

## Part II MPA Variant – Case Study Syracuse

The Maxwell School of Citizenship and Public Affairs at Syracuse has one of the oldest highly ranked Masters of Public Administration (MPA) degree programs in the country, possibly the first, having been established 90 years ago. The MPA at Syracuse as elsewhere attracts students and scholars of “public policy” ranging from national and international security, environmental policy, international and development administration. There are two ways of completing the MPA. One is fulltime over one year and the other is extended over several years to accommodate employed professionals. The curriculum requires nine core completions in the sub-fields of public affairs, public budgeting, public administration and democracy, public organizations and management, economics for public decision making, introduction to statistics, quantitative analysis, and executive leadership and policy politics. But until spring 2017, nothing having to do with any of the 14 Engineering Grand Challenges (save one) however these might impact on public services and risks.

When Laura J. Steinberg approached the Associate Dean of the Maxwell School with her proposal to adapt her course in Modern Urban Infrastructure to a mixed enrollment of master’s students in engineering and master’s students in public administration, she learned that there were other related courses: one on the “smart grid” and another on urban policy but none that took a comprehensive look at the infrastructure crisis. The “smart grid” course had been piloted several times before, and had proved that a course taught from the *dual perspective* of engineering and public administration could be successful. The Associate Dean responded positively to Laura’s proposal giving permission for Modern Urban Infrastructure, renamed as Planning and Management of Public Infrastructure, and modified for the new audience, to be taught the very next semester in a co-disciplinary mode, i.e. open to MPA and engineering master’s students. And so it was, even if, as it turned out, there were only 3 M.S. engineering and 11 from the MPA, some returning for the degree in mid-career. What was new for the MPA students is that they would be meeting with an instructor who was a civil engineer and former dean of the School of Engineering in the University.

### Recruiting Students

Once the MPA chair agreed to sponsor Planning and Management of Public Infrastructure, he connected Professor Steinberg with the office in charge of course advising who specifically targeted students who had indicated an interest in metropolitan governance. To attract engineers, Prof. Steinberg put up posters in her own building and asked fellow faculty to recommend the course to their students. Next time, and she intends to teach the course again, she intends to socialize more with the MPA program and feature, if she can, other engineering-related opportunities for MPA students, as for example a capstone project dealing with the Peruvian National Infrastructure Plan, for which she has volunteered to be a faculty adviser.

Recruitment was appropriate for what would be a first-time course in Planning and Management of Infrastructure. Final enrollment: 11 MPA students, 3 graduate students in Engineering, and a visiting Humphrey student from overseas . There were no dropouts from the course.

## The Course

Planning and Management of Public Infrastructure Spring 2017, was described by the instructor as a *series of inquiries* that would be relevant to professionals in public administration.

She described it as follows:

- This course covers the planning, management, and purpose of public infrastructure projects, such as bridges, expressways, ports, water supply systems, and flood control structures. What projects get built and why? How do municipalities, regional authorities, and states manage their infrastructure to keep it in good repair and meet budgeting constraints?
- What role does/should the public play in public infrastructure design and management?
- How is infrastructure financed and how can it be built in sustainable and resilient ways?
- Important but not covered in this first iteration of the course: What is the national security import of public infrastructure and what measures can be taken to protect critical infrastructure assets?

In addition, Prof. Steinberg warned her students (8 of whom could not be assumed to have a technical background) that the role of technology and the ‘smart cities’ approach to infrastructure management would be “central” to the discussion. Yet, and this is important to the nature of the MPA program, the course would be taught in seminar style with readings, case studies, and class discussion. Nonetheless, she promised, the course would provide significant *capacity building*. At the end of the course, students could expect to be conversant with:

- The technology of water supply;
- Transportation infrastructures
- Policy regarding investment decisions in infrastructures
- Infrastructure Asset management
- Financing of infrastructure projects
- Designing for Sustainability
- “Smart City” technologies

## Requirements

Appropriate to its multi-disciplinary nature, Planning and Management of Public Infrastructure required, in addition to reading and class discussion, a set of written policy briefs and analyses.

Both the course outline and the readings were meant to convey the multi-disciplinary nature of the course. For each topic, there is a Case Study, discussed in class and reflected in the reading assignments. In the case of the Introduction to infrastructure and infrastructure systems, the case is President Trump’s Infrastructure Plan. For the section of water supply, the case is that of the San Diego water supply system. For transportation, the case is from the rebuilding of I-70 through Denver, CO. And so on.

But, as with Prof. Steinberg's other urban Infrastructure courses, the required readings also reflect her commitment to enlarging her students' reference frame. (See detailed syllabus/class assignments, in the Appendix to this Section). The topics range from infrastructure finance to the executive summaries of the Infrastructure Report Card from the Am. Society for Civil Engineers. But, as well, articles from *The Economist* and *The Boston Globe* and materials produced by The Center on Budget and Policy Priorities – the purpose being to construct *shared* sources from those mostly technical sources M.E. students consult and those that provide the political insights MPA students rely on. For the segment on water supply, the instructor selected an equally diverse set of sources. Clearly, her overall purpose was to convey the *multiple specialties* that bear on Infrastructure. Not that every professional has to master *all*, but to convey with trenchant examples that professionals *have to be conversant with what their stakeholders may be reading*, which is more than illustrated in the student assignments.

### **Guest Lecturers**

Master's students, more than undergraduates are already focused on the world of work they will be entering as professionals as soon as they graduate; particularly those in an MPA program already in mid-career. So not surprisingly, Prof. Steinberg's guest lecturers, coming as they did from the "real world," were essential. Given the breadth of the Maxwell School's contacts, the instructor was able to piggy back on a visit by the head of public finance at Goldman Sachs to speak about the financing of infrastructure through public-private partnerships, as evidenced by the construction of the new sports stadium in Washington D. C. which helped revive a whole section of the city. In April, the former CEO of Bright House Communications addressed what she called "the infrastructure you cannot see" to speak about the cable and wireless industry, specifically how an urban network is served and secured. She also introduced the students to the tension between nonprofit-oriented policy makers, and the needs of un-served (rural) and underserved (urban) users of cable.

The final visiting speaker in the semester being tracked here was the head of construction for Onondaga County's waste water and storm water systems. At times acting out the role of a contractor, the speaker tracked issues and conflicts from the design process to construction, using real examples of water pipes in a near time as a way of illuminating the conflicts that can and do occur.

### **Student Assignments**

The course required a team project and a final exam with, however, *class participation and homework together* totaling 50 points out of 100, to illustrate the importance of the reading, the discussion, and the Final Project. Homework involved the writing of policy and/or management briefs, analysis of readings, and application of concepts discussed in class. Also heavily evaluated was the participation with teams on in-class assignments.

A key assignment in the course was the team project which involved selecting a team, defining an issue, generating a scope of work, a 50 percent completion report, a class

presentation, and a final report. Midway the teams presented a 5-minute summary of their progress for class comment and suggestions. Following are the project topics chosen by the teams:

1. Policy evaluation for lead service line replacement for water pipes: evaluate scenarios involving eminent domain, rights of way, and municipal ordinances.
2. Plan for Village of Fayetteville, NY. Goal: to enhance the residential experience of the village, by way of walk ways and walking routes for residents. How? Where? How to justify? How to pay for these improvements?
3. Recommendation to the Chicago Transit Authority: How to spend a billion dollar grant from the Obama administration on proposed improvements of the L train. In terms of citizen perspectives, current conditions of the trains, and the financial condition of the CTA.
4. Introducing and controlling automated vehicles in Syracuse. How can one city establish a strategy to maximize the potential and minimize the negatives the new vehicles present?
5. Privatization of the City of Syracuse's water system. Prepare a memorandum to identify the policy implications of a shift in ownership.
6. Opportunity to work with the instructor to document the implementation of a "Smart City" approach in central NY, using sensors to track operational issues and to contribute to asset management.

## Student Response

One of the few engineers in the MPA class explained his reason for being in an MPA class most succinctly: "I'm in this class because I want to understand how public managers think." Indeed, engineers had to do more adapting to the MPA students' style of engaging in discussion than the reverse because the course was taught seminar style around a table and students were expected to *build on one another's comments*. At the same time, the instructor had to work to keep the MPA students on topic. For example, in re water supply, several students wanted to know the role of Superfund cleanup in nearby Lake Onondaga. Clearly the topic mattered to the students, but the instructor had other priorities for the discussion, such as the emerging role of desalinization in the coastal areas in the Far West (southern California).

When it came to case studies, the instructor found the MPA students to be articulate writers, knowing how to reference their readings, and creative in their suggestion of topics they read about in the news. More than the engineers, (with one exception), MPA students keep up on current events and bring questions about what they read into the classroom. The engineers had to learn how to write policy briefs that would pass muster with a variety of readers/users at the same time adjusting to a set of assignments and an in-class environment they're not used to.

## How the MPA and Engineering students fared

The students generally did quite well. Most received well-deserved A's or A-'s, with a few students (both MPA and engineers) receiving B+ or B's.

They did what the instructor hoped they would do: used the projects to investigate topics that were central to their professional interests, using the tools and knowledge they gained from the class. For example, one student aiming for a career in public finance led the group investigating the feasibility of a public-private partnership for Syracuse's water supply. And, a student planning to work for a public transportation agency led the group in exploring the best uses of the \$1 billion grant to the Chicago Transit Authority.

The three engineers in the class split into two teams, with MPA students. Observing the interaction of these teams, Steinberg found it gratifying to see the two perspectives being jointly addressed by the students. In the group working on asset management, the students together crafted interview questions of public works officials – both technical and administrative. In the group exploring policies for full-line lead replacement, the students drew on a newly acquired understanding of the chemical and physical attributes of leaded water pipelines.

Although the students submitted progress reports on their projects and created their teams early in the semester, their final reports generally suffered from a common malady of multi-investigator projects: their reports were sometimes disjointed and/or lacked a comprehensive conclusion. Clearly, each student worked diligently on his or her section, leaving the team with either not enough time or perhaps not enough attention to pulling the disparate pieces together.

The student evaluations of the course were illuminating. They very much enjoyed the discussion format of the course. However, it appears that the format made it difficult to study for the exam, as the discussions were generally broad in nature while the exams had some specific questions. For example, being asked to apply the criteria for requiring a federal Environmental Impact Statement to several development project scenarios. They were enthusiastic about the guest speakers, particularly the last one, who gave a lively description of how a town handles a construction project from start to finish.

When the instructor asked for suggestions for improvement, some students suggested that they would like the class to be more project oriented. Instead of by sector, each case study illustrating one or more concepts; especially following a project from conception to completion to the asset management phase. Important to note if the model is to be exported, is that the MPA students were not concerned about their ability to learn the engineering aspects of the course. Rather, what they seemed to be after was the integration of all the elements involved in project development and management into case studies.

In future iterations of the course, Professor Steinberg intends to:

- De-emphasize, or possibly eliminate the exam and rely more heavily on more frequent homework assignments. Also to focus exams on big-picture essay questions and cover the more narrowly defined topics in the homework problems.

- Because policy briefs require a specific format, which MPA students are expected to employ in their professional work, in future the instructor plans to assign more policy briefs as homework. In the water supply brief Professor Steinberg assigned, the engineers did as well as MPA students, indicating to the instructor and any faculty who might employ the model, that this type of assignment does not disadvantage engineering students so long as they are provided in advance with a template for the Policy Brief, which the students found particularly helpful in writing their briefs.
- Consider either eliminating the cable and internet section, or treating the topic in greater depth.
- Evaluate changing the course format from 2 meetings per week to a single 3-hour session in order to allow more time for in-class team work.
- Assign additional readings from journals such as those in the management, planning, and public works domains, to supplement and strengthen the conceptual framework of the course.
- Experiment with a deeper reservoir of case studies, particularly ones that allow the students to experience the process by which a project moves from concept to implementation.

## Future of the Program

Discussions with the chair of the MPA department found resonance with Prof, Steinberg's own findings. In public administration classes, there is always a tension that has to be navigated between how conceptual and how practical classes need to be. And, as regards examinations, the chair would advise the instructor to hand out past exams. The MPA students like to be directed on what to study for exams and to be told at the beginning of the course how the professor intends to assess their performance.

Overall, the Chair was pleased that Professor Steinberg enabled her students to become aware of issues they may find in the communities they will be serving. And that they were made aware that managing metropolitan areas requires some understanding of what engineers *do* and how they *think about* what they do.

From her colleague, Ross Rubenstein, who holds a Chair in Educational Community Policy at the Andrew Young School of Policy studies comes this appraisal.

[Laura Steinberg's] course covers one of the most pressing issues facing public managers in the coming decades: ensuring that critical infrastructure needs are identified and met. Leaders at all levels of government and particularly at the local level are likely to face infrastructure crises brought on by decades of under-investment, but the topic is often absent from traditional MPA curricula.

The Chair of Dr. Steinberg's Civil and Environmental Engineering department was pleased both with the course and with the way the course developed, especially the integration of engineering students with MPA students. In a show of support from the University, an article about the course, "*Bonding Over Infrastructure*," originally written for in-house distribution to

Engineering alums, was lengthened and selected for university-wide dissemination. (See: <https://news.syr.edu/2017/05/bonding-over-infrastructure/>.)

## **Conclusion**

With an ever more “engineered environment” -- issues of cyber security, climate change effects, smart cities, waste management and securing critical infrastructure looming large – a program that incorporates “what engineers do and how they think about what they do” surely will enhance a “standard” MPA program, most especially those that recruit early and mid-career professionals. And, if *engineers* have an understanding of the choices and imperatives for public managers, they in turn will more effective agents for sound decision-making about infrastructure design and investment.