King Fahd University of Petroleum & Minerals
College of Computer Sciences Engineering
Computer Engineering Department

COE 485: Senior Design Project
Syllabus — Term 151

Catalog Description

Various design phases leading to a practical engineering solution. Feasibility study, preparation of specifications, and the methodology for the design. Detailed design and implementation, testing, debugging, and documentation.

Prerequisite: Senior standing.

Instructor

Dr. Ahmad Khayyat. Office: 22/150. Phone: 8234. Email: akhayyat@kfupm.edu.sa.
Website: `http://www.ccse.kfupm.edu.sa/~akhayyat/`.

Office Hours

Sunday, Tuesday, Thursday 9:30 AM – 10:30 AM.

Course Website

- `https://blackboard.kfupm.edu.sa/`
- Additionally, we will be using Piazza for discussion; a system for getting you help fast and efficiently from classmates and the instructor, and for sharing your experiences.

  Course page on Piazza (also accessible through BlackBoard):
  `https://piazza.com/kfupm.edu.sa/fall2015/coe485/`

Deliverables and Grading Policy

Deliverable	Points	Due	Evaluated by
Project plan	5%	week 1	Instructor
Effective use of a task management tool	5%	Weekly	Instructor
Design document	20%	week 5	Instructor, Advisor
Design presentation and first prototype	5%	week 6	Instructor, Advisor
Final report draft	10%	week 12	Instructor, Advisor
Final report	35%	week 14	Instructor, Advisor, Examiners
Final presentation	10%	week 15	Instructor, Advisor, Examiners
Prototype demonstration	10%	week 15	Instructor, Advisor, Examiners
Demonstration video (bonus)	+3%	week 15	Instructor
Source code (bonus)	+3%	week 15	Instructor

- All deliverables must be submitted to the course instructor through the course website.
- The course website will list finer-grained deliverables.
- All documents and slides must be submitted as PDF files only.

- Late submission penalty for all deliverables: 20% per day.
- No *Incomplete* grade (IC).
- Attendance is required: the fourth unexcused absence results in a DN grade.
- Mandatory weekly meetings with project advisor; missing any four weeks results in a DN grade.
- A collaborative task management tool must be used to document all activities. The tool must be made accessible to the instructor. Recommended tools: Trello.com, Asana.com.

Project Guidelines

- **Design problem:** The project should be a *design* or a *design analysis* project, where you design a product or a service, or analyze an existing solution to identify weaknesses and propose improvements. *A prototype must be produced*.
- **Design process:** The problem should not be specific, where there is only one clear solution. It should be a general problem. *You* need to identify the *requirements*, formulate them into *technical specifications*, *identify* different solutions, *choose* one based on specific, documented criteria, and then *implement* it.
- **Hardware/software integration:** The solution must involve *integrating hardware and software components*. Components may include a mixture of standard, ready-made components, e.g. web server, database server, UART, as well as custom components designed by the team, e.g. microcontroller software, application server, FPGA-based hardware, custom circuit.
- **Engineering tools:** The project must involve the use of *engineering tools*, e.g. simulators, CAD tools, formal description, standard benchmarks, and must refer to and conform to *standards*, e.g. IEEE 802.11p, CAN, I2C.
- **Relevance and Impact:** The project should be relevant to the global, regional, or local community, and should have a tangible positive impact on that community. You must demonstrate how you can, as computer engineers, contribute solutions (products/services) that improve people's lives.

General Remarks

- An extremely useful resource for all stages of your project is the book: *"Practical Tips for Software-Intensive Student Projects"*, freely available online at `http://studentprojectguide.info/`.
- **Purchasing:** A growing library of hardware components is available. A summary of some notable components is going to be presented in the first lecture. If you decide to use an unavailable component, you must first seek the approval of your project advisor and the course instructor. You can purchase any approved parts and you will be reimbursed their cost, *provided you submit original invoices billed to KFUPM*.
- **Discussion:** It is strongly encouraged to start new discussions, participate in ongoing ones, and share any findings on Piazza. Starting an interesting and engaging discussion may grant you bonus points.
- **Seeking help:** Use Piazza and office hours, or set up appointments with the course instructor or your project advisor to obtain any necessary guidance. It is your responsibility to seek help when needed.
- **Responsibility:** Projects are student-driven; the student is responsible for carrying out the required tasks and meeting all deliverable deadlines.
- **Attribution:** In any documentation, non-original text or figures must be cited from the original sources.