Course Syllabus

Code - Course Title	**OGP225 - Lightweight Game Frameworks**
Course Type	III. SEMESTER
Laboratory + Practice	1+2
ECTS	**3.0**
Language of Instruction	Türkçe
Course Type	Area Elective Courses
Course Instructor(s)	ÖĞR. GÖR. GÜVENÇ USANMAZ

Mode of Delivery	This course is delivered through face-to-face instruction. Theoretical lectures and laboratory sessions are integrated throughout the semester. The default framework for practical work is Godot; the instructor may prefer an equivalent lightweight framework (e.g., raylib, LÖVE, Pygame).
Prerequisites	There are no prerequisites or co-requisites for this course.
Courses Recomended	It is recommended to have completed OGP104 Programming II, OGP102 Game Design Principles and XXX7954 Game Engine Technologies before taking this course. Basic programming knowledge will facilitate the learning process.
Recommended Resources	Godot Engine. Official documentation: https://docs.godotengine.org/Nystrom, R. (2014). Game Programming Patterns: https://gameprogrammingpatterns.com/
Work Placement	This course has no internship or placement requirement.

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Introduction to game frameworks; framework and engine differences; advantages of lightweight architectures; Godot interface and project structure.	
Week - 2		Scene tree, nodes; 2D scene and coordinate system.	
Week - 3		Drawing libraries: 2D shape and sprite drawing, screen refresh loop, color management.	
Week - 4		Event management: keyboard and mouse inputs; signals and event-driven flow.	
Week - 5		Window events, timers; state management basics.	
Week - 6		Audio management: effect playback, background music loops, volume control.	
Week - 7		Collision detection: bounding boxes (AABB), Area2D/CharacterBody2D concepts.	
Week - 8		Basic physics integration: movement, friction, simple platform mechanics.	
Week - 9		Asset loading: loading image and audio files into memory; resource paths and optimization.	
Week - 10		Game loop architecture: update and draw separation, delta time, frame rate fixing.	

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 11		Scene management: PackedScene, scene transitions, reusable prefab structure.	
Week - 12		Cross-platform support: exporting, compilation processes; web/mobile/desktop overview.	
Week - 13		Lightweight library comparison: concept mapping with raylib/pygame/Love2D; prototyping strategy.	
Week - 14		End-of-term mini game project presentation; code structure and process documentation.	

Learning Outcomes

#	Learning Outcome
1	Explains the difference between game frameworks and game engines and use cases for lightweight architectures.
2	Creates a 2D game scene using a scene tree and node-based structure.
3	Manages keyboard, mouse and timer inputs with event-driven architecture.
4	Implements simple sound effects and background music integration.
5	Applies bounding box collision detection and basic physics movement.
6	Loads image and audio assets and optimizes memory and resource usage.
7	Designs a game loop with update/draw separation and fixes frame rate.
8	Exports and presents a 2D mini game developed with a lightweight framework to multiple platforms.

Sustainable Development Goals

No content has been provided.

Course Theme

No content has been provided.

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	0	0	0
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	0	0	0
Ödevler	0	0	0
Proje - Rapor - Sunum Hazırlama	0	0	0
Ara Sınav Hazırlığı (sınav süresi dahil)	0	0	0
Final Sınavı Hazırlığı (sınav süresi dahil)	0	0	0
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0	0	0
Staj Uygulaması	0	0	0
		Calculated ECTS	**0**

Assessment Method and Passing Requirements

No content has been provided.