Embedded System Education in the e-Living and SoC Era

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Embedded System Education in the e-Living and SoC Era

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The e-living Society

Our Life, Property and Privacy heavily depend on IT.
Education for

• **Users of Systems and Devices including SoCs**
  – Citizen should understand Mechanisms and Principle of Systems.
  – Different from PC usage

• **Engineers who design Systems, Devices and SoCs**
  – Technology is changing very quickly.

• **Students who will be Engineers of Future Systems, Devices and SoCs**
  – The next generation engineers should have skills on HW and SW design, and insights for future world.
  – Requirement for Project Leaders
Needs for User Education

Values and Credit on a Chip

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Personal Information

$200

$500

$30/Chip

E-Money

Signature

Credit Cards

QUBE

Q-shu University hardware/software borderless system design Education program
Education for Engineers

- **QUBE**
  - (Kyushu(Q-shu) University hardware/software Borderless system design Education program)

- **Education Program for**
  - SoC Engineers
    - System Designers
    - Hardware (Logic) Engineers
    - Embedded Software Engineers
  - Engineers in industry

- **Catch up the progress of technology**
  - HW, SW and co-design
  - Project Base Learning Course (8 days)
  - 2 days Lectures by Top Professors (27 courses)

- **Details are presented in WESE by Dr. Hisazumi.**
New Education Program for Codesign

Q-shu University hardware/software Borderless system design Education program (QUBE)

【Purpose】Educate highly qualified and skilled system LSI design engineers for VLSI design, embedded software design and HW/SW co-design

【Period】2005.7～2010.3  【Goal】Totally 360 engineers

Hardware Design
HW/SW Co-design
Embedded Software Design

System LSI Design Training Program
Advanced Design Technology Program

Cooperated Lecture: Real Embedded Software Development Engineering
Design Method and Education Division System LSI Research Center

Fukuoka Innovative CLUSTER
21st Century Center of Excellence Program

Offer Educational Know-how Backup by the Staff

Shift Upper-level Lectures

Application/Practice Courses
Basic Courses

QUBE

College of System LSI, FUKUOKA

System LSI Research Center
Graduate School of Information Science and Electrical Engineering
Kyushu University

QUBE University hardware/software Borderless system design Education program
Education for Students

• Leading IT Specialist Education Program
  – Program of Ministry of Education, Culture, Sports, Science and Technology
  – Pressure from Federation of Economic Organization
  – 6 out of 26 proposal are accepted (2006-2009)

• Education for Top Software Engineers
  – Embedded Software
  – Enterprise System
  – Security (next year)

• Request of Project Leaders
  – Leaders for project with 200-3,000 engineers
  – SoC, embedded software, networks
  – Experiences of Project Management
Education for Graduate Course

Kyushu University Advanced ICT Architect Course

Technology and Theory
Software, Hardware and Network Technology
  - Embedded Systems
  - Enterprise Systems

Projects
  - System Development Project
  - Problem Solving Project
  - Advanced Real Project
  - Internship In Industry 1-3 months

Philosophy and Social Sci.
  - History of IT
  - Relation of IT and Social Systems

Human Skills
  - Leadership for Project Management
  - Communication Skill
Conclusion

• Users of Systems and Devices including SoCs
  – Education in elementary and junior-high schools
  – Education for citizen
  – Easily understandable system

• Engineers who design Systems, Devices and SoCs
  – Refresh education of engineers
  – Engineers understanding both HW and SW
  – Project Management, Intellectual Properties and Co-design
  – QUBE

• Students who will be engineers of Systems, Devices and SoCs
  – Education of Project Leaders
  – Technology, Philosophy and Human Skill
  – Advanced ICT Architect Course