

National University of Engineering (UNI)

School of Computer Science Syllabus 2024-II

1. COURSE

CS351. Topics in Computer Graphics (Elective)

2. GENERAL INFORMATION

2.1 Course	:	CS351. Topics in Computer Graphics
2.2 Semester	:	9^{th} Semester.
2.3 Credits	:	4
2.4 Horas	:	2 HT; 4 HP;
2.5 Duration of the period	:	16 weeks
2.6 Type of course	:	Elective
2.7 Learning modality	:	Face to face
2.8 Prerrequisites	:	CS251. Computer graphics . (7^{th} Sem)

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

Advanced course covering real-time rendering techniques, 3D modeling, and physical simulation, with applications in entertainment industries and scientific visualization. Aligns with ACM/IEEE Computing Curricula guidelines.

5. GOALS

• Implement advanced graphics algorithms (ray tracing, GPU computing).

6. COMPETENCES

- 1) Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions. (Usage)
- 3) Communicate effectively in a variety of professional contexts.. (Usage)
- AG-C01) The Professional and the World: Analyzes and evaluates the impact of solutions to complex computing problems on the sustainable development of society. (Usage)
- AG-C05) Project Management: Applies project management principles in computing to manage projects. (Usage)

7. TOPICS

Unit 1: (60 hours)	
Competences Expected: 1,3	
Topics	Learning Outcomes
 Hardware-accelerated ray tracing Procedural texturing 	 Integrate offline/real-time rendering techniques [Usar] Evaluate computational costs [Evaluar]
Readings : [AH08], [SM20]	

- 8. WORKPLAN
 - 8.1 Methodology

Individual and team participation is encouraged to present their ideas, motivating them with additional points in the different stages of the course evaluation.

8.2 Theory Sessions

The theory sessions are held in master classes with activities including active learning and roleplay to allow students to internalize the concepts.

8.3 Practical Sessions

The practical sessions are held in class where a series of exercises and/or practical concepts are developed through problem solving, problem solving, specific exercises and/or in application contexts.

9. EVALUATION SYSTEM

******** EVALUATION MISSING *******

10. BASIC BIBLIOGRAPHY

- [AH08] Tomas Akenine-Möller and Eric Haines. Real-Time Rendering. AK Peters, 2008.
- [SM20] Peter Shirley and Steve Marschner. Fundamentals of Computer Graphics. CRC Press, 2020.