	J. Bucalossi	
10:30-10:45	coffee break		
10:45-12:15	The Engineering of JET	V. Riccardo	
13:45-15:15	ITER	R. Raffray	
15:15-15:30	coffee break		
15:30-16:30	Exhibition of TBM Manufacturing Mock Ups	J. Rey	

Friday 14/09/2012

09:00-10:00	DEMO and the route to fusion power(part 1)	D. Stork	
10:00-11:00	DEMO and the route to fusion power(part 2)	D. Stork	
11:00-11:15	coffee break		
11:15-12:00	Final discussion, hand-out of certificates and closing of the summer school	B. Keim	

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	Karlsruhe Institut of Technology
	Culham Centre for Fusion Energy
	Commissariat à l'Energie Atomique et aux énergies alternatives
	AREVA NP GmbH
	Italian National Agency for New Technology, Energy and Sustainable Economic Development
	Max-Planck-Institute for Plasma Physics
	Babcock Noell GmbH
	ITER Organization
	Fusion for Energy (F4E)
	AnsaldoEnergia
	Austrian Academy of Science