

| Course Description Form | | | |
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| Course Code and Name | 5221329 3D Game Programming | | |
| Course Semester | Fall-Spring | | |
| Catalog Content | Introduction to Game Programming and Computer Graphics, 3D Computer Graphics Pipeline, Matrix Algebra, OpenGL and WebGL States and Primitives, 2D Viewing, 3D Viewing, Transformations, Color, Materials and Lighting, Texture Mapping, Programmable Pipeline, OpenGL Extensions, Vertex Shaders, Fragment Shaders, Project | | |
| Textbook | OpenGL SuperBible: Comprehensive Tutorial and Reference (5th Edition). Richard S. Wright, Jr., Benjamin Lipchak, Nicholas Haemel | | |
| Supplementary Textbooks | - | | |
| Credit | 8 | | |
| Prerequisites of the Course (Attendance Requirements) | There is no prerequisite or co-requisite for this course. | | |
| Type of the Course | Technical Elective | | |
| Instruction Language | English | | |
| Course Objectives | Understanding the basics of 3D computer graphics. Ability to develop interactive games. | | |
| Course Learning Outcomes | 1- The students can produce both theoretical and practical solutions to the problems encountered in 3D Game development. 2- The students can develop a 3D game. | | |
| Instruction Methods | Face to face | | |
| Weekly Schedule | 1. Week Introduction to Game Programming and Computer Graphics 2. Week 3D Computer Graphics Pipeline 3. Week Matrix Algebra 4. Week OpenGL and WebGL States and Primitives 5. Week 2D Viewing 6. Week 3D Viewing 7. Week Transformations 8. Week Color, Materials and Lighting 9. Week Texture Mapping 10. Week Programmable Pipeline 11. Week OpenGL Extensions 12. Week Vertex Shaders 13. Week Fragment Shaders 14. Week Project | | |
| Teaching and Learning Methods <i>(These are examples. Please fill which activities you use in the course)</i> | Weekly theoretical course hours Weekly tutorial hours Reading Activities Internet browsing, library work Designing and implementing materials Report preparing Preparing a Presentation Presentations Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam | | |
| Assessment Criteria | | Numbers | Total Weighting (%) |
| | Midterm Exams | 1 | 30 |
| | Assignment | | |
| | Application | | |
| | Projects | 1 | 30 |
| | Practice | | |
| | Quiz | | |
| | Percent of In-term | | 60 |

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| | Studies (%) | | | | | | |
| | Percentage of Final Exam to Total Score (%) | | | 40 | | | |
| | Attendance | | | | | | |
| Workload | Activity | Total Number of Weeks | Duration (weekly hour) | Total Period Work Load | | | |
| | Weekly Theoretical Course Hours | 14 | 3 | 42 | | | |
| | Weekly Tutorial Hours | | | | | | |
| | Reading Tasks | 14 | 2 | 28 | | | |
| | Studies | 14 | 2 | 28 | | | |
| | Material Design and Implementation | 3 | 9 | 27 | | | |
| | Report Preparing | 3 | 5 | 15 | | | |
| | Preparing a Presentation | | | | | | |
| | Presentations | | | | | | |
| | Midterm Exam and Preperation for Midterm Exam | 1 | 25 | 25 | | | |
| | Final Exam and Preperation for Final Exam | 1 | 35 | 35 | | | |
| | Other (should be emphasized) | | | | | | |
| | Total Workload | | | 200 | | | |
| | Total Workload / 25 | | | 8 | | | |
| | Course Credit (ECTS) | | | 8.0 | | | |
| Contribution Level Between Course Learning Outcomes and Program Outcomes | No | Program Outcomes | 1 | 2 | 3 | 4 | 5 |
| | 1 | Reaches the expansion of knowledge by conducting scientific research in the field of engineering and evaluation, interpretation and application of information. | | | | | X |
| | 2 | Has extensive and in depth knowledge including the latest techniques, methods applied and their limitations in engineering. | | | | | X |
| | 3 | Completes and applies knowledge by using scientific methods by using limited or missing data and integrates information from different disciplines. | | | | X | |
| | 4 | Be aware of new and developing practices of the profession, examines and learns when needed. | | | | | X |
| | 5 | Defines and formulates problems related to the field, develops methods to solve them and applies innovative methods in solutions. | | | | X | |
| | 6 | Develops new and / or original ideas and methods, designs complex systems or processes and develops innovative / alternative solutions in their designs. | | | | X | |

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| | 7 | Designs and applies theoretical, experimental and modeling based researches, examines and solves the complex problems encountered in this process. | | | | | X |
| | 8 | Works effectively in disciplinary and multidisciplinary teams, leads such teams and develops solution approaches in complex situations, works independently and takes responsibility. | | | X | | |
| | 9 | Communicates oral and written using a foreign language at least at the level of European Language Portfolio B2. | X | | | | |
| | 10 | Conveys the process and results of the studies in written and oral form in a systematic and clear manner in national and international environments within or outside the field. | | | | | X |
| | 11 | Knows the social, environmental, health, security, legal aspects of engineering applications; project management, and business lifeX applications and be aware of the constraints of these engineering applications. | | | | | |
| | 12 | Considers social, scientific and ethical values in the stages of data collection, interpretation and announcement and in all professional activities. | X | | | | |
| The Course's Lecturer(s) and Contact Informations | | Name Surname: Assist. Prof. Dr. Öner BARUT E-mail address: onerbarut@gazi.edu.tr | | | | | |