

Tenth International Accelerator School for Linear Colliders – Curriculum (v1, 7/12/2016)

8 – 19 December, 2016, Teijin Academy Fuji, Susono, Shizuoka, Japan

Daily Schedule

Breakfast	07:30 – 09:00
Morning	09:00 – 12:30, including ½-hour break
Lunch	12:30 – 14:00
Afternoon	14:00 – 17:30, including ½-hour break
Tutorial & homework	17:30 – 18:30
Dinner	19:00 – 20:00
Tutorial & homework	20:00 – 22:00

List of Courses (black: required, red, blue and purple: elective)

	Morning	Afternoon	Evening
Thurs 8 Dec		<i>Arrival, registration at KEK</i>	
Fri 9 Dec	ILC	<i>KEK site visit</i>	<i>Reception</i>
Sat 10 Dec	CLIC, Detectors	Joint lecture: Linac basics	Tutorial & homework
Sun 11 Dec	<i>Moving from KEK to Fuji (bus)</i>	Joint lecture: Instrumentation basics	Tutorial & homework
Mon 12 Dec	Course A: Collider beam physics Course B: Warm and cold RF Course C: Collider technology and MDI		Tutorial & homework
Tues 13 Dec	Course A: Collider beam physics Course B: Warm and cold RF Course C: Collider technology and MDI		Tutorial & homework
Wed 14 Dec	Course A: Collider beam physics Course B: Warm and cold RF Course C: Collider technology and MDI		Tutorial & homework
Thurs 15 Dec	<i>Excursion</i>		Tutorial & homework
Fri 16 Dec	Course A: Collider beam physics Course B: Warm and cold RF Course C: Collider technology and MDI		Tutorial & homework
Sat 17 Dec	Course A: Collider beam physics Course B: Warm and cold RF Course C: Collider technology and MDI		Tutorial & homework
Sun 18 Dec	Course A: Collider beam physics Course B: Warm and cold RF Course C: Collider technology and MDI	Study time	Study time
Mon 19 Dec	Final exam	Free time	Banquet; Student Award Ceremony
Tues 20 Dec	<i>Departure</i>		

Program

	Friday, 9 December	Saturday, 10 December	Sunday, 11 December	Monday, 12 December	Tuesday, 13 December	Wednesday, 14 December
Morning 09:00 – 12:30	Welcome Introduction II – ILC (3 hrs)	I2 – CLIC (1.5 hrs) I3 – Detectors (1.5 hrs)	<i>Moving from KEK to Fuji</i>	A1 – Linac (9 hrs) B1 – NC RF (12 hrs) C1 – Instrumentation (6 hrs)	A1 – Linac (cont'd) B1 – NC RF (cont'd) C3 – fs timing (3 hrs)	A1 – Linac (cont'd) B1 – NC RF (cont'd) C5 – MDI (6 hrs)
Afternoon 14:00 – 17:30	<i>KEK site visit</i> <ul style="list-style-type: none"> • <i>STF</i> • <i>ATF</i> • <i>CSF</i> • <i>SuperKEKB</i> • <i>cERL</i> 	ABC1 – Linac basics (3 hrs)	ABC2 – Instrumentation basics (3 hrs)	A2 – Sources (6 hrs) B2 – SC RF (12 hrs) C2 – nm stabilization below 100 Hz (3 hrs)	A2 – Sources (cont'd) B2 – SC RF (cont'd) C4 – Alignment (3 hrs)	A3 – Damping rings (12 hrs) B2 – SC RF (cont'd) C6 – Kickers (3 hrs)
Evening 19:00 – 22:00	<i>Reception</i>	Tutorial & homework	Tutorial & homework	Tutorial & homework	Tutorial & homework	Tutorial & homework

Program (cont'd)

	Thursday, 15 December	Friday, 16 December	Saturday, 17 December	Sunday, 18 December	Monday, 19 December	Tuesday, 20 December
Morning 09:00 – 12:30		A3 – Damping rings (cont'd) B1 – NC RF (cont'd) C1 – Instrumentation (cont'd)	A3 – Damping rings (cont'd) B3 – LLRF (6 hrs) C5 – MDI (cont'd)	A3 – Damping rings (cont'd) Joint C9 & B4 – High efficiency RF power source (3 hrs)	08:00 – 12:30 Final exam (4.5 hrs)	Departure
Afternoon 14:00 – 17:30	<i>Excursion:</i>	A4 – BDS & beam-beam (6 hrs) B2 – SC RF (cont'd) C7 – Feedback (3 hrs)	A4 – BDS & beam-beam (cont'd) B3 – LLRF (cont'd) C8 – Special magnets (3 hrs)	Study time	Free time	
Evening 19:00 – 22:00	Tutorial & homework	Tutorial & homework	Tutorial & homework	Study time	Banquet at 19:00; Student Award Ceremony	

Notes on the Program:

1. There are a total of 11 school days in this year's program, excluding the arrival day (December 8) and the departure day (December 20). The time is divided as follows: 2 days for required courses, 5-1/2 days for elective courses, one day for excursion, 1/2 day for KEK site visit, 1/2 day for transportation from KEK to Fuji, 1/2 day for study time and a final examination day.
2. The required course consists of five lectures: ILC, CLIC, detectors, linac basics and instrumentation basics. Every student must take this course.
3. There are three elective courses: Course A (the red course) is collider beam physics, Course B (the blue course) is warm and cold RF, and Course C (the purple course) is collider technology and machine-detector interface (MDI). They will run in parallel. Each student will choose one of these.
4. The collider beam physics course consists of lectures on four topics: (1) linac, (2) sources, (3) damping rings, and (4) beam delivery system (BDS) and beam-beam effects.
5. The warm and cold RF course consists of lectures on four topics: (1) normal conducting RF, (2) superconducting RF, (3) LLRF and (4) high efficiency RF power source.
6. The collider technology and MDI course is a new addition to this year's school. It has nine topics: (1) instrumentation, (2) nm-stabilization below 100 Hz, (3) fs timing, (4) alignment, (5) MDI, (6) kickers, (7) feedback, (8) special magnets, and (9) high efficiency RF power source.
7. There will be homework assignments, but homework is not counted in the grade. There will be a final examination. Some of the exam problems will be taken from variations of the homework assignments. The exam papers will be graded immediately after the exam and results announced in the evening of December 19 at the student award ceremony.
8. There is a tutorial and homework period every evening. It is part of the curriculum and students are required to attend. Lecturers will be available in the evening of their lecture day during this period.
9. Lecturers have been asked to cover the basics as well as possible. Their teaching material will be made available online to the students ahead of time. Students are strongly encouraged to study this material prior to the beginning of the school.
10. Lecturers of the elective courses are required to provide lecture syllabus as soon as possible in order to help students make their selection.
11. All lecturers are responsible for the design of homework and exam problems as well as the answer sheet. They are also responsible for grading the exams.
12. The award ceremony will honor the top (~10) students based on their exam scores.