



Creative Computing Module I

Winter Semester 2021/22

Language of Instruction: English

Last update: 23 March 2021

Please note that the number of course places open to exchange students is limited. If there are too many exchange students wishing to participate in a course, places are allocated according to the first-come-first-served principle.

Please note that the list might be subject to alterations.

| Subject Code | Subject | ECTS credits |
|--------------|--|--------------|
| BCC-1 | 2D Browser Game Coding | 3 |
| BCC-1 | 2D Game Graphics | 2 |
| BCC-1 | 2D Game Mathematics and Physics | 3 |
| BCC-1 | Agile Software Life Cycle Management | 1.5 |
| BCC-1 | Client-Side Coding | 4 |
| BCC-1 | Creative Code Lab 1: Games and Playful Frontends | 5 |
| BCC-1 | Design Thinking | 1.5 |
| BCC-1 | Game Design and Digital Storytelling | 4 |
| BCC-1 | Graphics Design | 3 |
| BCC-1 | Introduction to Web Technologies | 3 |
| DSOEK-3 | German Language | 3 |
| DSOEK-3 | Scouting Austrian Culture | 3 |

BCC = Bachelor Creative Computing. For further information, please visit:
<https://www.fhstp.ac.at/en/academic-studies-continuing-education/media-digital-technologies/creative-computing/course-contents>

DSOEK = German Language and Austrian Culture. For further information, please visit
<https://www.fhstp.ac.at/en/international/incoming-students/german-language-classes>

Detailed course descriptions:

2D Browser Game Coding (3 ECTS credits)

Content:

Fundamentals of programming a 2D browser game engine:

- working with HTML canvas
- moving, rotating and translating elements
- implementing physics
- local data storage
- manage user input (mouse, keyboard)

2D Game Graphics (2 ECTS credits)

Content:

The students learn

- the basics of graphics editing (e.g. Adobe Photoshop, Adobe Illustrator)
- differences between vector and raster graphics
- concepts of 2D animation for games (Sprite Sheets)
- to apply simple effects

2D Game Mathematics and Physics (3 ECTS credits)

Content:

- Functions, basics of trigonometry
- Complex numbers, vectors and matrices calculations
- Integral and differential calculus and equation
- Game physics
- Hooke's Law (mass-spring systems)
- Bounding boxes
- Integration procedures: Euler, Verlet
- 2D physics engine implementation

Agile Software Life Cycle Management (1.5 ECTS credits)

Content:

Basic knowledge for the management and administration of individual projects

- Rolls from SCRUM (focusing on the Scrum master and developer)
- Application of KANBAN boards and strategies for estimating times for underlying user stories
- Use of CI and CD systems

Client-Side Coding (4 ECTS credits)

Content:

Fundamentals of programming based on JavaScript / Typescript:

- variables, Data types and operators, arrays
- conditions and loops (if, while, for)
- functions and scope
- Debugging
- Using JavaScript libraries (e.g., Math)
- Objects & Classes
- DOM Manipulation

Creative Code Lab 1: Games and Playful Frontends (5 ECTS credits)

Content:

In addition to the contents of the lectures of the first semester, the students are coached regarding

- the planning of their projects,
- time-efficient presentation for a booth presentation at a small fair,
- writing a description of the game setting,
- creating an entry about the project results in their ePortfolio.
- Throughout the two blocked weeks, tutors are available to support the students.

Design Thinking (1.5 ECTS credits)

Content:

- Introduction to Design Thinking
- Introduction to the design process with its phases
- Introduction to various design and creativity methods

Game Design and Digital Storytelling (4 ECTS credits)

Content:

Basic knowledge and practical exercises on

- Game and Audio Design
- Story Telling with focus on games
- Concepts of story development for games
- Creating storyboards and moodboards for graphics and audio
- Creation of pitching documents

Graphics Design (3 ECTS credits)

Content:

- Introduction to the basic design principles and elements (shapes, colors, typography, visual hierarchy, white space, etc.)
- Introduction to the gestalt laws
- Introduction to layout and positioning
- Introduction to project briefing and process
- Design analysis and development
- Software Training

Introduction to Web Technologies (3 ECTS credits)

Content:

Introduction to the fundamentals of web development:

- internet and its services,
- history of HTML and CSS,
- client-server communication,
- browser compatibility

Introduction to the development with HTML and CSS as client-side technologies

German Language (3 ECTS credits)

Content:

Students train their speaking, writing, reading and listening skills in the German language.

The course is offered at three different levels:

- German 1: for learners without previous knowledge of German

- German 2: for learners with some knowledge of German on the first basic user level of CEFR.
- German 3: for learners who exceed the basic user level of CEFR

Placement tests and consultation for learners of all levels at the beginning of the semester.

Scouting Austrian Culture (3 ECTS credits) – in English

Content:

Workshop sessions on collecting and contributing facts and experiences on Austrian geography, history, arts, music and further topics of interest, including participation in excursions.