STEM Teaching Competences, Lecturer Attitudes and CPD Activities

STEM-CPD@EUni Roadmap[1]

Part 1: Teaching competences

No	Statement
1	frame the course in the context of the study programme
2	define intended learning outcomes in every course they teach
3	choose an appropriate assessment method for their course
4	engage students and arouse interest for the discipline in the class
5	teach holistically by integrating social and art aspects in teaching and learning complex chemical concepts
6	cope with heterogeneous pre-knowledge of students
7	being able to bring out and correct misconceptions
8	develop critical thinking by students
9	give prompt feedback and support students during learning
10	support students in socializing (specifically e.g. during a pandemic)
11	stimulate discussion
12	design laboratory courses
13	teach about lab safety using digital tools/platform (where appropriate)
14	teach large groups of students
15	teach small groups of students (group's dynamics)
16	design interactive lectures
17	design online exams
18	design problem solving sessions
19	design active learning classes / sessions using digital technology
20	use digital tools in lab courses
21	use design thinking methods
22	use research based teaching methods
23	use project based teaching methods
24	use blended learning approach
25	use interactive online boards for teaching and learning
26	use voting in lectures to activate thinking and understanding of (e.g. chemistry) concepts
27	organize peer-assessment / peer-feedback in their courses
28	organize (online) collaborative learning
29	use advanced tools, based on artificial intelligence, in supporting students in their learning process
30	make/produce short MOOCs

Larger clusters of Teaching Competences

P1-1 Constructive alignment (q. 1, 2, 3, 6)
P1-2 Pedagogy, Interactive teaching
    P1-2a Competence teaching (q. 9, 10, 14, 15)
    P1-2b Competence design interactive teaching (q. 16, 19)

P1-3 Pedagogy, Learning facilitation
  P1-3a Problem solving (design and teaching) (q. 18, 21, 22, 23)
  P1-3b Engagement and motivation, facilitation discipline specific learning (q. 4, 12, 13)
  P1-3c Deep learning (q. 5, 7, 8, 11)
  P1-3d Organize peer-feedback, collaborative learning (q. 27, 28)
P1-4 Technology in facilitative teaching:
  P1-4a Use of digital tools for a pedagogical goal (q. 17, 25, 26, 29, 30)
  P1-4b Blended learning (q. 20, 24)

Part 2: Lecturer Attitudes

No	Statement
1	be reflective teachers and reflect about their courses / lectures.
2	have high expectations for the students and themselves.
3	inspire a positive attitude in their class.
4	make students feel special, included, safe and secure.
5	be interested in their students' progress.
6	use students evaluations and the feedback of students to improve courses.
7	read literature about teaching and learning in higher education.
8	discuss teaching with their colleagues.
9	observe (some) lectures / teaching sessions of colleagues and give feedback.
10	record (some) own lectures / teaching sessions on the video to reflect on.
11	organize / attend meetings of their own teaching team to discuss / reflect on the teaching methods and on the effect of those on students' learning.
12	share experience and knowledge gained through continuous professional development (CPD) with lecturers from other institutions.
13	analyse the effect of teaching and introduce changes in an evidence based way.
14	set their own goals for professional development.
15	attend training for lecturers at the university.
16	apply for specific professional development programmes to obtain certificate(s) in teaching. (If this doesn't exist in your country, please indicate in General importance what is your personal opinion about it and choose in Personal practice not applicable)
17	participate in conferences about teaching in higher education.

Larger clusters of CPD Attitudes

P2-1 Motivation and self-regulation for CPD (q. 2, 14, 15, 16)
P2-2 Pastoral interest (q. 3, 4, 5)
P2-3 Reflection (q. 1, 10, 11)
P2-4 Evidence informed approach (q. 6, 7, 13)
P2-5 Knowledge sharing (q. 8, 9, 12, 17)

Part 3: CPD Activities

No	Statements
1	reading books / journal articles on teaching and learning in HE.
2	attending presentations about teaching approaches.
3	attending webinars about teaching and learning.
4	attending hands-on workshops on specific continuous professional development (CPD) topics.
5	following online courses / MOOC about teaching and learning.
6	attending conferences on teaching and learning in HE.
7	attending a summer school on teaching and learning.
8	attending a professional development programme to get a teaching certificate in higher education*
9	attending workshops that are organized specifically for STEM lecturers.
10	attending workshops that are organized generally for lecturers from different disciplines.
11	collaborating with a peer-lecturer on a redesign of a course.
12	getting peer-feedback on own teaching practice from a colleague.
13	collaborating on a teaching innovation project.
14	getting personal coaching / support by a pedagogical expert.
15	getting mentoring from an experienced colleague.
16	getting just-in-time support on a specific teaching and learning issue.
17	giving mentoring to a junior lecturer.
18	giving workshops to other lecturers.
19	participating in a teaching and learning network or a special interest group on teaching and learning in HE.

*if there existed no progamme to achieve a teaching certificate in higher education in the country, the participants were requested to only indicate their opinion about the General importance and to choose not applicable in the Personal practice perspective.

Larger clusters of CPD Activities

P3-1 Imparting information (trainer-centered) (q. 1, 2, 3)
P3-2 Learning facilitation (person-centered) (q. 4, 5, 7, 8, 9, 10)
P3-3 Collaboration (q. 11, 13)
P3-4 Mentor-mentee support (q. 12, 15, 17)
P3-5 (Personal/individual) expert support (q. 14, 16)
P3-6 Knowledge sharing (q. 6, 18, 19)

[1]The statements in Part 1, 2, and 3 are defined in the STEM-CPD@EUni project Roadmap, https://ectn.eu/work-groups/stem-cpd/