



UNIVERSITY OF HELSINKI

# CENTRE FOR CONTINUING EDUCATION

## STEM ONLINE PROGRAMME COURSE CONTENT

### Chapter 1

1. Why early education matters: The importance of science education
2. Defining STEM education
3. Four C's of STEM Education
4. Science in everyday life: Part 1
5. Science in everyday life: Part 2
6. STEM activities: Air
7. STEM activities: Slime
8. Technology in STEM education
9. STEM activities: number sense
10. STEM activities: programmatic thinking

### Chapter 2

11. STEM activities: States of matter
12. Child-centered approaches
13. Inquiry-based approaches
14. Activating previous knowledge
15. STEM activities: solubility
16. STEM activities: do plants breathe?

17. STEM activities: sound

18. STEM activities: measuring

19. STEM activities: decomposing numbers

20. STEM activities: algorithmic thinking

### Chapter 3

21. Learning by doing

22. Inquiry-based STEM education

23. Inquiry-based STEM education: promoting children's questions

24. Guided inquiry

25. STEM activities: screen-free programming

26. STEM activities: air pressure

27. STEM activities: water

28. STEM activities: what plants do to grow?

29. STEM activities: shapes

30. STEM activities: programming as a language

### Chapter 4

31. Principles of inquiry-based learning: Part 1

32. Principles of inquiry-based learning: Part 2

33. Child-centered approaches
34. Creativity in technology education
35. STEM activities: air resistance
36. STEM activities: how do plants drink?
37. STEM activities: electric circuits
38. STEM activities: colours
39. STEM activities: patterns
40. STEM activities: digital toys to promote programming skills

## **Chapter 5**

41. Phases of inquiry
42. Setting up investigations
43. Inquiry skills: collecting data
44. Inquiry skills: interpreting, drawing conclusions and reflecting
45. Technology in education
46. STEM activities: gravity
47. STEM activities: pressure
48. STEM activities: germs
49. STEM activities: geometry and spatial skills
50. STEM activities: numeracy

## **Chapter 6**

51. Cross-curricular education
52. Phenomenon-based learning
53. Designing phenomenon-based learning
54. Enriching learning environments
55. STEM activities: light and refraction
56. STEM activities: acidity
57. STEM activities: magnets
58. STEM activities: switch
59. STEM activities: statistics
60. STEM activities: adding and subtractin