

## Summer School Learning Plan

### „ Can You Escape? “

Maybe you have heard about escape rooms and wondered, what is that all about? Maybe you have already visited an escape room with your family or friends or cracked the right code for an online escape room? Escape rooms are fun, escape rooms are challenging and escape rooms can teach you a thing or two. If you take part in the summer school this year, you can find out, how to develop one entirely by yourself!

You will undertake a discovery road of escape room planning, design and printing, participate in activities that are embedded in real life situations. You will apply knowledge in different STEM areas and learn new concepts in a hands-on, collaborative and supporting environment. You will meet successful women who will share their experiences in choosing a career in STEM field: being a part of research on the use of 3D-printing, entrepreneurship with STEM-background.

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## PHFR GEM Summer School

### Target Group:

Female students from the age of 12 to 18.

### Venue:

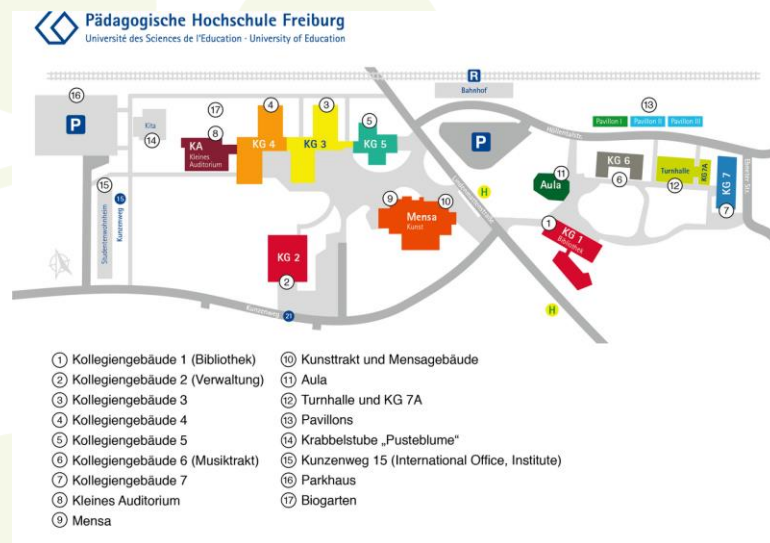
The University of Education: Kunzenweg 21 · 79117 Freiburg im Breisgau



### Transportation to the venue:

Please take Tram 1, direction *Lassberstraße*. For connections, please check <https://www.vag-freiburg.de/>

We are meeting on Wednesday at the staircase of KG5 at 8 a.m., *Lindenmattenstraße* (please notice the red arrow in the map).



### Subsistence:

The summer camp is free. Snacks and light lunch will be served every day for all participants.

### Contact person for girls and their guardians:

Students, in groups of three or five, will be led by a female mentor who will accompany them throughout the summer camp. She will be their contact person during the week.

For other information girls and their guardians may contact the organisers (Prof. Dr. Katja Maaß, Dr. Oliver Straser, Berit Stier and Dita Kreuz) [dita.kreuz@ph-freiburg.de](mailto:dita.kreuz@ph-freiburg.de).




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## Schedule

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Wednesday, 20. July

8:15 – 9:00	Welcome
9:00 – 9:45	Testing escape activities
9:45 – 10:00	Pause
10:00– 11:30	Testing escape activities
11:30 – 11:45	Pause
11:45 – 12:30	Summary: how are the escape rooms built?
12:30 – 13:00	Personal lecture and discussion with <b>Dorothea Helmer</b> from 
13:00 – 14:00	Lunch


Thursday, 21. July

8:15 – 9:00	3D-printing and 3D-design. Basics.
9:00 – 9:45	Working on a very own escape box
9:45 – 10:00	Pause
10:00– 10:45	Workshop 1: Escape Design
10:45– 11:30	Working on a very own escape box
11:30 – 11:45	Pause
11:45 – 12:30	Workshop 2: Storytelling
12:30 – 13:15	Working on a very own escape box
13:00 – 14:00	Lunch
14:00 -16:00	Frexit City Challenge




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## Friday, 22. July

8:15 – 9:00	Designing escape box with the 3D-printer
9:00 – 9:45	Working on a very own escape box
9:45 – 10:00	Pause
10:00– 10:45	Workshop 3: programming I
10:45– 11:30	Working on a very own escape box
11:30 – 11:45	Pause
11:45 – 12:45	Working on a very own escape box
12:45 – 13:15	Personal lecture and discussion with <b>Isabel Hörder</b> from  <small>Im Jugendhilfswerk Freiburg e.V.</small>
13:00 – 14:00	Lunch

## Monday, 25. July

8:15 – 9:00	Workshop 4: programming II
9:00 – 9:45	Working on a very own escape box
9:45 – 10:00	Pause
10:00– 11:00	Workshop 5: Escape Design II
11:00 – 11:30	Personal lecture and discussion with <b>Nicola Gepperth</b> from 
11:30 – 11:45	Pause
11:45 – 12:30	Finalising escape box
12:30 – 13:15	Female empowerment session
13:00 – 14:00	Lunch



Tuesday, 26. July

8:15 – 9:00	Workshop: Outlook 3D-Druck
9:00 – 9:45	Presenting and testing the escape boxes I
9:45 – 10:00	Pause
10:00– 11:30	Presenting and testing the escape boxes II
11:30 – 11:45	Pause
11:45 – 12:15	Personal lecture and discussion with <b>Lisa Ihde:</b> software-designer, book author, lecturer, design-thinking-coach, gender referee and mentor.
12:15 – 12:45	Evaluation, Certificates for Participation
13:00 – 14:30	<b>Materials Market</b> THE possibility for gaining authentic STEM world of work. Local entrepreneurs are showing their work and sharing with you their professional insights. Join the materials market with your family and friends.



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## Learning Activities

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Learning Activities	STEM/ICT subject knowledge	Knowledge of inspiring role models and their meaning	Knowledge about the STEM/digital world of work	Entrepreneurial mind-sets	Transversal skills
Planning escape activities	x				x
Escape box design	x				x
Programming	x				
Female empowerment session		x			x
Role model talks		x	x	x	
Presentation of escape activities	x				x
Presenting and testing the escape rooms				x	x
Escape City Challenge in Freiburg			x		x
Materials Market with meeting STEM scientists and professionals		x	x	x	x

During our summer school, girls will undertake a journey of discovering planning, designing, and printing 3-D escape rooms. First of all, girls will acquire STEM knowledge by preparing different exciting riddles using STEM knowledge and critical thinking. After hearing input on building and designing escape boxes, they will design their very own 3D escape boxes and gain basic programming skills to be able to print them out completely by herself. Even though the task is to do it on their own, they will get plenty of support if needed and encouraged to learn by making mistakes. Throughout the summer school girls are



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working in collaborative way as they are divided in groups of 5 and accompanied by female mentors, that are supporting the girls throughout the activities.

After these sessions, girls will know how escape activities are designed and how STEM-sciences are involved in the conceptualisation.

We have invited brilliant female STEM professionals to participate in the summer school. The girl participants will hear first-hand about 3-D printed items utilization in medicine, thus gaining a better understanding, how useful STEM is for the society and individual persons. Another speaker, a female entrepreneur, will tell about the innovative 3D printing technics for working with glass and how she has developed a start-up. Through the speakers and discussions, accompanied by these well-experienced females, the girls will be sensitized for seeking entrepreneurial potentials. The speakers will also share their personal and professional experiences, discussing challenges they have encountered and how did they overcome gender stereotypes. After these exciting sessions, girls will be provided time to informally discuss the role of stereotypes in their lives and whole society, reflect upon their impact on their personal lives and seek countermeasures.

Though the summer school we will dissolve typical STEM stereotypes by emphasizing how creativity and collaboration are required to be successful in STEM-tasks. The challenging yet manageable tasks and the positive learning environment will enhance the feeling of self-competence and efficacy.

Besides STEM knowledge, they will also gain a variety of transversal skills. Girls will present the activities of the escape rooms and try out each other's escape boxes, take part in escape city challenge as well as collaborate in group work phases. They will learn about teamwork, tolerance, organizational skills, enthusiasm, self-motivation, open-mindedness and communication strategies while building up the GEM community.

## PHFR GEM Summer School Support Site

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**You can find more information about the Summer School in the national language by following this link:**

<https://icse.ph-freiburg.de/gem/gem2022/>



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## Lecturers and mentors

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The International Centre of STEM Education located at the University of Education Freiburg, is a high-profile research institute for STEM Education and coordinator of several national and international funded projects, focusing the improvement of STEM-Education. ICSE regularly hosts out of school student-activities and is determined to increase the reputation of STEM-sciences among students. There are 7 female mentors accompanying the girls during the summer school. Lecturers involved in the GEM summer camps are:



**Dr. Dorothea Helmer.** Female empowerment and bringing together personal life with entrepreneurial ambitions. She is the founder of the new technology that allows to 3D print glass that currently is the best on the market. Being able to print glass brings big advantages not only for production but also for the environmental issues. She is the grounder of a company *Glassomer*, scientist, project manager of *MatrixPrint*.



**Isabel Hörder.** Female empowerment and local possibilities to keep on the STEM track. She works as a media educator in a beloved youth centre in Freiburg and leads exciting ICT workshops for girls, for example "Coding Space". She is guiding youngsters in learning and trying out programming, coding, engineering, game design. She is also a close contact person to girls in questions of social media usage and is offering creative workshops for the school holidays.



**Nicola Geppert.** Female power and entrepreneurial mindsets meet MINT. She has a degree in Biology, Geography, and science communication. She has worked in science communication for 14 years, has developed and lead science shows, workshops, and training courses for teachers. In 2020 she grounded a company *Experinauten* and is inspiring children and youngsters to be involved with STEM.



**Lisa Ihde.** Impersonation of endless energy and creativity. She studied ICT and 2021 was chosen for Forbes »30 Under 30«. She is a mentor for programming workshops for youngsters and a lecturer, has published books on informatics for children and youngsters. Winner of the *multimedia award* in Hackathon.



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