A.D. 1308 unipg UNIVERSITÀ DEGLI STUDI DI PERUGIA	**Documento di pianificazione e di organizzazione delle attività formative e di ricerca (DPO)**	**MODOT AQ 3 Rev 01 del 21.03.2024**

Il Documento di pianificazione e di organizzazione delle attività formative e di ricerca viene richiesto al Corso di Dottorato in fase di presentazione della scheda di accreditamento del corso di dottorato. Ai contenuti del DPO viene data adeguata visibilità nel sito web del corso ai fini dell'attrattività e della trasparenza. Il DPO viene eventualmente aggiornato annualmente in caso di modifiche e si può redigere anche solo in lingua inglese.

PhD program in "Pharmaceutical Sciences"
Department of Pharmaceutical Sciences
Via Fabretti n. 48, 06123 Perugia

Data di compilazione March, 30th, 2024

Training activities calendar (D.PHD.2.1)

Attività didattiche – tipologia A, B e C (come da linee guida di Ateneo per la definizione delle attività didattiche e formative nell'ambito dei corsi di dottorato di ricerca, approvate dagli OO.AA. in data 30 e 31 gennaio 2024)

A. Frontal teaching provided by Doctoral Course in Pharmaceutical Sciences. Each student must acquire at least 18 credits of the courses indicated below in the three-year period.

The courses planned by Academic Board cover topics in Scientific Disciplinary Sectors relevant to the two curricula, with focus on medicinal chemistry, analytical chemistry, pharmaceutical technology, organic and bioorganic chemistry, nutraceuticals, molecular biology, and biochemistry. Relevance will be also given to interactive teaching consisting in group activities coordinated by a tutor. Following the teaching activities of type A planned for the XL cycle are reported, of which some are specifically planned for one of the two curricula.

Denominazione insegnamento	**n. cfu (ore)**	**SSD insegnamento**	**Verifica finale***	**Docente**	**Tipologia Docente****	**Distribuzione durante il ciclo di dottorato (anni in cui l'insegnamento è attivo)**	**Eventuale curriculum di riferimento*****
Solid state characterization of pharmaceuticals	2 (12)	CHIM/03	written	Prof. A. Donnadio	Associate professor and member of the teaching board	I year	CC
In silico toxicology	2 (12)	CHIM/08	written	Prof. Ecker Gerhard Dept. of Pharmaceutical Sciences - University of Vienna, Austria L240/2010 art.23 Comma3	*Academic high profile foreign expert*	I year	CC
Modern NMR techniques for	2 (12)	CHIM/06	written	Prof. C. Santi	Associate professor and	I year	EPDD

structures elucidation					member of the teaching board		
Mass spectrometry-based analytical approaches in the evaluation of environmental contamination by pharmaceuticals and personal care products (PPCPs)	2 (12)	CHIM/01	written	Dr L. Mattoli Aboca S.p.A. L240/2010 art.23 Comma 1	*esperto italiano di elevato profilo proveniente dalle aziende*	I year	CC
Classical and innovative approaches to address Anti-Microbial Resistance I	1 (6)	CHIM/08	written	Prof. Hirsch A.K.H. Helmholtz Institute for Pharmaceutical Research Saarland (HIPS), Germany L240/2010 art.23 Comma 3	*Academic high profile foreign expert*	I year	EPDD
Classical and innovative approaches to address Anti-Microbial Resistance II	1 (6)	CHIM/08	written	Prof. S Sabatini	Associate professor and member of the teaching board	I year	EPDD
Bioactives from Agri-Food Waste I	1 (6)	CHIM/09	written	Prof. Schoubben A.	Associate professor and member of the teaching board	I year	PTN
Bioactives from Agri-Food Waste II	1 (6)	CHIM/10	written	Prof. F. Blasi	Assistant professor and and member of the teaching board	I year	PTN
Plant extracts I	1 (6)	AGR/13	written	Prof C. Zadra	Associate professor and member of the teaching board	I year	PTN
Plant extracts II	1 (6)	BIO/15	written	Prof. MC Marcotullio	Associate professor and member of the teaching board	I year	PTN
Application of RT-PCR in basic and clinical research	2 (12)	BIO/10	written	Prof. Albi E.	Associate professor and member of the teaching board	II year	PTN
Multi-omics strategies in drug discovery and nutraceutical development and validation	2 (12)	MED/49	written	Prof F Galli	Full professor and member of the teaching board	II year	PTN
Emerging Approaches	1 (6)	BIO/11	written	Prof. Fatica A.	L240/2010 art.23	II year	CC

using Nucleic Acids as target or therapeutic molecules for the treatment of complex diseases I				Sapienza University of Rome, Associate Professor	Selection notice		
Emerging Approaches using Nucleic Acids as target or therapeutic molecules for the treatment of complex diseases II	1 (6)	BIO/11	written	Prof. Morlando M. Sapienza University of Rome	Associate professor and member of the teaching board L240/2010 art.23 Lettera di incarico	II year	CC
Rational design of small molecule degraders: from PROTAC to IFDs	2 (12)	CHIM/08	written	L240/2010 art.23 Comma 3	High profile foreign expert from companies	II year	EPDD
Integrated technology platforms for medicinal chemistry and organic synthesis	2 (12)	CHIM/08	written	Prof A. Gioiello	Associate professor and member of the teaching board	II year	EPDD
Biophysical techniques: principles and applications	2 (12)	CHIM/08	written	External expert	L240/2010 art.23 Comma 2	II year	CC
Surface plasmon resonance: principles and applications	2 (12)	CHIM/08	written	Prof. G. Manfroni	Associate professor and member of the teaching board	II year	CC
Catalytic approaches for the preparation of bioactive compounds	2 (12)	CHIM/06	written	Prof. L. Sancineto	Associate professor and member of the teaching board	III year	EPDD
Exploring Computer-Aided Drug Discovery: Theory and Practice	2 (12)	CHIM/08	written	Prof Maria Letizia Barreca	Associate professor and member of the teaching board	III year	EPDD
Short course on ADME-PK and Physicochemical Properties of Drugs	2 (12)	CHIM/08	written	L240/2010 art.23 Comma 3	High profile foreign expert from companies	III year	CC

**scritta, orale, realizzazione di un elaborato (saggio, presentazione, etc…)*

***componenti del collegio dei docenti, studiosi ed esperti italiani e stranieri di elevato profilo provenienti dal mondo accademico, dagli enti di ricerca, dalle aziende, dalle istituzioni culturali e sociali; indicare nome del docente ove possibile o la tipologia del contratto da stipulare.*

***cc: corso comune; PTN: pharmaceutical technology and nutraceuticals; EPDD: early phase drug discovery.

B. Frontal teaching provided by other Doctoral Courses

Il Corso di dottorato suggerisce le sottoelencate attività, tuttavia il dottorando può scegliere in maniera autonoma ulteriori attività, per le quali saranno riconosciuti i relativi cfu secondo quanto previsto dalle Linee guida di Ateneo per la definizione delle attività didattiche e formative nell'ambito dei Corsi di dottorato di ricerca.

Denominazione insegnamento	n. cfu (ore)	SSD insegnamento	Verifica finale*	Docente	Ripartizione/Area/Ufficio di Ateneo /Dottorato di riferimento	Distribuzione durante il ciclo di dottorato (anni in cui l'insegnamento è attivo)	Eventuale curriculum di riferimento

**scritta, orale, realizzazione di un elaborato (saggio, presentazione, etc…)*

C. Frontal and transversal teaching of the University and/or another multi/inter/trans-disciplinary Doctoral Course - Each student must acquire at least 6 credits in the three-year period

Denominazione insegnamento	n. cfu (ore)	SSD insegnamento	Corso erogato da……..	Distribuzione durante il ciclo di dottorato (anni in cui l'insegnamento è attivo)	Eventuale curriculum di riferimento	Verifica finale*	Docente
Elements of statistic	6 (12)	MAT/06	Associate professor UNIPG	II year	CC**	written	Prof Andrea Capotorti

**scritta, orale, realizzazione di un elaborato (saggio, presentazione, etc…)*

***cc: corso comune*

Attività didattiche – tipologia D (come da linee guida di Ateneo per la definizione delle attività didattiche e formative nell'ambito dei corsi di dottorato di ricerca, approvate dagli OO.AA. in data 30 e 31 gennaio 2024)

D. Congressional activities, doctoral schools and other scientific events - each student must acquire at least 3 credits over the three-year period.

PhD students are invited to participate in:

-**national/international congresses and/or workshops**, also as speakers;

-national and international schools on topics related to the PhD program. The suggested schools can be found in: https://dsf.unipg.it/alta-formazione/dottorato-di-ricerca/training-activities-phd/suggested-international-and-national-schools-2;

-seminars on topics specifically addressed the two curricula and organized by the academic board (at least 3-4 per year), other doctoral courses, universities/institutions or companies.

All the organized or suggested activities are reported in good time on the doctoral website, however, the PhD student can independently choose further activities, for which the relevant credits will be recognized in accordance with the University Guidelines for the definition of teaching and training activities within the Doctoral Courses**.**

Tipo di attività	Descrizione dell'attività (e delle modalità di accesso alle infrastrutture per i dottorati nazionali)	n. cfu (ore)	Eventuale curriculum di riferimento	Documentazione richiesta*

**attestato di frequenza/attestato di partecipazione, etc…*

Integration of doctoral students in the scientific community (D.PHD.2.2)

The PhD program promotes the integration of the enrolled PhD students in the scientific community by:

- **Training moments for the exchange/presentation of research results**, as follows:
  - at the end of the first and second year, the PhD student presents a written report in English on the research activities carried out. The report is examined and evaluated by a commission made up of members belonging to the Academic Board which evaluates the ability to develop and illustrate the research project and eventually suggests revisions;
  - at the end of the first year, each PhD student gives a seminar on the preliminary results;
  - at the end of the second year, each PhD student presents a monographic thematic seminar on topics related to her/ his curricular path.
  Both seminars will be held in English.
- **attending national/international congresses and/or workshops**, also as speakers (at least one in the three-year period)
- **attending national and international schools** on topics related to the PhD program (at least one in the three-year period). The suggested schools can be found in: https://dsf.unipg.it/alta-formazione/dottorato-di-ricerca/training-activities-phd/suggested-international-and-national-schools-2.

The integration of the enrolled PhD students in the scientific community is also favoured by the participation in doctoral networks, such as EUROPIN and Paul Erhlich MedChem, and international scientific networks and research projects.

Autonomy of the PhD student (D.PHD.2.3)

During the three years the PhD students will acquire scientific and technical abilities in carrying out research activities, in participating in scientific discussions, as well as, in communicating the results of their researches to all type of audiences and progressively will develop autonomy in set up and manage original research projects or innovative programs. The training program should provide adequate skills to enter a broader job market than the academic one.

The PhD program promotes the autonomy of the enrolled PhD students in conceiving, planning, implementing and disseminating research and innovation programs by:

- adequate support and guidance from the academic tutor as well as from the curricula referents and the appointed commission; the identification of the academic tutor takes place on the basis of the research topics included in the call for the admission, according to rotation criteria. A maximum number of 2 doctoral students for each tutor will be possible;
- a company co-supervisor is provided for the PhD student working in the company;
- external Italian and foreign tutors from the academic world, research institutions and companies are part of the Board with support and mentoring roles;
- courses of management and dissemination of research, European and International research systems and intellectual properties organized by University of Perugia.

Financial and structural resources (D.PHD.2.4)

• Some PhD grants are financed by Unipg. Doctoral students have a pro-capite budget made available by the University, starting from the first year, equal to 10% of a PhD scholarship. The amount of the

scholarship is increased by 50% for carrying out research activities abroad, for a total period not exceeding 12 months.

•The financial resources for carrying out the research activities are provided by the supervisors with their own research funds;

•PhD students have access to the department's facilities, scientific laboratories and instrumental resources of the Department of Pharmaceutical Sciences. Adequate access to databases is also provided.

Teaching and tutoring activities (D.PHD.2.5)

As an integral part of the training project, PhD students can carry out:

- tutoring activities for students of Bachelor's degree courses, Single-cycle degree courses and Master's degree courses;
- integrative teaching activity for a maximum number of 40 hours per year;
- tutoring activities for teaching laboratories by department call;
- research dissemination programs (Sharper, orientation activities for master degree students, etc).

Scientific reports and PhD student mobility (D.PHD.2.6)

• Co-tutorship agreements between the University of Perugia and foreign Universities are signed for the purpose of establishing a joint doctoral program for specific PhD students. Moreover, dual degree titles can be awarded.

• The PhD students may spend periods of study and research at qualified national or foreign universities, public or private research institutions and companies. Ordinarily a foreign mobility period of 6 months, even non-continuous, is expected.

Research products (D.PHD.2.7)

- PhD students are encouraged to disseminate the results of their work publishing articles in peer-reviewed international journals, filing patents, presenting oral or poster communications to congresses/schools/workshops, writing book chapters, and developing tools or software, etc. Each student is expected to publish 1 paper in a peer-reviewed international journal or to present 2 communications at international congresses/conferences/workshops.