PARTNER: **University of Antwerp**

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Schedule for all 4 teacher seminar sessions VERSION: **3**

Teacher Seminar Schedule

2 (+1) (+1) = 4 sessions in total

Each session covers approx. 4 periods of 50 min.
The first two sessions are coupled, the third and the fourth are separated. A teacher can join the group from the beginning, after the second and after the third session. He can also stop after session two.

Materials needed for all sessions:

SC2_teacher_seminar_EN_0A_schedule_all_20071112_VE.doc
SC2_teacher_seminar_EN_0B_checklist_20071112_VE.doc
SC2_teacher_seminar_EN_0C_teaching methods_20071030_WP.ppt
SC2_teacher_seminar_EN_0D_teaching methods_remarks_20070911_WP.ppt

Needed for teacher seminars:

- Room with 1 pc per at the most 3 persons: connected to the internet, CA installed
- Beamer
- Flexible settings of chairs and tables (movable)
- An experimental room (lab) close by

- Papers (A3 and A4)
- Teacher guides
- CA
- Badges for all participants (number+name)

The teacher trainer should carefully read the “Notes” of the slides of SC2_TS4_teaching methods_20071030_WP.ppt : it is indicated what is needed to organise the lesson according to the specific method.

First session: ½ day **TOPIC: Experience the SC2 project**		230 min	**Activities**	**Materials needed**
• Starter experiment (eye catcher)		15	Short show to set the scene	LN, Superconductor (Meissner effect), lattice
• Welcome: What is SC2 + time schedule + content + practical information		15	Presentation + syllabus	Teacher seminar & SC2 project: **SC2_teacher_seminar_EN_1B_intro_1_20071111_WP.ppt**
• What is superconductivity, Aims ▪ Multimedia ⇔ Experiments ▪ Use of ICT (short) ▪ Curriculum implementation		30	Presentation by teacher trainer/ Active participation of teachers (curriculum)	**SC2_teacher_seminar_EN_1C_superconductivity_20071111_WP.ppt** CA, Teacher guide, Demo exp., Curriculum plan
• **"History of superconductivity"** + **"Superconducting materials"**		50	TM1 "**Quiz**" Ppt, includes questions & solutions	Help of CA and Teacher Guide + 4 series of questions **SC2_teacher_seminar_EN_1D_quiz_magnetism_20071111_WP.ppt** + self eval. of answers
• Pause		20		
• Parallel sessions of groups of 2-3 "students" (they will be scattered around in the second phase)	**"Electric conduction"** (4 groups)	35	TM2: "**A/B activities**" : summary of this module + questions to guide this summary.	CA, Teacher Guide, in **SC2_teacher_seminar_EN_1F_test_conduction_20071112_VE.doc** Possible list of questions to be given after this phase
	"Electro-magnetic Induction" (4 groups)	35	TM3 "**Mind map"**. Studying this Module, noting the headlines of it Every member should have notes. KEEP SUMMARIES FOR LATER	CA, Teacher Guide (explanation of the teaching method); Info on basics of mindmapping: **SC2_teacher_seminar_EN_1E_mindmap_20071112_VE.doc** A3 papers for answers: **SC2_teacher_seminar_EN_1G_test_induction_20071112_VE.doc**
• The two parallel groups mix and gather in groups of 4-6 (two of each module) and explain to each other their chapter		30	TM4 "**Construction of knowledge**": (variation) In each group 2-3 persons of each module (different groups) and with different kind of written summary meet to exchange their knowledge; one of the individual notes should be selected to build on. The papers should be scanned and uploaded = "homework"	Peer instruction Peer evaluation KEEP SUMMARIES FOR LATER
• Physible + account + "homework"		15	Active learning, discussion led by the teacher coach; scans should be uploaded	Internet; Names + accounts (syllabus) + upload zone + task to upload scans of best summaries of the two modules Accounts on Physible
• Reflection: evaluation + discussion of the session		20		**SC2_teacher_seminar_EN_1Z_evaluation_1_20071112_VE.doc**

Second session: ½ day TOPIC: In-depth study of SC2, minds-on experiments	230 min	**Activities**	**Materials needed**
• Welcome, schedule of the session	10	2 strong magnets, attracting. Stack of several magnets.	**SC2_teacher_seminar_EN_2B_intro_2_20071111_WP.ppt**
• Physible, part one - materials	10	Close look at uploaded scans	
• **"Magnetism"**	40	Pre-test to be given at the start! TM5 **"Group work"**: Independent learning by two/three, based on questions. TM6 in last 10 min:"**Line**": Cards with the screenshots of the pages will be spread among the participants: the group puts them in order of the module (make physically a circle) and then each one tells shortly where the page is about => summary of the whole chapter Self evaluation on attitudes	**SC2_teacher_seminar_EN_2C_test_magnetism_20071112_VE.doc** CA, Teacher Guide. **SC2_teacher_seminar_EN_2E_selfevaluation_criteria_20070711_WP.doc** and **SC2_teacher_seminar_EN_2F_selfevaluation_form_20070711_WP.doc** Printed (two per page): **SC2_teacher_seminar_EN_2D_screenshots_magnetism_20071112_VE.doc** Use as SUMMARY FOR LATER USE Magnet + graphite Conduction (electrostatic swing), the drunk magnet (induction)
• Low-Tech experiments	60	TM7 **"Rotating corners":** all perform several experiments; given explanations are confronted with the ones given in the CA; Where do they "belong" in the theory, guide= CA	Lab with several experiments (eventually doubled), ready to use **Materials WG2D: Hands-on Kit Low tech and Teacher guide p 56-64 & p 67-69** 6 real experiments to be chosen Video of phenomenon to be explained Animation/ simulation of phenomenon to be explained. Films can be used as a SUMMARY for LATER
	?	Possible test on this module (questions not given already)	**SC2_teacher_seminar_EN_2C_test_magnetism_20071112_VE.doc**
Pause	20		
• **"Introduction to superconductivity"**	40	TM8 "**Building activities**" for this chapter	Teacher Guide, PPT, CA, video's SUMMARY to be made
• Teaching methods : **evaluation** during learning: discussion	20	Active learning, discussion led by the teacher coach;	
• **Gender linked** questionnaire; discussion	20		Questionnaire to be added
• Evaluation + discussion of the session	10		**SC2_teacher_seminar_EN_2Z_evaluation_2_20071112_VE.doc**

Third session: ½ day **TOPIC: Better teaching with SC2**	230 min	**Activities**	**Materials needed**
• Welcome, schedule of the session	10	Starter experiment: Show piece of superconducting wire, how it is built	**SC2_teacher_seminar_EN_3B_intro_3_20071111_WP.ppt** Superconducting wire would be nice
• Overview of first two sessions via schedules and website on modules 1,2 and 3 available for class room use; results of Physible; description of teaching methods	50	TM9 **"Interactive lecture"** + TM5 **"Group work"** Exercise: curriculum mapping	**Teacher guide p 56-64 & p 67-69** Local curricula **SC2_teacher_seminar_EN_3C_curriculum_mapping_20071112_VE.doc**
• **"Explanation of Superconductivity"**	50	TM10 "**Spider**": students are active, but teacher controls progress in knowledge closely (this is necessary in this difficult chapter)	Teacher Guide, CA, Video's of experiments Set of questions can help. Divide the module in smaller parts. Give all groups the chance to study a section. Call one group to explain
Pause	30		
"Activities with superconductors"	50	TM9 **"Interactive lecture"** Classical, interactive lesson, with small experiments on superconductivity (Meissner, LED, pinning)	**SC2_teacher_seminar_EN_3D_mindson_comments_20071112_VE.doc** **SC2_teacher_seminar_EN_3E_mindson_demo_20070711_WP.ppt** **Teacher guide p 78-82**
• Task: prepare a short task/test for students on the CA (SUPERCOMET Computer Application) and upload to Physible	20	TM11 **"4sides"** Preparation in small groups. Each group has to specify the module	PC
• Evaluation + discussion of the session	20		**SC2_teacher_seminar_EN_3Z_evaluation_3_20071112_VE.doc**

Fourth session: ½ day **TOPIC: Learn from SC2**	230 min	**Activities**	**Materials needed**
• Welcome, schedule of the session	10	Starter: slides with particle therapy	
• Summary of first three sessions: , materials used ; implementation in the curriculum; introduction to video analysis	20	Active learning, led by the teacher coach.	Summaries of all modules, results of the work of the different people. PPT presentations on curriculum **Folder HighTechExpVid**
• Physible: Presentation of the homework (short task/test on CA)	20	Active learning, discussion led by the teacher coach.	
• Superconductivity, summary of 3 modules, including theory and the use of videos of high tech experiments.	50	**TM12 "Lab experts2".**Group becoming experts of each item/subject/experiment. Next phase: new group forming and turning from one experiment to another, so that each expert can explain what the experiment is all about.	Set-up with the different pc's and (video's of)experiments (Meissner, LED, pinning): which principles of the previous modules are being shown? where should the experiments/video's be inserted in the learning cycle? What is the connection to superconductivity? Principles and application of video analysis. **Folder: HighTechExpVid**
OR (this can be done instead of the previous item) o Put together a lesson plan for one hour, based on SC2 materials, and report on this plan:		**TM12 "Lab experts2".** Group becoming experts of each lesson plan. Next phase: new group forming, so that each expert can explain what the lesson plan of his group is all about.	Copy machine can be useful here to multiply lesson plans.
Pause	30		
• **"Applications of superconductivity"**	40	TM13: **"Round"** After looking and searching the module, an open discussion on applications: which are mentioned, classify according to interest, other examples, future, necessary research,...	
• Active teaching methods (2)	40	13 methods of active learning: discussion led by the teacher coach.	**SC2_teacher_seminar_EN_0C_teaching_methods_20071030_WP.ppt** **SC2_teacher_seminar_EN_0D_teaching_methods_remarks_20070911_WP.ppt**
• Evaluation of session 4 • Final evaluation of all sessions + discussions	30		**SC2_teacher_seminar_EN_4Z_evaluation_4_20071112_VE.doc** **SC2_teacher_seminar_EN_0Z_evaluation_all_20071112_VE.doc**