Lesson Plan
The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. On the authority of the charter granted to it by Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Ralph J. Cicerone is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. C. D. (Dan) Mote, Jr., is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Victor J. Dzau is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy’s purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Ralph J. Cicerone and Dr. C.D. (Dan) Mote, Jr., are chair and vice chair, respectively, of the National Research Council.

The Transportation Research Board is one of six major divisions of the National Research Council. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board’s varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. www.TRB.org

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SHRP 2 R11 Lesson Plan

Welcome and Administrative Paperwork

Introduction of Instructors, Participants, and Administrative Forms

Time Allocation: 45 Minutes

Session 1—Introduction to WISE

A. Topic Description
   The Session will cover current research work and techniques for evaluating work zone impacts on the traveling public. A quick summary of the procedures used by WISE for evaluating regionwide or large corridor renewal projects. Limitations and the overall objective and expected WISE final results will be discussed.

B. Expected Outcome
   Participants will understand the general principals of work zone impacts and the WISE approach for evaluating impacts of renewal projects on the traveling public.

C. Time Allocation
   30 Minutes

D. Evaluation of Participants
   Review Questions

E. Instructional Method
   Lecture

F. References
   SHRP 2 R11 Phase 1 and 2 Report

Session 2—Getting Started in WISE

A. Topic Description
   The Session will cover the computer requirements necessary to run WISE. A summary discussion will be conducted to cover the data necessary to run WISE and potential sources for the information. The NEXTA network format will be reviewed. A summary discussion and display of the Graphical User Interface will be included in the Session.

B. Expected Outcome
   The participants will have a basic understanding of what hardware, software, and data are needed to run WISE.

C. Time Allocation
   70 Minutes

D. Evaluation of Participants
   Review Questions

E. Instructional Method
   Lecture and Microcomputer Display and Sample Network
Session 3—Creating/Opening a Workspace

A. Topic Description
   The Session will demonstrate how to open up either an existing scenario or prepare to create a new scenario. The file structure of WISE will be discussed.

B. Expected Outcome
   Development of a WISE workspace on the participant’s computer

C. Time Allocation
   30 Minutes

D. Evaluation of Participants
   Participants’ development of a computer case study

E. Instructional Method
   Hands-on computer case study

F. References
   SHRP 2 R11 Software Documentation

Session 4—Planning Module (Inputs)

A. Topic Description
   Session 4 is the heart of WISE process. All input for running the Planning Module will be discussed and displayed by the instructor. Each participant will input planning data for a case study. Data input will include the NEXTA network, traffic information, value of time, road user costs, project costs, work zone strategies, creation of strategy libraries, and project information and descriptions.

B. Expected Outcome
   Participants will be capable of inputting all data into the Planning Module.

C. Time Allocation
   355 Minutes

D. Evaluation of Participants
   Review and success in participants’ creating a Planning Module.

E. Instructional Method
   Discussion and participants creating a microcomputer planning module.

F. References
   SHRP 2 R11 Project and Software Documentation

Session 5—Running the Algorithm

A. Topic Description
The basic concepts of the algorithm will be discussed. A line item explanation will be given by the instructors and the algorithm will be executed within WISE. The results of the algorithm will be discussed with the class. All participants will execute the algorithm on their computers.

B. Expected Outcome
   Basic understanding of the algorithm and the results as well as a successful execution of the algorithm

C. Time Allocation
   165 Minutes

D. Evaluation of Participants
   Review of algorithm

E. Instructional Method
   Lecture

F. References
   SHRP 2 R11 Documentation on the Model Algorithms

**Session 6—Operation Module**

A. Topic Description
   Session 6 will discuss and demonstrate the application of a selected traffic operational microcomputer software package such as Transmodeler or DynusT. The operational software will provide an estimate of the potential traffic diversion due to renewal projects that are part of the case study.

B. Expected Outcome
   Participants will be able to apply the results of the traffic diversion results of the selected operational software.

C. Time Allocation
   175 Minutes

D. Evaluation of Participants
   Successful execution by the participants of the operational software.

E. Instructional Method
   Discussion and Microcomputer Demonstration as well Participant Case Study

F. References
   SHRP 2 R11 Documentation and Operational Software Documentation

**Session 7—Back to the Planning Module**

A. Topic Description
   Session 7 will demonstrate and discuss the iteration process between the Operation Module and the Planning Module. The input of the traffic percent diversion results from the operational model to the Planning Module will be demonstrated. Final results of the WISE Model will be reviewed.
B. Expected Outcome
   Participants understand the iteration process between the Operation and Planning modules.

C. Time Allocation
   75 Minutes

D. Evaluation of Participants
   Successful completion of the class case study

E. Instructional Method
   Discussion and class case study

F. References
   SHRP 2 R11 Software Documentation

Case Study Wrap-up and Conclusion – 90 Minutes