

Chapter IV.2

The history of JUAS, 1994–2024

Marcelle Rey-Campagnolle^{a,b}, Joël Le Duff^c, François Méot^d, Louis Rinolfi^{a,e}, Philippe Lebrun^{a,e}, John M. Jowett^{f,h}, Elias Métral^f, and Bob Holland^g

^a European Scientific Institute (ESI), Archamps, France

^b ISN and CNRS, Grenoble, France (retired)

^c Laboratoire de l'Accélérateur Linéaire, Orsay, France and IN2P3 (retired)

^d Brookhaven National Laboratory, Upton, NY, USA and CEA/Saclay, France

^e CERN retired, Geneva, Switzerland

^f CERN, Geneva, Switzerland

^g ESI (seconded by Archamps Technopole) retired

^h GSI Helmholtzzentrum für Schwerionenforschung GmbH, Darmstadt, Germany

The first official JUAS school was held in 1994: this chapter gives a brief history of the school over the 30 years.

IV.2.1 ESI—Presidents—support from local authorities—JUAS business model

The European Scientific Institute (ESI) is a not-for-profit association under French law. It was founded in 1994 to provide administrative support to JUAS, which had just successfully organised its first edition under the direction of Marcelle Rey-Campagnolle, and another CERN-inspired training project coordinated by Yves Lemoigne, namely the AcoBio symposia, which led to the creation of the European School of Medical Physics (1998–2014). The close link between ESI and CERN is clearly visible in the governance of the association, with four of its seven Presidents having spent the majority of their careers at CERN, collectively covering 25 of ESI's 30 years of existence. The list of the ESI Presidents is as follows:

1. Denis Linglin (CNRS): November 1994–November 1999
2. Giorgio Brianti (CERN ret.): November 1999–November 2002
3. Manfred Buhler Broglin (CERN ret.): November 2002–November 2012
4. Hans Falk Hoffmann (CERN ret.): November 2012–September 2020
5. Philippe Sabatier (Université Grenoble-Alpes ret.), September 2020–January 2021 (deceased)

This chapter should be cited as: The history of JUAS, 1994–2024, M. Rey-Campagnolle *et al.*, DOI: [10.23730/CYRSP-2024-003.2211](https://doi.org/10.23730/CYRSP-2024-003.2211), in: Proceedings of the Joint Universities Accelerator School (JUAS): Courses and exercises, E. Métral (ed.), CERN Yellow Reports: School Proceedings, CERN-2024-003, DOI: [10.23730/CYRSP-2024-003](https://doi.org/10.23730/CYRSP-2024-003), p. 2211. © CERN, 2024. Published by CERN under the [Creative Commons Attribution 4.0 license](https://creativecommons.org/licenses/by/4.0/).

6. Philippe Lebrun (CERN ret.): January 2021–June 2022
7. Jean-Michel Thénard (CNRS ret.): June 2022–present

Throughout its history, JUAS has benefited, via ESI core funding, from the active support of the French local authorities, in particular the *Conseil départemental de Haute-Savoie* and the *Mairie d'Archamps*. ArchParc (formerly Archamps Technopole) has likewise provided important contributions in the form of human resources and teaching facilities on its French Geneva Campus. Both have been a constant and significant factor in the longevity of JUAS.

Given that JUAS caters primarily for postgraduate and doctoral students, ESI has always striven to ensure that costs are kept to a minimum. The school's business model consequently relies on a mix of cash and in-kind contributions, reflecting the highly collaborative nature, both formal and informal, of the international particle accelerator community.

Cash revenue consists of grants from accelerator facilities, participants' registration fees and contributions to accommodation costs, and, when necessary, top-up funding from ESI's core budget. However, in its current form, JUAS could not be organised without significant in-kind support, the most important of which concerns the intellectual input required to deliver the school curriculum.

Since August 2021, and for the second time since the school was launched, the JUAS Director, Elias Métral, is a serving CERN staff member, with formal authorisation to allot 30% of his time to the organisation of JUAS (Louis Rinolfi was also still a CERN staff member in 2011 before retiring). The school faculty comprises more than 60 accelerator physicists and engineers who give lectures and tutorials, facilitate the practical sessions, and run the visits. This faculty is drawn from a wide range of collaborating universities, research institutes, hospitals, and private companies who allow staff to devote “company time” to JUAS. Their geographical and organisational diversity makes it difficult to put a precise value on this input, but a conservative estimate for the 2024 edition of the school would put this in the region of €153k.

Other important in-kind contributions include the organisation of practical technology sessions at CERN, bespoke visits, and on-site seminars at experimental facilities at CERN, the Paul Scherrer Institute, ESRF Grenoble, SOLEIL Paris, and Geneva University Hospitals' radiotherapy department. Special mention should also be made of the hands-on instrumentation sessions organised through a long-standing collaboration with Bergoz Instrumentation in the Pays de Gex.

Figure IV.2.1 presents the consolidated budget of the 2023 edition of the school.

JUAS - CONSOLIDATED BUDGET 2023		Students 2023 : C1 - 31 ; C2 - 39	
Cash Expenditure		Euros	
Faculty		13 940	
Travel and accommodation		13 940	
Participants		59 101	
Visits and Practical days		10 444	
Meals, Afterworks, Coffee breaks		6 228	
Accommodation & shuttles		42 429	
Governance / Representation		10 285	
Advisory Board / IPAC / Deauville		10 285	
Communication		1 113	
Posters / "Zoom on"		1 113	
School logistics		35 220	
Supplies		598	
ESI staff and overheads		34 622	
Total		119 659	
Cash Income		Euros	
Participants		56 304	
Registration		27 489	
Accommodation		28 815	
Grants		63 355	
Accelerator labs		54 500	
ESI balancing grant		8 855	
Total		119 659	
In-kind expenditure		Euros	
Intellectual input		153 000	
School Management		33 000	
Faculty		120 000	
Teaching facilities		16 250	
Rooms		16 250	
Total		169 250	
In-kind income		Euros	
Intellectual input		153 000	
School Management		33 000	
Faculty		120 000	
Teaching facilities		16 250	
Accelerator labs		16 250	
Total		169 250	
Consolidated expenditure		Euros	
Cash		119 659	
In-kind		169 250	
Total		288 909	
Consolidated income		Euros	
Cash		119 659	
In-kind		169 250	
Total		288 909	

Fig. IV.2.1: Example of the JUAS consolidated budget for 2023.

IV.2.2 Agreements, exams, and credits

In general, agreements are signed between ESI, the JUAS Director, and partner universities to formalise the collaboration and provide a framework for recognition of JUAS as one or more modules in the partner university's master's and/or doctoral programmes. These agreements have taken different forms over the years. The current agreement is a Memorandum of Understanding, signed by the ESI President and a representative of the partner university, and countersigned "read and acknowledged" by the JUAS Director.

Partner universities nominate a representative to sit on the JUAS Advisory Board, which is in charge of overseeing the school curriculum, examinations, and certification.

Written examinations are taken at the end of each of the two courses. They cover three recurrent core topics and two topics that change each year. The exam session also includes an oral presentation of group work. The core topics of Course 1 are transverse beam dynamics, longitudinal beam dynamics, and synchrotron radiation; the oral presentation is on accelerator design. The core topics of Course 2 are RF engineering, normal and superconducting magnets, and beam instrumentation. The oral presentations require students to present group reports on the practical sessions run at CERN.

The current certificate of participation, signed by the ESI President and the JUAS Director, lists all lectures, seminars, workshops, and visits attended by the student, together with the total number of hours. The certificate also gives the student's overall examination mark out of 20 (the French system), as well as the class average and the standard deviation. A separate sheet gives the individual marks obtained for each topic examined. The partner university is responsible for translating the mark out of 20 into its own grading system and awarding the corresponding ECTS or doctoral credits. In practice, the number of credits varies from one university to another depending on how JUAS is weighted against other modules in the curriculum.

IV.2.3 JUAS statistics

A variety of statistics about JUAS are presented in Figs. [IV.2.2–IV.2.37](#). These include: the evolution of the numbers of students (according to three categories: master's students, PhD students, and professionals) over the years; countries of citizenship and institutional affiliation; the number of students taking exams; the locations of the Advisory Board (or Committee) meetings; a list of all the speakers; the evolution of the partner universities and the collaborating institutions and programmes (with the corresponding lists of logos for 2024); and the evolution of the members of the JUAS committees. Regarding the last point, there was a single Organising Committee in 1994 and 1995, while from 1996 onwards, two distinct committees were created: the Advisory Committee and the Programme Committee. As of 2012, these were merged back into a single body, called the JUAS Advisory Board. Finally, the timetables for both Courses 1 and 2 are shown for 1997 (when JUAS started to have two distinct courses) and 2024, showing how the programme has evolved during the lifetime of JUAS.

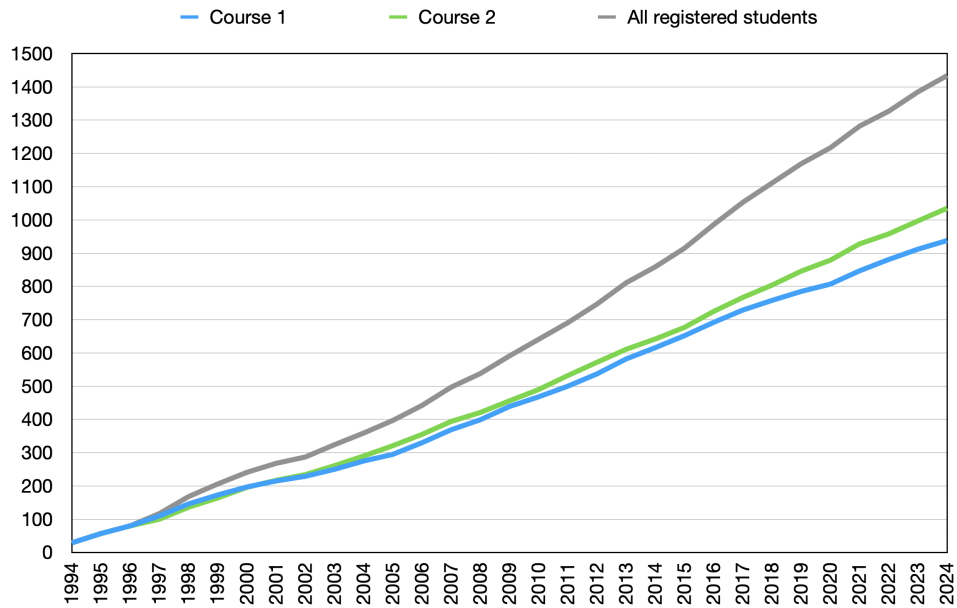


Fig. IV.2.2: Numbers of students trained at JUAS over the years (cumulative sum).

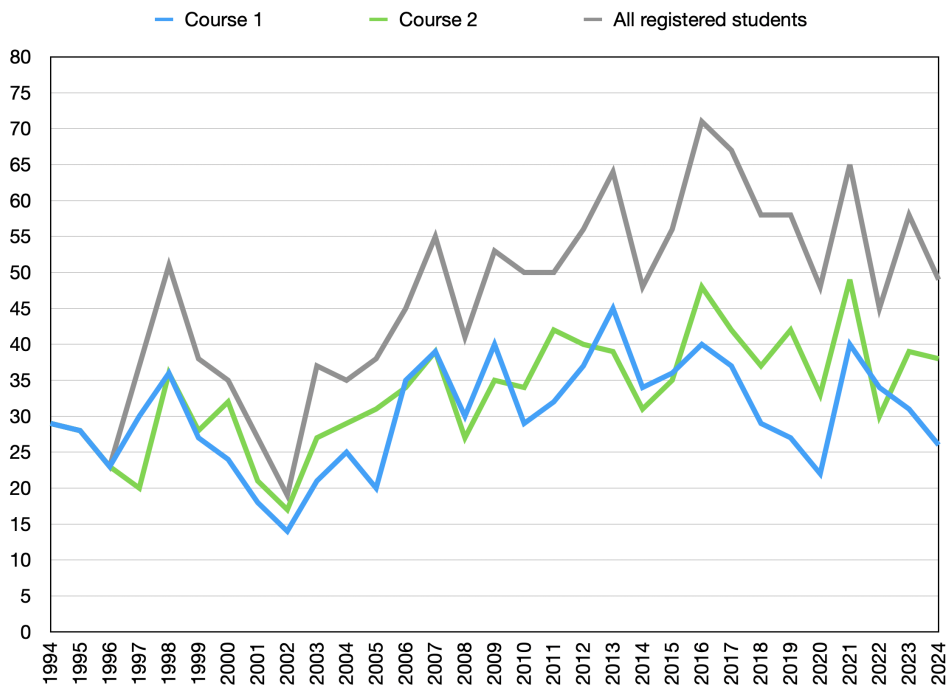


Fig. IV.2.3: Numbers of students trained at JUAS each year.

IV.2.3. JUAS statistics

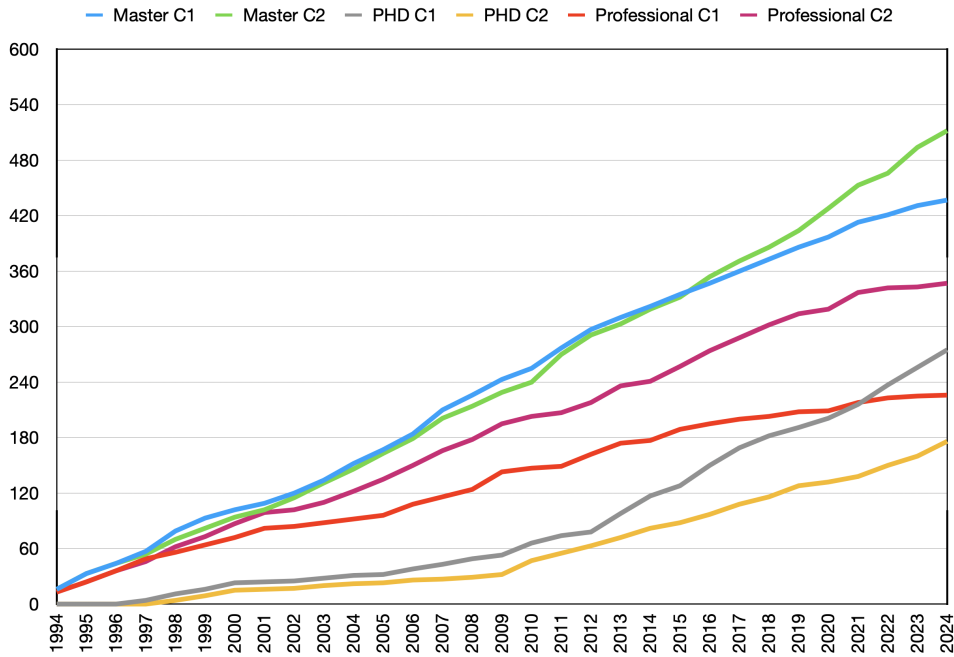


Fig. IV.2.4: Evolution of the numbers of students trained at JUAS over the years (cumulative sum) for the three categories: master’s students, PhD students, and professionals.

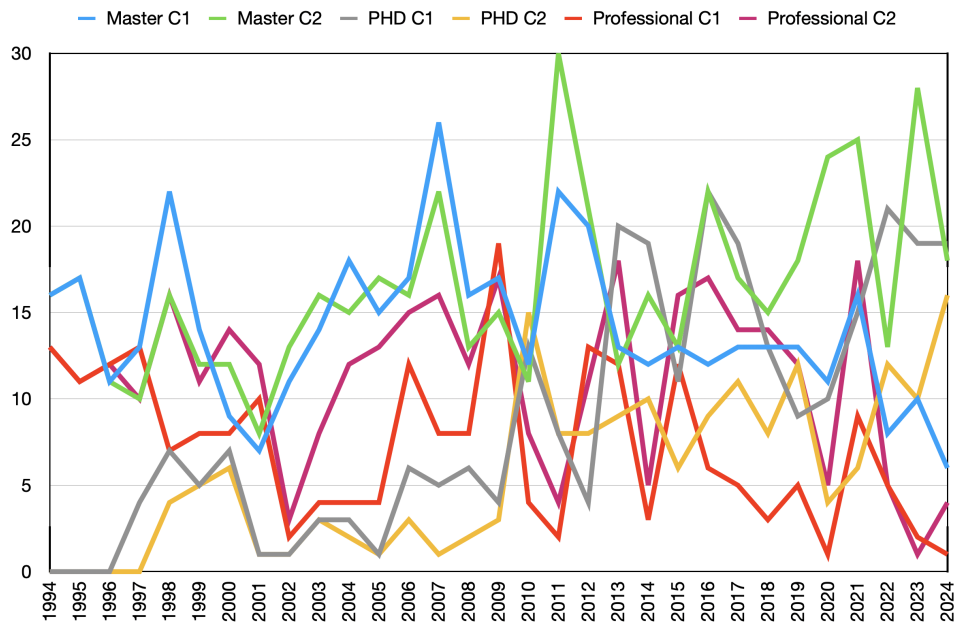


Fig. IV.2.5: Numbers of students trained at JUAS per year for the three categories: master’s students, PhD students, and professionals.

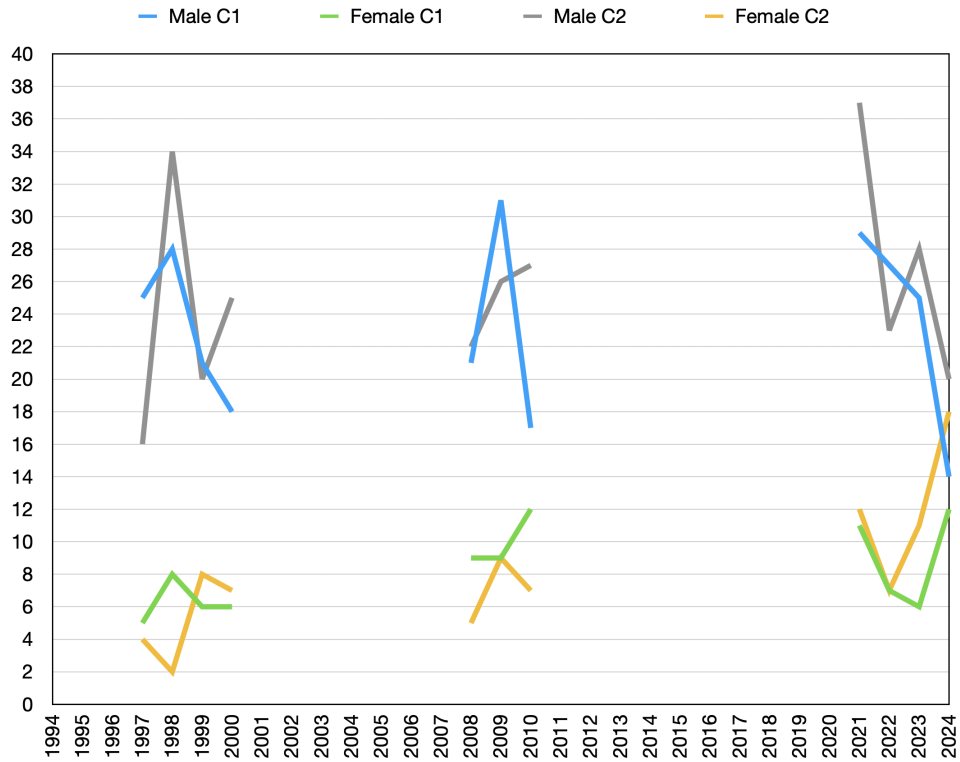


Fig. IV.2.6: Comparison between the numbers of males and females over the years (some snapshots).

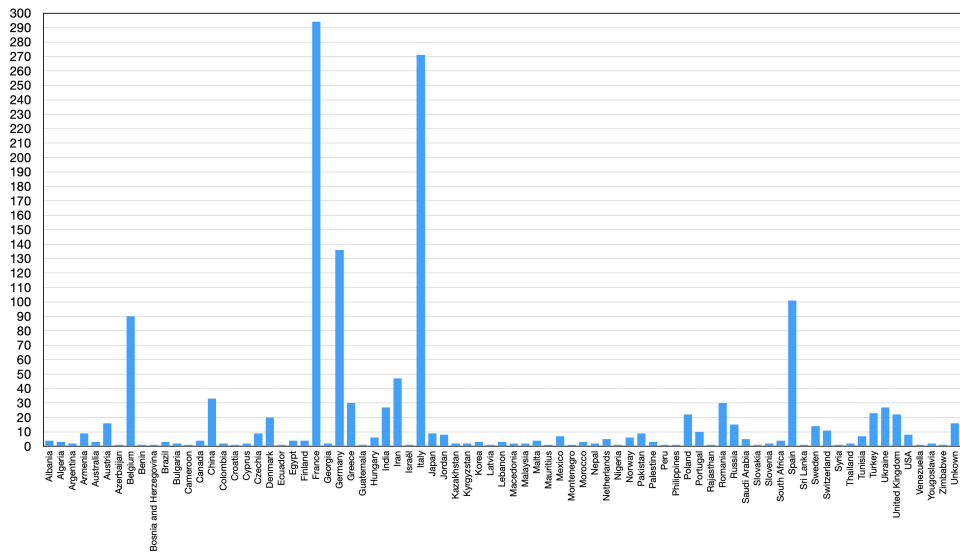


Fig. IV.2.7: Numbers of students trained at JUAS by country of citizenship (78 countries in total).

IV.2.3. JUAS statistics

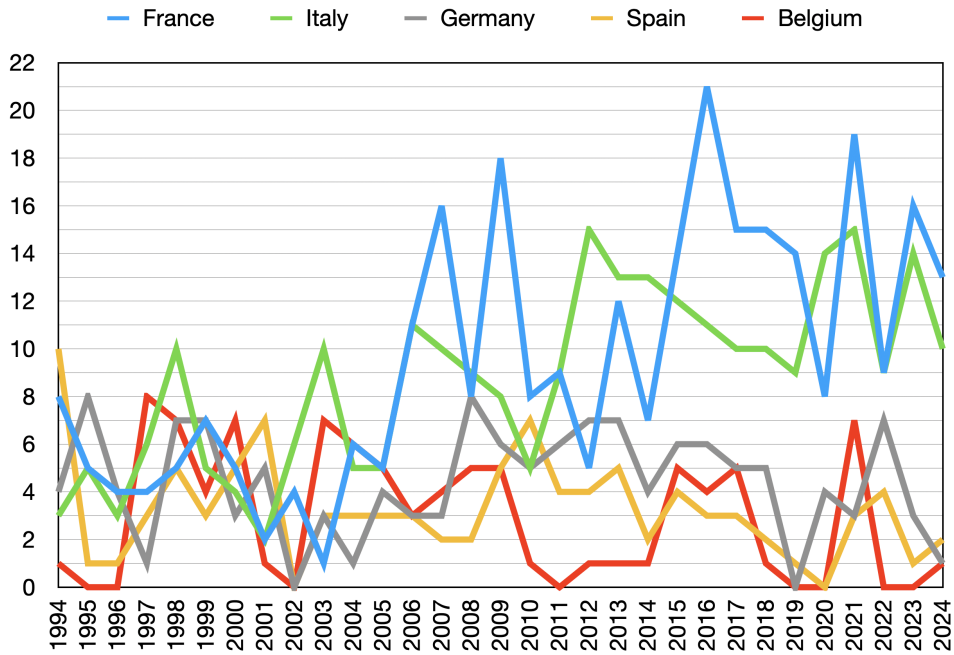


Fig. IV.2.8: Numbers of students trained at JUAS per year for the five countries with the most students.

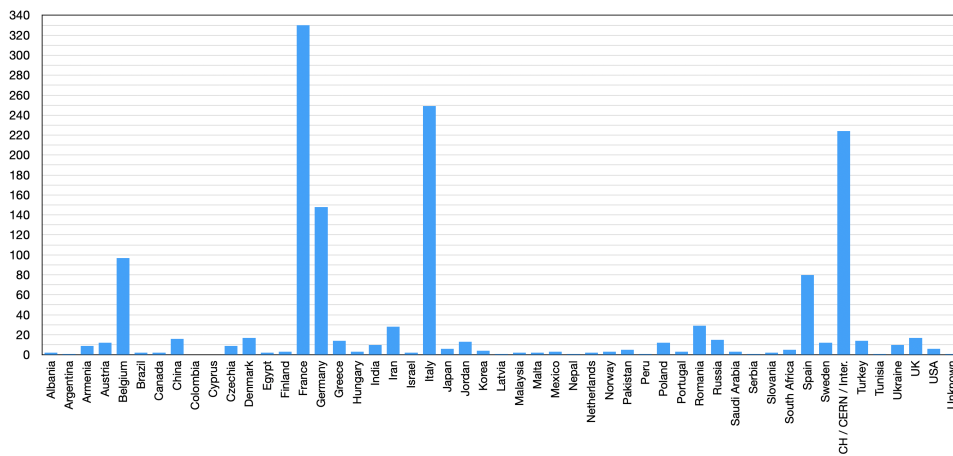


Fig. IV.2.9: Numbers of students trained at JUAS by country of institution.

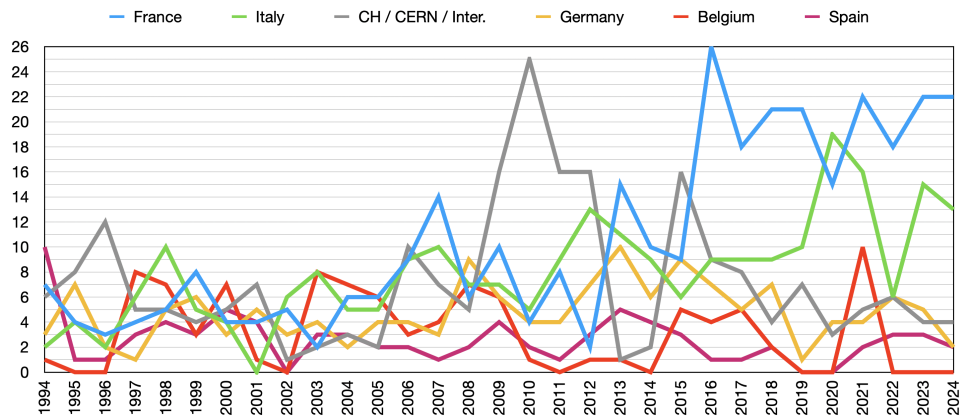


Fig. IV.2.10: Numbers of students trained at JUAS per year for the five institutions with the most students.

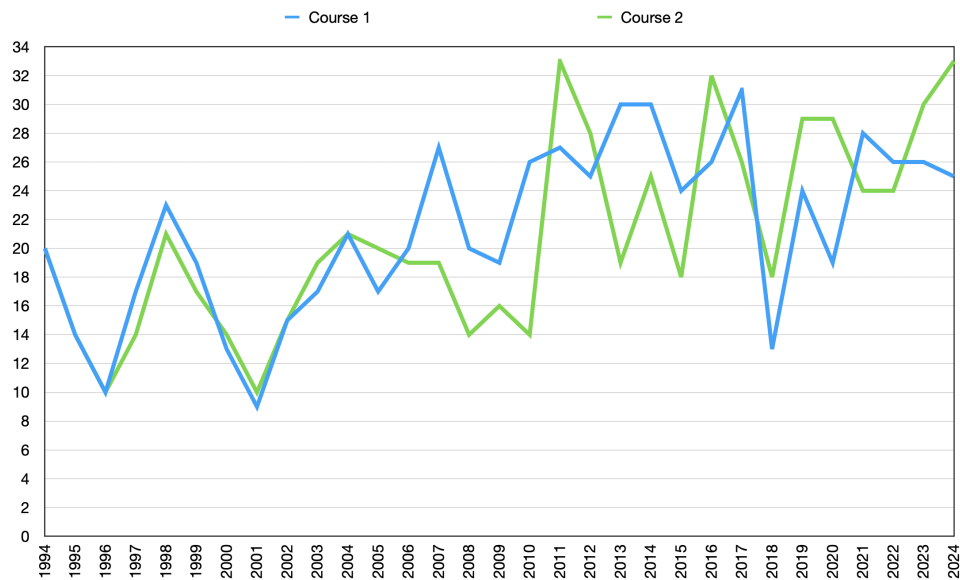


Fig. IV.2.11: Numbers of students trained at JUAS per year who took exams.

IV.2.3. JUAS statistics

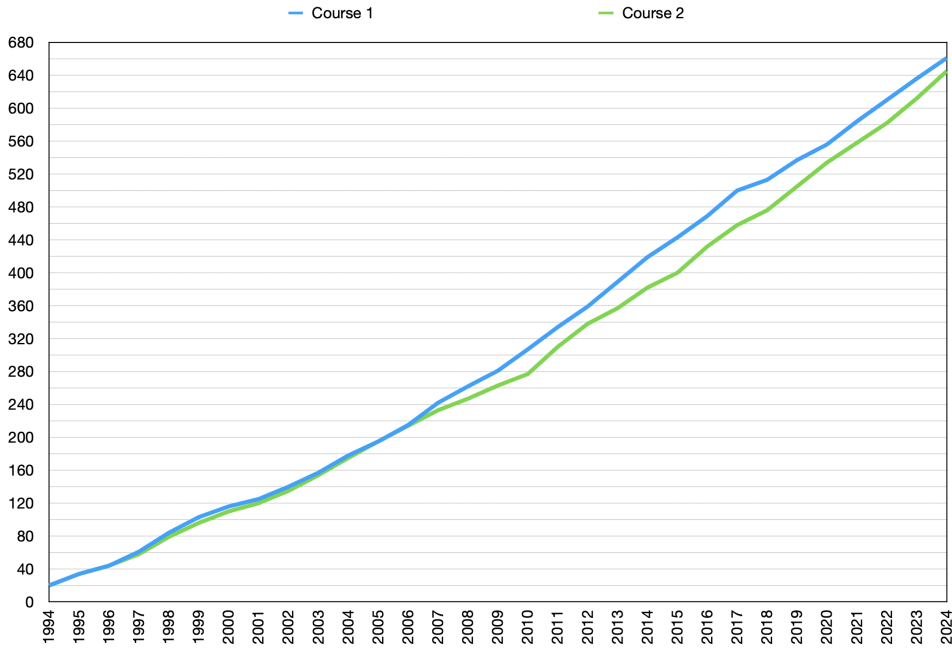


Fig. IV.2.12: Evolution of the numbers of students trained at JUAS over the years (cumulative sum) who took exams.

JUAS	Conference attended	Name	First name	Gender	Nationality	Status at JUAS	University	Country
2024	IPAC 2024 Nashville	VAN DER SCHUEREN	Silke	F	Belgian	PhD	Università degli Studi di Roma "La Sapienza"	Italy
2023	IPAC 2023 Venice	VERES	Dora Erzebet	F	Hungarian	PhD	Goethe Universität Frankfurt	Germany
2022	IPAC 2022 Bangkok	NIEDERMAYER	Philipp	M	German	PhD	Goethe Universität Frankfurt	Germany
2021	IPAC 2022 Bangkok	MARTINEZ REVERIEGO	Pablo	M	Spanish	PhD	Universitat de Valencia	Spain
2020	IPAC 2020 Caen (on-line)	BUTTI	Daniele	M	italian	PhD	Royal Holloway University of London	UK
2019	IPAC 2019 Melbourne	PARASCHOU	Konstantinos	M	Greek	PhD	Aristotle University of Thessaloniki	Greece
2018	IPAC 2018 Vancouver	VALLIERES	Simon	M	Canadian	PhD	Université de Bordeaux / INRS Varennes	France / Canada
2017	IPAC 2017 Copenhagen	KOSTOGLOU	Sofia	F	Greek	PhD	National Technical University of Athens	Greece
2016	IPAC 2016 Busan	AMORIM	David	M	French	Master	Grenoble INP	France
2015	IPAC 2015 Newport News	DIJKSTAL	Philipp	M	German	Master	Technische Universität Darmsatdt	Germany
	IPAC 2015 Newport News	CAMPOGIANI	Giovanna	F	Italian	PhD	Università degli Studi di Roma "La Sapienza"	Italy
2014	IPAC 2014 Dresden	CARLA	Michele	M	Italian	Pro		Spain
	IPAC 2014 Dresden	SCHMITT	Nikolai	M	German	Master	Technische Universität Darmsatdt	Germany
2013	IPAC 2013 Shanghai	GINER NAVARRO	Jorge	M	Spanish	Master	Universitat de Valencia	Spain
	IPAC 2013 Shanghai	MEREGHETTI	Alessio	M	Italian	PhD	University of Manchester	UK
2012	IPAC 2012 New Orleans	STEGMANN	Robert	M	German	Master	Technische Universität Darmsatdt	Germany
2011	IPAC 2012 New Orleans	DUTHEIL	Yann	M	French	Master	Université Joseph Fourier Grenoble	France
2010	IPAC 2011 San Sebastian	ALABAU GONZALVO	Javier	M	Spanish	Master	Universitat de Valencia	Spain
	IPAC 2011 San Sebastian	JOHN	Philipp	M	German	Master	Technische Universität Darmsatdt	Germany
2009	IPAC 2010 Kyoto	BLOCH	Timo	M	German	Master	Technische Universität Darmsatdt	Germany
2008	PAC 2009 Vancouver	BAUER	Christopher	M	German	Master	Technische Universität Darmsatdt	Germany
2007	EPAC 2008 Genoa	PICHARD	Alexandre	M	French	Master	Grenoble INP	France
2006	EPAC 2008 Genoa	EULER	Matthias	M	German	Master	Technische Universität Darmsatdt	Germany
	PAC 2007 Albuquerque	BARRANCO	Javier	M	Spanish	Master	Universidad Pontifia Comillas Madrid	Spain

Fig. IV.2.13: List of the best JUAS students who were awarded the EPS-AG (European Physical Society's Accelerator Group) prize to attend a particle accelerator conference from 2006 to 2024.

Year	City	Country	Meeting's number
2024	Groningen	Netherlands	26
2023	Oxford	UK	25
2022	Rome	Italy	24
2021	Videoconference	Videoconference	23
2020	Videoconference	Videoconference	22
2019	Barcelona	Spain	21
2018	Rostock	Germany	20
2017	Paris-Saclay	France	19
2016	Naples	Italy	18
2015	Liverpool	UK	17
2014	Grenoble	France	16
2013	Berlin	Germany	15
2012	Genoa	Italy	14
2011	Heidelberg	Germany	13
2010	Rome	Italy	12
2009	Grenoble	France	11
2008	Barcelona	Spain	10
2007	Darmstadt	Germany	9
2006	Naples	Italy	8
2005	Archamps	France	7
2004	Valencia	Spain	6
2003	Rome	Italy	5
2002	Barcelona	Spain	4
2001	Grenoble	France	3
2000	Darmstadt	Germany	2
1999	Karlsruhe	Germany	1

Fig. IV.2.14: List of the years/cities/countries of the 26 meetings of the Advisory Board (or Committee), between 1999 and 2024.

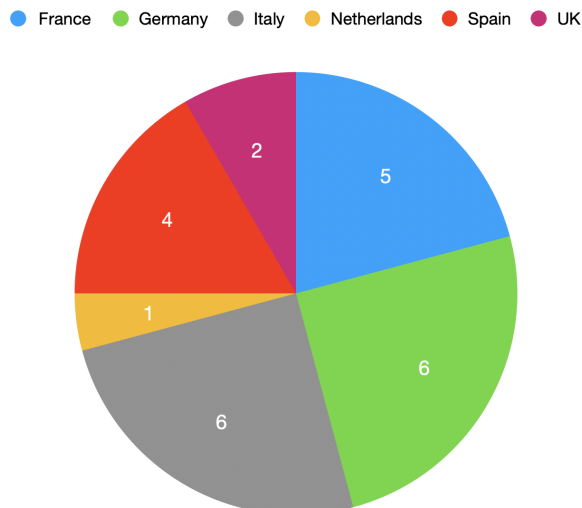


Fig. IV.2.15: Pie chart of the countries of the 24 face-to-face meetings of the Advisory Board (or Committee) between 1999 and 2024 (i.e. without the two meetings from 2020 and 2021, which took place through videoconference).

IV.2.3. JUAS statistics

Name	Institution	Years
M. Ady	CERN	2022
R. Alemany Fernandez	CERN	2013-2023
D. Alesini	INFN Frascati	2019-2024
D. Amorim	CERN	2021-2024
K. André	CERN	2021-2024
C. Antoine	CEA	2022-2024
F. Antoniou	CERN	2021-2022
J. Arianer	IPN Orsay	1995
M. Arnold	TU Darmstadt	2019-2022, 2024
R. Assmann	CERN	2006, 2015-2024
S. Baird	CERN	2000
V. Baglin	CERN	2017-2024
A. Ballarino	CERN	2010-2016
O. Barbalat	CERN	1994-1996
R. Bartolini	Oxford University, DLS, JAI	2014-2018
H. Bartosik	CERN	2016-2024
J. Bauché	CERN	2012-2024
M. Baylac	LPSC Grenoble	2019-2020
E. Benedetto	CERN	2014
M. Benedikt	CERN	2000
P. Berkvens	ESRF	1996-2013
H. Bernas	CSNSM Orsay	1996
K. Bethge	Frankfurt	1994
A. Beuret	CERN	1995
G.J. Beyer	HU Geneva	1998-2012
N. Biancacci	CERN	2020-2024
J.L. Biarrotte	IPNO	2016, 2018
A. Blondel	Univ. Geneva	2018
M. Boege	PSI	2023
K. Bongardt	KFA Jülich	1995
F. Bordry	CERN	1995, 2016-2018
J. Bosser	CERN	1994
L. Bottura	CERN	2024
F. Bouly	LPSC/IN2P3/CNRS	2021-2024
D. Boussard	CERN	1999-2000
S. Bousson	IPN Orsay	2005-2022
M. Bozzolan	CERN	2020-2024
O. Bruning	CERN	2001-2008, 2019-2023
P.J. Bryant	CERN	1996, 1999-2020
M. Buhler-Broglin	CERN	1994
P. Burrows	Oxford University	2023-2024
S. Calatroni	CERN	2020-2024
C. Carli	CERN	2021-2024

Fig. IV.2.16: List of all contributors to JUAS schools between 1994 and 2024 (220 in total): Part 1/5.

N. Carmignani	ESRF	2022-2024
F. Caspers	CERN	2002-2024
T. Charles	CERN	2022
F. Chautard	GANIL	2008-2016
P. Chiggiato	CERN	2012-2016
V. Cilento	CERN	2023-2024
D. Cornuejols	ESRF	1999-2000
R. Corsini	CERN	2003-2009
P. Costa Pinto	CERN	2021-2024
W. Decking	DESY	2006
J.M. De Conto	IN2P3 LPSC	1998-2005, 2013-2019
P. Defrance	Louvain-La-Neuve	1994
M. Dehler	PSI	2019-2020
N. Delerue	CNRS & Univ. Paris-Saclay	2023-2024
G. De Rijk	CERN	2019-2020
V. Dimov	CERN	2014-2017
A. Donath	HU Geneva	1995
J.C. Dran	LRMF Paris	1997
A. Durham	HU Geneva	2021-2024
M. Eshraqi	ESS	2023-2024
W. Farabolini	CERN	2016-2020, 2023-2024
L. Farvacque	ESRF	2001-2011
J. Fermé	GANIL	1995
P. Ferracin	CERN and LBNL	2014-2015, 2017-2024
A. Ferrari	ISV Uppsala	2003
J.M. Filhol	ESRF	1998-2000
L. Fiscarelli	CERN	2018, 2021-2024
J. Fleiter	CERN	2017-2020, 2023
P. Forck	GSI	2002-2024
N. Fuster Martinez	Valencia	2015, 2018-2024
D. Gamba	CERN	2022-2024
J. Gareyte	CERN	1994
R. Garoby	CERN	1995
L. Garolfi	CERN	2019
J.C. Gayde	CERN	2022-2024
A. Gerbershagen	UMCG	2024
E. Gianfelice	DESY	2003-2005
A. Gilardi	CERN	2019
M. Giovannozzi	CERN	2022-2024
M. Gourber Pace	CERN	2007-2009
E. Gschwendtner	CERN	2024
B. Haerer	KIT	2021-2024
H. Henke	Berlin University	2012-2020
B. Hermann	PSI	2019-2022

Fig. IV.2.17: List of all contributors to JUAS schools between 1994 and 2024 (220 in total): Part 2/5.

IV.2.3. JUAS statistics

J.O. Herrador	CERN	2024
N. Hiller	PSI	2020
G. Hoffstätter	DESY	2000-2002
B. Holzer	CERN	2007-2012, 2021-2024
K. Hübner	CERN	1999-2003
L. Intelisano	CERN	2024
R. Ischebeck	PSI	2017-2024
B. Jacquot	GANIL	2017-2024
B. Jenninger	CERN	2021-2022
S. Joly	CERN	2024
Y. Jongen	IBA Louvain-la-Neuve	1997-2010
J. Jowett	CERN	2020-2024
R. Jung	CERN	1994-1995
S. Kapitza	IPP Moscow	1996
B.E. Karlsen-Baek	CERN	2024
J. Keintzel	CERN	2023-2024
R. Kersevan	CERN	2012-2024
W. Kleeven	IBA Belgium	2014-2021
H. Koivisto	University of Jyväskylä	2013
P. Korysko	Oxford University and CERN	2023-2024
S. Kostoglou	CERN	2021-2024
Y. Lacaze	ESRF	2020
J.L. Laclare	ESRF	1994
J.M. Lagniel	CEA Saclay	1998
J.B. Lallement	CERN	2014-2018, 2021-2024
K. Langbein	CERN	1996-1998
P. Lapostolle	Paris	1994
A. Lasheen	CERN	2022-2024
A. Latina	CERN	2013-2020
P. Lebrun	CERN	1999-2002, 2016-2024
J. Le Duff	LAL Orsay	1998-2009
H. Lengeler	CERN	1994, 1996-2001
G. Lindecker	CERN	2000-2003
F. Löhl	PSI	2019-2020, 2023-2024
A. Lombardi	CERN	1997-2013, 2021-2024
J.P. Longequeue	ENSP Grenoble	1996-1999
R. Losito	CERN	2011-2013
C. Mai	Technische Universität Dortmund	2023-2024
H. Mainaud-Durand	CERN	2019-2021
J. Mandrillon	IBA	2022-2023
P. Mandrillon	CAL Nice	1994, 1995, 1998
N. Marks	DRS Daresbury	1994-2000
M. Martini	CERN	1994-2002
F. Meot	CEA Saclay	1994, 2006-2010, 2020

Fig. IV.2.18: List of all contributors to JUAS schools between 1994 and 2024 (220 in total): Part 3/5.

E. Metral	CERN	2000-2001, 2011-2024
S. Meunier	CERN	2021-2022
S. Meyroneinc	Institut Curie	2013-2024
M. Migliorati	Univ. La Sapienza	2010-2024
A. Milanese	CERN	2018
R. Miralbell	HU Geneva	1995-1996, 1998, 2000-2019
D. Möhl	CERN	1994
W. Mondelaers	Univ. Ghent	1998-2024
H.G. Morales	Univ. RHUL	2017-2021
A. Mostacci	Univ. La Sapienza & INFN-Roma 1	2017-2024
A. Mueller	IPN Orsay	2003
G. Mülhaupt	ESRF	1996-1997
M. Munoz	ALBA	2007-2010
M. Neroni	Univ. La Sapienza	2022-2024
H. Nifenecker	ISN Grenoble	1995
A. Oeftiger	GSI	2021-2024
E. Palmieri	INFN Legnaro	1997-1998
L. Palumbo	Univ. La Sapienza & LNF-INFN	1996-2009
Y. Papaphilippou	CERN	2007-2017
D. Pellegrini	CERN	2012-2017
T. Perron	ESRF	2012-2021
N. Pichoff	CEA BIII	2002-2006
W. PirkI	CERN	1994-2005
A. Poncet	CERN	1995-2008
A. Poyet	CERN	2022
E. Prat Costa	PSI	2015-2024
T. Prebibaj	CERN	2024
C. Prior	RAL	2008-2009
X. Queralt	ISIS-RAL	2014-2024
U. Raich	CERN	1994-1997
J. Resta Lopez	Liverpool	2013-2017
J.P. Revol	CERN	1999-2000, 2020-2024
L. Riolfi	CERN	1994-2002, 2011-2022
L. Rivkin	EPFL and PSI	1994-1997
C. Roche	CERN	2000-2003
L. Rolland	LAPP (IN2P3)	2016
A. Ropert	ESRF	1994, 1996-1999
P. Royer	CERN	2002
G. Rumolo	CERN	2022-2024
S. Russenschuck	CERN	2001-2015
G. Russo	CERN	2023
B. Salvant	CERN	2016-2024
T. Satogata	JLab	2021-2024
W. Scandale	CERN	1994

Fig. IV.2.19: List of all contributors to JUAS schools between 1994 and 2024 (220 in total): Part 4/5.

IV.2.3. JUAS statistics

J. Schaefer	KIT	2021
M. Schippers	PSI	2011-2024
F. Schliessmann	TU Darmstadt	2023
P. Schmüser	DESY	1994
D. Schoerling	CERN	2017, 2019-2021
D. Schulte	CERN	2021-2024
P. Schwarz	CERN	2022
A. Seryi	Oxford University	2015-2018
M. Slupecki	CERN	2024
J. Snuverink	PSI	2021-2023
P. Sortais	ISN-IN2P3 Grenoble	1999-2006
T. Stambach	PSI	1996-2005
R. Steerenberg	CERN	2024
G. Sterbini	CERN	2011-2024
P. Strehl	GSI	1996-2001
A. Sullivan	CERN	1994
L. Tavian	CERN	2003-2006
F. Tecker	CERN	2010
T. Thuillier	IN2P3 LPSC	2007-2012, 2014-2024
D. Tommasini	CERN	2014-2017
E. Touzain	Bergoz Instrumentation	2021-2024
C. Travier	CEA Saclay	1999-2001
D. Treille	CERN	1994
D. Tronc	GE Medical Systems	1996-1997
J. Tuckmantel	CERN	2001-2006
V. Vaccaro	Univ. Federico II, Napoli & LNF-INFN	2010-2011, 2016-2017, 2019-2020
D. Vandeplassche	SCK-CEN	2017
E. Van Der Kraaij	IBA	2022-2024
P. Verbruggen	IBA	2011-2013
A. Verdier	CERN	1994-1995
W. Vollenberg	CERN	2021-2024
C. Vollinger	CERN	2022-2024
M. Vretenar	CERN	2014-2024
M. Weiss	CERN	1994
M. Wendt	CERN	2015-2024
W. Weingarten	CERN	2007-2011
K. Wille	Univ. Dortmund	1998-2013
E.J.N. Wilson	CERN	1994-2005
M. Wilson	Oxford Inst.	1995-2017
F. You	CSNSM Orsay	1997
M. Zerlauth	CERN	2024
T. Zickler	CERN	2012-2024
F. Zimmermann	CERN	2021-2022
E. Zimoch	PSI	2010-2024

Fig. IV.2.20: List of all contributors to JUAS schools between 1994 and 2024 (220 in total): Part 5/5.

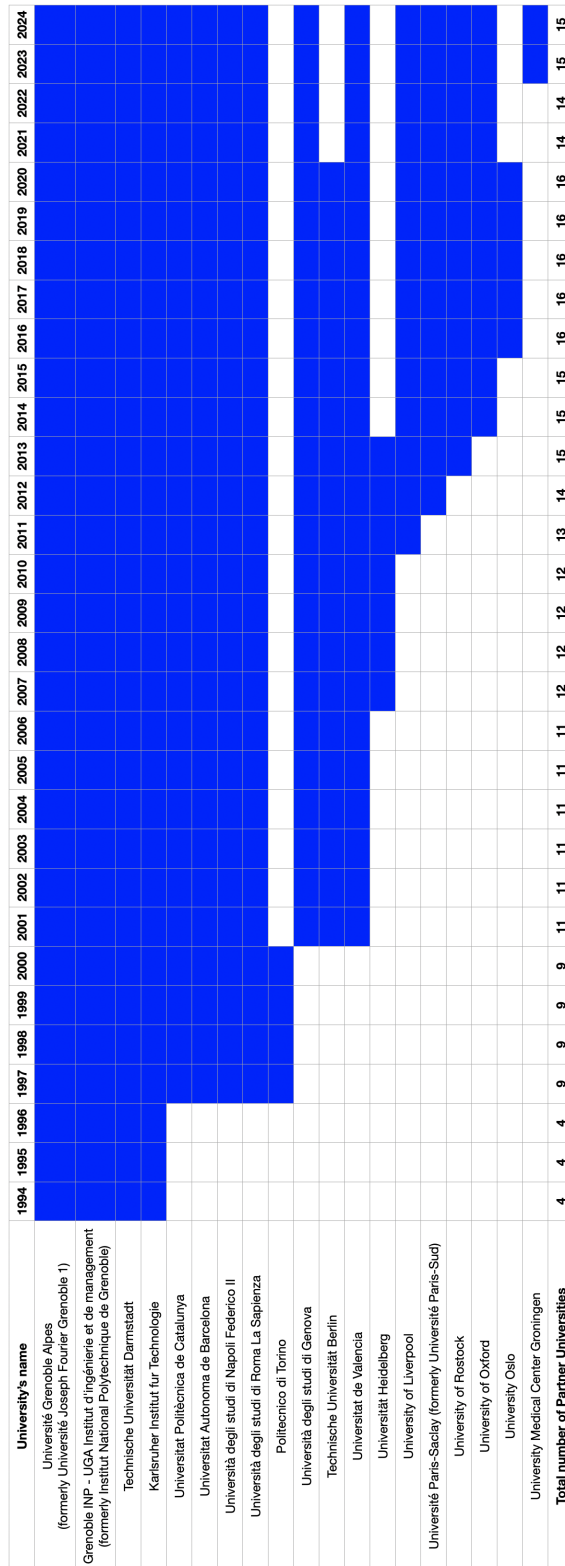


Fig. IV.2.21: Evolution of the partner universities between 1994 and 2024 (a total of 19 universities joined JUAS at some point).



Fig. IV.2.22: Logos of all the partner universities in 2024.



Fig. IV.2.23: Logos of all the collaborating institutions and programmes in 2024.

13 March 1997

LECTURE & TUTORIAL PROGRAMME

JUAS 1997 COURSE I

	Monday	Tuesday	wednesday	Thursday	Friday
week 3	13 January		14 January	15 January	17 January
9h		Long. Dyn.	Long. Dyn.	Long. Dyn.	Long. Dyn.
10h		Introd. (22)	Introd.	Introd.	Introd.
11h	Registration	Introd.	Introd.	Introd.	Introd.
13h30	what is an	relativity	Long. Dyn. (21)	Long. Dyn.	Long. Dyn.
14h30	accelerator?	(basic)	Long. Dyn.	Long. Dyn.	Long. Dyn.
15h30		MICROCOSM	Long. Dyn.	PS complex	Long. Dyn.
week 4	20 January	21 January	22 January	23 January	24 January
9h	soft. train.	soft. train.	synch. rad. I (24)	synch. rad. I	synch. rad. I
10h	Trsv. Dyn. (21)	Trsv. Dym.	synch. rad. I (24)	synch. rad. I	synch. rad. I
11h	Trsv. Dyn.	Trsv. Dyn.	Trsv. Dyn.	Trsv. Dyn.	Trsv. Dyn.
13h30	stud. seminar	electr. magn	Trsv. Dyn.	Trsv. Dyn.	Trsv. Dyn.
14h30	stud. seminar	(reminder)	Trsv. Dyn.	Trsv. Dyn.	
15h30					
week 5	27 January	28 January	29 January	30 January	31 January
9h	synch. rad. II	synch. rad. II	synch. rad. II		lin. imp. (22)
10h	synch. rad. II	synch. rad. II	synch. rad. II	VISIT	lin. imp. (22)
11h	lin. imp.	Inj. extr. (26)	cyclotrons (27)	of (25)	cyclotrons
13h30	visits of	inj. extr.	cyclotrons		cyclotrons
14h30	DELPHI	synch. rad. II	cyclotrons	PSI	lin. imp.
15h30	ISOLDE				
week 6	3 February	4 February	5 February	6 February	7 February
9h	non-linear (27)	non-linear.	instabilities	non-linear.	non. linear.
10h	non-linear.	non-linear.	instabilities	non-linear.	lin. imp.
11h	lin. imp.	instabilities (22)	non-linear.	instabilities	lin. imp.
13h30	lin. imp.	instabilities	non-linear.	instabilities	lin. imp.
14h30	lin. imp.	instabilities	instabilities	instabilities	
15h30					Farewell party
week 7	10 February	11 February	12 February	13 February	14 February
9h	designing (18)				
10h	accelerator			EXAM (17)	EXAM
11h	together			EXAM	EXAM

○ Attendance

No truancy this year!

15 students before PhD

Fig. IV.2.26: Historical timetable of JUAS 1997 Course 1.

3 March 1997

LECTURE & TUTORIAL PROGRAMME

JUAS 1997 Course II

	Monday	Tuesday	wednesday	Thursday	Friday
	17 February	18 February	19 February	20 February	21 February
9h		RF engineer.	contr. syst.	contr. syst.	RF engineer.
10h	Registration	RF engineer.	contr. syst.	contr. syst.	RF engineer.
11h	RF engineer. (20)	RF engineer.	RF engineer.	RF engineer.	RFQ (20)
13h30	RF engineer.	RF engineer.	RF engineer.	RF engineer.	
14h30	RF engineer.	RF engineer.	RF engineer.	RF engineer.	
15h30			in the lab		
	24 February	25 February	26 February	27 February	28 February
9h	supcd cav.	RF linacs	RF linacs	cycl.for med.	
10h	supcd cav.	VISIT	RF linacs	cycl.for med.	rad. & sfty
11h	RF linacs (16)	TO	cycl.for med. (15)	rad. & sfty	rad. & sfty (15)
13h30	RF linacs		cycl.for med.	rad. & sfty	rad. & sfty
14h30	RF linacs	ESRF	cycl.for med.	rad. & sfty	
15h30				rad. & sfty	
	03 March	04 March	05 March	06 March	07 March
9h		vacuum syst.	vacuum syst.	vacuum syst.	vacuum syst.
10h		conv.magnets	conv.magnets	conv.magnets	accel. appl.
11h	rad. & sfty	conv.magnets	conv.magnets (16)	conv.magnets	accel. appl.
13h30	rad. & sfty	conv.magnets	conv.magnets	conv.magnets	
14h30	rad. & sfty	conv.magnets	conv.magnets	conv.magnets	
15h30				vac.in lab	
	10 March	11 March	12 March	13 March	14 March
9h	sources (16)	suprcd.magn.	suprcd.magn.	AMS	beam instr.
10h	sources	suprcd.magn.	suprcd.magn.	AMS	beam instr.
11h	suprcd.magn. (17)	suprcd.magn.	suprcd.magn.	beam instr. (16)	
13h30	suprcd.magn.	sources	beam instr.	beam instr.	
14h30	suprcd.magn.	sources	beam instr.	beam instr.	
15h30		SM in the lab	in the lab	clos. cerem.	
	17 March	18 March	19 March	20 March	21 March
9h	combining			EXAM	EXAM
10h	technologies			EXAM	EXAM
11h	in accelerator				

9 students before PhD

Fig. IV.2.27: Historical timetable of JUAS 1997 Course 2.


(COURSE 1)		WEEK #1					
		15 Jan. Monday	16 Jan. Tuesday	17 Jan. Wednesday	18 Jan. Thursday	19 Jan. Friday	
MORNING <i>(From 9:00 to 12:00)</i>			Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	09:00 - 10:00
			Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	10:00 - 11:00
		(10:30 - 12:30) OFFICIAL OPENING: Presentation of JUAS & Introduction of students <i>E. Métral, B. Holland, S. Vandergooten</i>	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Intro on Colliders Seminar <i>E. Métral</i>	Transverse Beam Dynamics B. Holzer	11:00 - 12:00
AFTERNOON <i>(From 13:30 onwards)</i>		(14:00 - 15:30) Special relativity, electromagnetism, classical & quantum mechanics: What to remember for particle accelerators <i>E. Métral</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Transverse Beam Dynamics B. Holzer	Longitudinal Beam Dynamics <i>A. Lasheen</i>	12:00 - 13:30
			Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	13:30 - 14:30
		Particle Accelerators in the 21st century Seminar <i>M. Vretenar</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	14:30 - 15:30
		CHECK-IN AT THE RESIDENCE & SHOPPING FOR GROCERIES	Introduction to CERN & its Accelerator Complex Seminar <i>R. Steerenberg</i>		Longitudinal Beam Dynamics <i>A. Lasheen</i>		15:30 - 16:30
					Longitudinal Beam Dynamics <i>A. Lasheen</i>		16:30 - 17:30

Fig. IV.2.28: Timetable of JUAS 2024 Course 1: Week 1/5


(COURSE 1)		WEEK #2					
		22 Jan. Monday	23 Jan. Tuesday	24 Jan. Wednesday	25 Jan. Thursday	26 Jan. Friday	
MORNING <i>(From 9:00 to 12:00)</i>		Introduction to MAD-X <i>N. Fuster Martinez</i>	Introduction to PyHeadTail <i>B. Salvant</i>	PyHeadTail workshop <i>B. Salvant</i>	Linacs <i>D. Alesini</i>	Linacs <i>D. Alesini</i>	09:00 - 10:00
		Transverse Beam Dynamics (exam preparation) B. Holzer	Longitudinal Beam Dynamics (exam preparation) <i>A. Lasheen</i>	PyHeadTail workshop <i>B. Salvant</i>	Linacs <i>D. Alesini</i>	Linacs <i>D. Alesini</i>	10:00 - 11:00
		Transverse Beam Dynamics (exam preparation) B. Holzer	Longitudinal Beam Dynamics (exam preparation) <i>A. Lasheen</i>	PyHeadTail workshop <i>B. Salvant</i>	Linacs <i>D. Alesini</i>	Linacs <i>D. Alesini</i>	11:00 - 12:00
AFTERNOON <i>(From 13:30 onwards)</i>		MADX workshop <i>N. Fuster Martinez</i>	MADX workshop <i>N. Fuster Martinez</i>	Transverse linear imperfections <i>D. Gamba</i>	Linacs <i>D. Alesini</i>	Transverse linear imperfections <i>D. Gamba</i>	12:00 - 13:30
		MADX workshop <i>N. Fuster Martinez</i>	MADX workshop <i>N. Fuster Martinez</i>	Transverse linear imperfections <i>D. Gamba</i>	Linacs <i>D. Alesini</i>	Transverse linear imperfections <i>D. Gamba</i>	13:30 - 14:30
		MADX workshop <i>N. Fuster Martinez</i>	MADX workshop <i>N. Fuster Martinez</i>	Transverse linear imperfections <i>D. Gamba</i>	Transverse linear imperfections <i>D. Gamba</i>	FCC-hh Seminar <i>M. Giovannozzi</i>	14:30 - 15:30
		LHC & HL-LHC Seminar <i>O. Brüning</i>	Electron-positron circular colliders Seminar <i>J. Keintzel</i>	Transverse linear imperfections <i>D. Gamba</i>	Transverse linear imperfections <i>D. Gamba</i>		15:30 - 16:30
				Transverse linear imperfections <i>D. Gamba</i>	Transverse linear imperfections <i>D. Gamba</i>		16:30 - 17:30

Fig. IV.2.29: Timetable of JUAS 2024 Course 1: Week 2/5

IV.2.3. JUAS statistics

(COURSE 1)		WEEK #3					
juas...		29 Jan. Monday	30 Jan. Tuesday	31 Jan. Wednesday	1 Feb. Thursday	2 Feb. Friday	
MORNING (From 9:00 to 12:00)	WRITTEN EXAMINATION (09:00 - 10:30) <i>Transverse beam dynamics</i>	Cyclotrons & FFAs <i>B. Jacquot</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	09:00 - 10:00	
	WRITTEN EXAMINATION (11:30 - 13:00) <i>Longitudinal beam dynamics</i>	Cyclotrons & FFAs <i>B. Jacquot</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	10:00 - 11:00	
		Cyclotrons & FFAs <i>B. Jacquot</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	11:00 - 12:00	
12:00 - 13:30							
AFTERNOON (From 13:30 onwards)	Trip to CERN	Nuclear collisions at the LHC Seminar <i>J. Jowett</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	13:30 - 14:30	
	Visit of the CERN LEIR accelerator <i>N. Biancacci</i>	Future high-energy linear colliders Seminar <i>P. Burrows</i>	Cyclotrons & FFAs <i>B. Jacquot</i>	Transverse nonlinear effects <i>H. Bartosik</i>	Transverse nonlinear effects <i>H. Bartosik</i>	14:30 - 15:30	
	Visit to ALICE experiment (CERN LHC) <i>J. Jowett</i>	Muon collider Seminar <i>D. Schulte</i>	Cyclotrons & FFAs <i>B. Jacquot</i>	Transverse nonlinear effects <i>H. Bartosik</i>	Transverse nonlinear effects <i>H. Bartosik</i>	15:30 - 16:30	
	Visit of the CCC	The US Electron-Ion collider (Zoom PPT) Seminar <i>T. Satogata</i>	Cyclotrons & FFAs <i>B. Jacquot</i>	Transverse nonlinear effects <i>H. Bartosik</i>	Transverse nonlinear manipulations Seminar <i>M. Giovannozzi</i>	16:30 - 17:30	
	Dinner at CERN					17:30 - Onwards	

Fig. IV.2.30: Timetable of JUAS 2024 Course 1: Week 3/5

(COURSE 1)		WEEK #4					
juas...		5 Feb. Monday	6 Feb. Tuesday	7 Feb. Wednesday	8 Feb. Thursday	9 Feb. Friday	
MORNING (From 9:00 to 12:00)	WRITTEN EXAMINATION (09:00 - 10:30) <i>Synchrotron Radiation</i>	Accelerator design <i>B. Härer</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Accelerator design Workshop <i>A. Oeftiger</i>	09:00 - 10:00	
		Accelerator design <i>B. Härer</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Accelerator design Workshop <i>A. Oeftiger</i>	10:00 - 11:00	
	Free-Electron Lasers Seminar <i>E. Prat Costa</i>	Accelerator design <i>B. Härer</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Accelerator design Workshop <i>A. Oeftiger</i>	11:00 - 12:00	
12:00 - 13:30							
AFTERNOON (From 13:30 onwards)	Injection / Extraction <i>N. Carmignani</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	CERN LIU Project: Beam dynamics aspects & solutions Seminar <i>G. Rumolo</i>	13:30 - 14:30	
	Injection / Extraction <i>N. Carmignani</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Beam-based impedance measurements Seminar <i>N. Biancacci</i>	Novel High Gradient Particle Accelerators Seminar <i>R. Assmann</i>	Accelerator design Workshop <i>A. Oeftiger</i>	14:30 - 15:30	
	Injection / Extraction <i>N. Carmignani</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Accelerator design <i>B. Härer</i>	Accelerator design Workshop <i>A. Oeftiger</i>	Accelerator design Workshop <i>A. Oeftiger</i>	15:30 - 16:30	
	Fixed-target beamlines Seminar <i>A. Gerbershagen</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Accelerator design <i>B. Härer</i>	Accelerator design Workshop <i>A. Oeftiger</i>	Accelerator design Workshop <i>A. Oeftiger</i>	16:30 - 17:30	

Fig. IV.2.31: Timetable of JUAS 2024 Course 1: Week 4/5

(COURSE 1)		WEEK #5				
juas		12 Feb. Monday	13 Feb. Tuesday	14 Feb. Wednesday	15 Feb. Thursday	16 Feb. Friday
MORNING (From 9:00 to 12:00)	Accelerator design Workshop <i>A. Oeftiger</i>	ORAL EXAMINATION Accelerator design	PRIVATE STUDIES	Trip to ESRF	CHECK-OUT AT THE RESIDENCE	09:00 - 10:00
	Accelerator design Workshop <i>A. Oeftiger</i>					I-FAST-CBI: Challenge based innovation for particle accelerators & related technologies Seminar <i>N. Delerue</i>
	Accelerator design Workshop <i>A. Oeftiger</i>		WRITTEN EXAMINATION Subject 4 (TBA mid week 4)	Visit of ESRF: Intro, Scientific case & Facility <i>J.-L. Revol</i>	CLOSING SESSION Course 1 + Final Drink & lunch	11:00 - 12:00
AFTERNOON (From 13:30 onwards)	PRIVATE STUDIES	ORAL EXAMINATION Accelerator design	PRIVATE STUDIES	Visit of ESRF: Intro, Scientific case & Facility <i>J.-L. Revol</i>		12:00 - 13:30
	Accelerator design: Summary discussion <i>A. Oeftiger et al.</i>	WRITTEN EXAMINATION Subject 5 (TBA mid week 4)	Visit of ESRF: Control room & Beamline <i>J.-L. Revol</i>	13:30 - 14:30		
				Visit of ESRF: Control room & Beamline <i>J.-L. Revol</i>		14:30 - 15:30
				15:30 - 16:30		

Fig. IV.2.32: Timetable of JUAS 2024 Course 1: Week 5/5

(COURSE 2)		WEEK #6				
juas		19 Feb. Monday	20 Feb. Tuesday	21 Feb. Wednesday	22 Feb. Thursday	23 Feb. Friday
MORNING (From 9:00 to 12:00)			Introduction to RF <i>A. Mostacci</i>	Introduction to RF <i>A. Mostacci</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>
			Introduction to RF <i>A. Mostacci</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>
	(10:30) OFFICIAL OPENING: Presentation of JUAS & Introduction of students <i>E. Métral, B. Holland, S. Vandergooten</i>	Introduction to RF <i>A. Mostacci</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>
AFTERNOON (From 13:30 onwards)	Particle accel., instruments of discovery in physics (Seminar) <i>P. Lebrun</i>	Normal Conducting Magnets INTRODUCTION (Lect. #1) <i>T. Zickler</i>	Normal Conducting Magnets MAGNET CONSTRUCTION (Lect. #4) <i>T. Zickler</i>	Normal Conducting Magnets CASE STUDY INTRODUCTION (Lect. #7) <i>J. Bauche, T. Zickler</i>	Normal Conducting Magnets CASE STUDY #2 (by sub-groups #6) <i>J. Bauche, T. Zickler</i>	13:30 - 14:30
	Introduction to CERN practical days Magnet / SC / RF / Vacuum / CLEAR <i>J. Bauche, J. Fleiter, F. Caspers, V. Baglin, R. Corsini, P. Korysko</i>	Normal Conducting Magnets BASIC PRINCIPLES (Lect. #2) <i>T. Zickler</i>	Normal Conducting Magnets ANALYTICAL DESIGN (Lect. #5) <i>T. Zickler</i>	Normal Conducting Magnets CASE STUDY #1 (by sub-groups #6) <i>J. Bauche, T. Zickler</i>	Normal Conducting Magnets CASE STUDY #3 (by sub-groups #6) <i>J. Bauche, T. Zickler</i>	14:30 - 15:30
	CHECK-IN AT THE RESIDENCE & SHOPPING FOR GROCERIES + ELENA (TBC via Di-Gamba)	Normal Conducting Magnets MAGNET TYPES (Lect. #3) <i>T. Zickler</i>	Normal Conducting Magnets NUMERICAL DESIGN (Lect. #6) <i>T. Zickler</i>	Normal Conducting Magnets CASE STUDY #1 (Cont'd) (by sub-groups #6) <i>J. Bauche, T. Zickler</i>	Normal Conducting Magnets CASE STUDY #4 (by sub-groups #6) <i>J. Bauche, T. Zickler</i>	15:30 - 16:30

Fig. IV.2.33: Timetable of JUAS 2024 Course 2: Week 1/5

IV.2.3. JUAS statistics

(COURSE 2)		WEEK #7					
		26 Feb. Monday	27 Feb. Tuesday	28 Feb. Wednesday	29 Feb. Thursday	1 Mar. Friday	
MORNING (From 9:00 to 12:00)	RF Engineering C. Vollinger, M. Wendt	RF Engineering C. Vollinger, M. Wendt	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan	09:00 - 10:00	
	RF Engineering C. Vollinger, M. Wendt	RF Engineering (exam preparation) C. Vollinger, M. Wendt	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan	10:00 - 11:00	
	RF Engineering C. Vollinger, M. Wendt	RF Engineering (exam preparation) C. Vollinger, M. Wendt	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan	11:00 - 12:00	
12:00 - 13:30							
AFTERNOON (From 13:30 onwards)	Normal Conducting Magnets CASE STUDY (Oral presentation by group/students) J. Bauche, T. Zickler	Cryogenics for Superconducting devices P. Lebrun	Vacuum systems V. Baglin & R. Kersevan	Superconducting magnets P. Ferracin	Superconducting magnets P. Ferracin	13:30 - 14:30	
	Normal Conducting Magnets CASE STUDY (Oral presentation by group/students) J. Bauche, T. Zickler	Superconductivity (intro): RF vs. magnets C. Antoine	Superconducting RF Cavities F. Caspers, S. Calatroni	Superconducting magnets P. Ferracin	Superconducting magnets P. Ferracin	14:30 - 15:30	
	Normal Conducting Magnets TUTORIAL J. Bauche, T. Zickler	Superconductivity (intro): RF vs. magnets C. Antoine	Superconducting RF Cavities F. Caspers, S. Calatroni	Superconducting magnets P. Ferracin	Superconducting magnets P. Ferracin	15:30 - 16:30	
	Normal Conducting Magnets TUTORIAL J. Bauche, T. Zickler	Superconductivity (intro): RF vs. magnets C. Antoine	Materials for SCRF cavities: Beyond niobium (Seminar) S. Calatroni	Superconducting magnets P. Ferracin	Superconducting magnets (exam preparation) P. Ferracin	16:30 - 17:30	
			(18:00 - 20:00) Special afterwork drink with RF questions to Fritz Caspers				

Fig. IV.2.34: Timetable of JUAS 2024 Course 2: Week 2/5


(COURSE 2)		WEEK #8					
		4 Mar. Monday	5 Mar. Tuesday	6 Mar. Wednesday	7 Mar. Thursday	8 Mar. Friday	
MORNING (From 9:00 to 12:00)	WRITTEN EXAMINATION RF Engineering	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	09:00 - 10:00
	WRITTEN EXAMINATION	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	10:00 - 11:00
	Magnets (Normal & Superconducting) + report for NC from students to be given before (prep. for exam)	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	Beam instrumentation P. Forck	11:00 - 12:00
12:00 - 13:30							
AFTERNOON (From 13:30 onwards)	Trip to CERN	Particle Sources T. Thuillier	Particle Sources T. Thuillier	Visit & Experimental work at Bergoz Instrumentation E. Touzain	Beam instrumentation (exam preparation) P. Forck	13:30 - 14:30	
	Visit of LINAC4 A. Lombardi, J-B. Lallement	Particle Sources T. Thuillier	Particle Sources T. Thuillier	Visit & Experimental work at Bergoz Instrumentation E. Touzain	Beam instrumentation (exam preparation) P. Forck	14:30 - 15:30	
	Visit of AD ELENA C. Carli	Particle Sources T. Thuillier	Particle Sources T. Thuillier	Visit & Experimental work at Bergoz Instrumentation E. Touzain	Energy recovery linacs Seminar M. Arnold	15:30 - 16:30	
	Visit of THIN FILM COATING FACILITIES P. Costa Pinto, W. Vollenberg	Bench-impedance measurements & materials characterization Seminar N. Biancacci	Muon Colliders & associated technological challenges Seminar L. Bottura	Visit & Experimental work at Bergoz Instrumentation E. Touzain		16:30 - 17:30	
	Visit CLEAR P. Korysko					17:30 - Onwards	
	Dinner at CERN						

Fig. IV.2.35: Timetable of JUAS 2024 Course 2: Week 3/5

(COURSE 2)		WEEK #9				
juas...		11 Mar. Monday	12 Mar. Tuesday	13 Mar. Wednesday	14 Mar. Thursday	15 Mar. Friday
MORNING <i>(From 9:00 to 12:00)</i>	WRITTEN EXAMINATION (09:00 - 10:30) Beam Instrumentation		Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Low Energy Accelerators W. Mondelaers	Acc. for medical & Industrial applications E. Vanderkraaij
			Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Low Energy Accelerators W. Mondelaers	Acc. for medical & Industrial applications E. Vanderkraaij
	Life-cycle and operability of particle accelerators S. Meyroneinc		Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Low Energy Accelerators W. Mondelaers	Acc. for medical & Industrial applications E. Vanderkraaij
AFTERNOON <i>(From 13:30 onwards)</i>	Life-cycle and operability of particle accelerators S. Meyroneinc		Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Survey and Alignment of Accelerators J.-C. Gayde	Radiation safety X. Queralt
	High Power Proton Linacs M. Eshraqi		Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Survey and Alignment of Accelerators J.-C. Gayde	Radiation safety X. Queralt
	High Power Proton Linacs M. Eshraqi		Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Practical days at CERN RF / SC / VACUUM / MAGNET / CLEAR	Survey and Alignment of Accelerators J.-C. Gayde	Radiation safety X. Queralt
	High Power Proton Linacs M. Eshraqi				Accelerator driven system Seminar F. Bouly	AWAKE Seminar E. Gschwendtner

Fig. IV.2.36: Timetable of JUAS 2024 Course 2: Week 4/5

(COURSE 2)		WEEK #10				
juas...		18 Mar. Monday	19 Mar. Tuesday	20 Mar. Wednesday	21 Mar. Thursday	22 Mar. Friday
MORNING <i>(From 9:00 to 12:00)</i>	WRITTEN EXAMINATION (09:00 - 10:30) Subject 4 (TBA mid week 9)		ORAL EXAMINATION	Trip to PSI	Visit of PSI - ProScan presentation - SLS presentation & tour - SwissFEL presentation & tour - Accelerator controls (E. Zimoch) - Machine learning - Dielectric laser accelerators	CHECK-OUT AT THE RESIDENCE
	WRITTEN EXAMINATION (11:30 - 13:00) Subject 5 (TBA mid week 9)		Practical days @CERN			CLOSING SESSION Course 2 + Final Drink & lunch
AFTERNOON <i>(From 13:30 onwards)</i>	PRIVATE STUDIES		Trip to Geneva Hospital	Visit of PSI - ProScan presentation - SLS presentation & tour - SwissFEL presentation & tour - Accelerator-controls - Machine learning - Dielectric laser accelerators	Trip back from PSI	
			Visit to Geneva Hospital			
			Radiation Oncology: Biology, Physics & Clinical Applications (Seminar) A. Durham			
			Dinner @PSI			

Fig. IV.2.37: Timetable of JUAS 2024 Course 2: Week 5/5