



IA based Embedded Curriculum Sharing

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IA based Embedded Curriculum Summary

(Note: Please list the basic information of your embedded Curriculum on this page. If you have more than one course, please list each course information on a separate page and specify their relationship. Following items for your reference.)

Course Name: Embedded systems

Course Type: presentation & hands-on practice

Target Student/Semester: computer science, software engineering students/spring-summer semester

Student Number (per year): 150

Course Duration: 16 weeks

Prerequisite Courses: digital logic, computer organization, computer architecture, interface and assembly languages, program design, compiler technology

IA based Embedded Curriculum Characteristic

Curriculum/Course Characteristic:

System design ability is the theory of the course, combined with computer organization, computer architecture, OS, compiler technology courses, the goal is to improve students' practical and innovation abilities for designing and implementing **embedded (computer) systems** with specific application requirements.

- 1) embedded software-hardware co-design as a global view
- 2) practice and case studies
- 3) teaching and research combined
- 4) projects

IA based Embedded Curriculum Key Points

Curriculum/Course Key Points:

- 1) How to analyze software and hardware platforms through case studies
- 2) How to analyze embedded processors incorporated with computer organization course
- 3) How to analyze embedded architecture incorporated with computer architecture course
- 4) How to analyze embedded system software architecture incorporated with OS, project management and application development courses
- 5) How to design a project integrated with application requirements, contests, academia-industry collaboration

IA based Embedded Curriculum Difficult Points

Curriculum/Course Difficult Points:

- 1) How to use appropriate case studies for students with different backgrounds
- 2) How to let students evaluate the required hardware platforms
- 3) How to teach OS porting & interface driving
- 4) How to guide students to DIY their projects

IA based Embedded Curriculum Experience Sharing

Experience on teaching:

- 1) embedded system is the stage of comprehensively applying computer courses
- 2) practice is the key aspect of embedded system teaching

Developing content:

- IA embedded technology & application
- embedded concept and basics
- embedded microprocessor architecture
- embedded hardware development platform
- embedded OS
- Project design and implementation

IA based Embedded Curriculum Hands-on Practice Case Sharing

projects with practicability and enjoyment

e.g., image and audio interactive robot



Case Name: Beibei robot

Infant assistive robot

Case Attribution: IA-based platform course design

Case Objective: infant assistive robot with guardianship and image recognition

Case Content:

- 1. falling-off triggered alarm**
- 2. image recognition**
- 3. intelligent tracking**
- 4. speech control**

IA based Embedded Curriculum Resource

Please list your IA based Embedded Curriculum resource on this page. For example, textbook, website URL, etc.

1. textbook:

《Principles and Practice of Embedded system》, Tsinghua press, 2005

《Principles and Design of Embedded system 》, Tsinghua press2010

2. website:

www.arclab.zju.edu.cn

Thank You!