Course name: Droid App Design: Java

Grade: 10-12

Course description:

This is an introductory mobile application design & programming course! We will navigate the world of mobile apps using Java and Eclipse for Android devices. No programming experience is needed for this class. By the end of the course you will be able to successfully download real working mobile applications for Android devices!

Graduation standard(s) information: (alignment with Minnesota Academic Standards or national standards)

Mobile App:IT provides instruction in six critical areas:
1. Technical skills related to software development, computer programming & graphic design
2. Creative, innovative & critical thinking
3. Communication and collaboration as an individual and part of a team
4. Using appropriate and accessible digital tools for research and learning
5. Using engineering, physics & mathematical concepts critical to mobile application development
6. Post-secondary and career options & resources related to mobile app development and STEM

1. Technical Skills
A. Introduction to application development for Android technology
B. Programming by writing code using Java (object oriented language)
C. Follow technical and increasingly complex programming instructions in order and detail
D. Design & program real working education based mobile application projects
E. Use digital design resources and color theory to draw and animate sprites, objects, platforms, backgrounds and loops
F. Become familiar with common mobile application technologies and platforms; open files, save files, create and program original material, integrate separate files into a mobile application project, create and edit audio sound effects & music
G. Technical writing; user instructions, application rules and document development process within a development team

2. Creative, Innovative & Critical Thinking
A. Learn steps of the engineering design cycle (discover- evaluate, design- evaluate, developevaluate, deliver- evaluate) and how it works as a practical problem solving method
B. Use gained technical skills to improve mobile application projects
C. Use gained technical skills to create, design & program original applications
D. Troubleshoot applications to fix bugs and ensure performance
E. Test fellow classmate's applications to ensure performance
F. Perform self-evaluations of projects against the required established directives
G. Perform evaluations of classmate's projects against the required established directives
H. Develop a marketing plan for original programmed application to include; target audience, current competition, delivery options, product pricing, logo design and strategy to spend budgeted funds

3. Communication and Collaboration
A. Form mobile application development groups to achieve directive of completing working Android applications
B. Assign tasks to members of development group to achieve directive of creating a mobile application
C. Use the engineering design cycle within a development team to achieve directive of creating a working mobile application
D. Project management; students will have opportunity to lead a development team, assign tasks, evaluate progress, facilitate communication among team members and ensure that project is completed within time deadline
E. Conduct in-class presentations including demonstration of application

4. Using Digital Research Tools
A. Use appropriate internet websites to gather and analyze research on a variety of subjects including; mobile application development, marketing statistics, color and design theory, post-secondary education options and careers in mobile application development & other STEM related industries
B. Use appropriate wiki's and blogs to engage other (distance) users of Android technology and/or Java for research, ideas and help

5. Engineering, Physics & Math
A. Learn how the process used in designing and developing software can be applied to other design and development projects like bridges, buildings and machines
B. Learn how basic physics concepts like gravity, acceleration, velocity, speed, trajectory, Newton's Laws of Motion, force & elasticity are used in mobile application development
C. Use required mathematical techniques to perform physics calculations in determining how physics is used in mobile application development as compared to the real world
D. Use knowledge of math & physics to evaluate behavior within applications in the "virtual world" as compared to the "real world"

6. Further Career, STEM & Post-secondary Education Options
A. Research how technical & communication skills used in mobile application design translate to other technology industries and businesses
B. Research required post-secondary diplomas, certificates & degrees needed to gain employment in game development and other technology based industries
C. Research career trends, wage data and employment opportunities in mobile application development and technology based industries

Learner outcomes:
Students will:

1. Develop Technical skills related to software development, computer programming & graphic design
2. Apply Creative, innovative & critical thinking
3. Use Communication and collaboration as an individual and part of a team
4. Using appropriate and accessible digital tools for research and learning
5. Using engineering, physics & mathematical concepts critical to mobile application development
6. Post-secondary and career options & resources related to mobile app development and STEM

Course content: (Write this in outline format.)
   1. Mobile Application History
   2. Mobile Platforms
   3. Mobile Application Careers
   4. Android Platform
   5. Open Source
   6. Think Like a Programmer
   7. Java Programming
   8. Eclipse Basics
   9. Sample Applications
   10. Button Applications
   11. Layout Applications
   12. NoteDroid Application

Notes: (This section should contain information regarding textbooks, technology integration, films, videos and various resources used in teaching the course. Any additional notes that are useful to teachers should be included.)

Stem Fuse App: It Course Materials