

Issues and Experience in Teaching ITS

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Need for Enhanced ITS Curriculum

- A comprehensive approach to teaching ITS is needed
 - Based on ITS industry needs
- More data and research is needed to further delineate industry needs for ITS skills
- Only aspects of ITS are covered well in university programs
 - Additional ITS concepts need to be incorporated
- ITS is a very diverse field but there are concepts that are cross cutting
- Planning and design should be covered but there is also increased focus on operation and management

Need for ITS Education Resources

- There has not been good resources to teach ITS
- New resources are being produced by the USDOT PCB program (ITS ePrimer, case studies, etc.)
 - Available resources need to be supplemented by additional materials when used for student education
- Need informative and interesting teaching aids to engage students in ITS
- A semester-long case study may be useful similar to a capstone class project

Incorporation of ITS Teaching

- ITS is becoming an overarching field
- Should ITS be taught in specific ITS course(s) or should it be covered in existing undergraduate and graduate courses?
- At least one graduate level ITS course should be offered?
- ITS materials can also be incorporated in basic undergrad courses and graduate courses
 - Signal control, traffic flow theory, traffic operation, transit operations, ports, and planning
 - Difficult to fit ITS education in undergrad programs

Example Questions - Job Interview (Week of January 20th, 2014)

- What is ITS? Can you list some ITS examples you know.
- What is ETC? What are the components of an ETC system?
- What's the ITS component of managed lanes? How to decide the toll rate of the managed lanes?
- What is TMC?
- What does NTCIP refer to?
- What is ITS Cabinet?
- What are the communication methods between the field detector and TMC?
- What is NEC? (National Electrical Code)
- What is the different between RJ 11 and RJ 45? How many wires in RJ?
- What is Voltage Drop?

ITS Course Offering at FIU

- Graduate level course offered since 2003
 - Undergraduate students were allowed in the class
- Based on industry experience
- 15-25 students per offering
 - Offered also through distance learning
- Two tests and one semester project
- No Text book
 - Next time to offer in Fall 2014 will be revised to incorporate new USDOT PCB materials

Covered Topics

- Introduction
- ITS Functional Areas
- System Engineering and ITS Architecture
- ITS Standards
- ITS Evaluation, Methods and Tools
- Communications
- Detectors and CCTV cameras
- DMS, HAR, ATIS
- Incident Management
- Managed Lanes
- Ramp Metering
- Dynamic speed limit/speed harmonization
- Connected Vehicles

Other ITS Education Activities

- Summer class that address Advanced Applications
 - Offered twice in the past two years
 - Covered TSM&O, ICM, Signal Controller and Cabinet, Port Operations, Engineering Management
- ITS related materials incorporated in other courses
- Speaker series, webinar participation, and field visits
- Student participation in ITS lab research activities
- Internships and employments at TMCs and other ITS and operation agencies