

# Advanced Pediatric Pharmacotherapy: An Elective Course with Service-Learning

Christy S. Scott and Kimberly H. Deloatch

*School of Pharmacy, University of North Carolina, Chapel Hill NC 27599-7360*

This paper describes the implementation and evaluation of a new pediatric pharmacotherapy elective course. Unique aspects of this course included a significant service-learning component (minimum of 20 hours at a child-focused site), active-learning strategies, and absence of formal written examinations. Primary goals of the course were to limit traditional lectures and focus on student-centered discussion. Weekly preparatory assignments, journal writing, journal club, and student presentations were included. The course was highly rated by students, particularly in learning processes used and course format (mean scores >4/5). Students indicated they were encouraged toward active participation and challenged to think critically. Implementation of an elective pediatric pharmacotherapy course with significant active- and service-based learning components fosters student learning and civic responsibility and provides positive benefits to the community.

## INTRODUCTION

Pediatric pharmacotherapy is often overlooked in pharmacy curricula, and yet it is an essential area of pharmacy practice(1). In the U.S. in 1994, 18.3 percent of all babies born were premature or of low birthweight. The average lifetime medical costs for a premature baby exceed \$500,000<sup>1</sup>. Ten percent of all health care costs for children are attributable to caring for low birthweight babies(2). Congenital defects affect more than 150,000 babies each year and are the leading cause of infant death and disability in children and adolescents(3). An estimated four million children suffer from asthma (10 percent of all children under the age of 18 and one third of all asthma cases), accounting for 15 million physician visits, 479,000 hospitalizations, 1.2 million emergency room visits, and 10 million missed school days(4,5). An estimated 123,000 children and teenagers have Type I diabetes(6).

The majority of pharmacy curricula in the United States do not include required pediatric pharmacotherapy courses and only 18 percent offer elective courses(1). The University of North Carolina School of Pharmacy curriculum does not include a pediatric module in its pharmacotherapy sequence, providing only 21.5 total hours of pediatric-focused topics dispersed throughout approximately 1245 hours in required courses (excluding clerkships). Topics that include a pediatric focus within the required courses at UNC are presented in Table I. An additional ten hours of pediatric-focused material is also available to students through four professional elective courses (Vitamins and Minerals, Ambulatory Care, Acute Care, and Cardiology). Pediatric considerations may be mentioned in other courses, however this is usually brief and inconsistent.

<sup>1</sup>Krebs, G., "Maternity medical case management: A study of employer attitudes," Presentation before the National Managed Health Care Congress; Dec. 9, 1993.

**Table I. Pediatric topics taught in required courses in the PharmD curriculum**

Topics (listed alphabetically)	Contact hours
Asthma	1
Bugs and Drugs and Kids	1
Cystic Fibrosis	2
Epilepsy	2
Immunizations	2
Infant Formulas	1
Meningitis	2
Osteomyelitis	1
Otitis Media	1
Over-the-Counter Products	3
Pediatric Fluid Requirements and Replacement Therapy	1.5
Pediatric Nutrition	2
Pharmacokinetics	2
Pharyngitis	1

Pharmacy students are typically involved in passive learning and have been described as dependent learners(7,8). In creating this new course, recommendations of a recent focus group of the American Association of Colleges of Pharmacy(9) emphasizing active-learning were heeded. A primary goal of the new course was to limit the time spent on traditional lectures and to focus on student-centered discussion in the classroom setting.

This paper describes the implementation and evaluation of a new pediatric pharmacotherapy elective course. Unique aspects of the course included active- and service-learning and the absence of formal written examinations.

## COURSE OBJECTIVES

The overall goal of this three-credit course was to help the student learn to care for children. Pharmacists should assess and address children's overall well-being, in addition to providing appropriate pharmacotherapy. Specific learning objectives were for the student to: (i) describe

specific pharmacotherapeutic, psychosocial, and medical needs of children; (ii) define therapeutic plans in the treatment of children with specific illnesses (see Table II); and (iii) incorporate behavioral, social, and developmental observations of children acquired through the service-learning setting into future practice.

#### COURSE FORMAT AND DESCRIPTION

The course was offered for the first time during the 1998 Spring semester to third-year professional year students in the PharmD curriculum. Enrollment was limited to allow for effective group discussion and other active learning and assessment techniques. Twenty-two students were initially registered, with sixteen students completing the course. Various active-learning strategies and teaching methods were used for this course and are described below with emphasis on the service-learning and journal writing components.

#### Preparatory Assignments

Students were expected to complete reading assignments in preparation for classroom discussion. Currently, no suitable textbook exists for pediatric pharmacotherapy coursework. Readings from the current literature were provided in a coursepack. Additional readings were assigned from two texts that are required for other courses(9,10).

Case studies or dosing problems were planned as necessary to help students prepare for class discussion, apply content from previous sessions, or clarify areas of confusion. In this first offering, classroom discussion and journal entries indicated a need for assignments in two distinct areas: dosing of medications in children following cardiac arrest, and aminoglycoside pharmacokinetics in children with cystic fibrosis. These assignments were reviewed individually and corrected to provide feedback to students, but they were not used in the determination of the student's grade.

#### Lectures/Discussion

Lectures with class discussion were provided once weekly in the three-hour class meeting, with the exception of one class period reserved for student presentations. The sequence and time devoted to each topic are shown in Table II. Guest lecturers were invited to participate in the course; most were affiliated with The University of North Carolina Schools of Pharmacy or Medicine or the University hospital. Course coordinators requested that guest speakers replace lectures with interactive class discussion on their topics. Typically, questions were asked for the first 15-30 minutes of each class period to review and clarify content of the previous class and reading assignments.

Although class discussion was the goal, most instructors in the course were less successful in engaging students than desired, relying primarily on the traditional lecture style. The question period at the beginning of each session was most successful, but student participation in the remainder of the class was sporadic. Faculty observed that five students consistently had little or no participation unless directly asked questions. Midway through the semester, coordinators evaluated class participation and provided students with mid-semester grade estimations, emphasizing the value of participation. Following this feedback, all but one student participated more actively in class.

At the beginning of the semester, students self-select-

**Table II. Lecture topics in Advanced Pediatric Pharmacotherapy course**

Topic (listed in order presented)	Contact hours	Lecturer
Growth and Development	1	Physician
General Baby Care	0.5	Physician
Children as Patients: Real Kids, Real Stories	2	3 children, parent, social worker
Drug Delivery (oral and parenteral)	1.5	Pharmacist
Communication	0.75	Pharmacist
Neonatology	2	Pharmacist
Congenital Heart Defects	2	Pharmacist
Pain Management	2	Pharmacist
Hematology/Oncology	2	Pharmacist
Pediatric Advanced Life Support	2.5	Pharmacist
Attention Deficit Hyperactivity Disorders	2	Pharmacist
Diabetes	1	Nurse clinician
Juvenile Rheumatoid Arthritis	1	Physician
Respiratory Diseases	2.5	Pharmacist
HIV/AIDS	2	Physician
Career Training and National Pharmacy Organizations	2	Pharmacist

ed themselves into groups of three to four students that met periodically during class time to discuss service-learning activities and to review course material. Members of these small groups were required to select different types of community service sites; therefore, each member benefited from the experiences of others. For example, only one student in the small group could be involved with an after school program.

Time for small group discussion was not always available, as question periods and lectures were often longer than anticipated. However, with a class size of only 16, most small group discussion material was adequately covered during the question period at the beginning of each class. Students shared service-learning experiences with the entire class during this time.

#### Service-Learning

Service-learning is a process in which students learn through active participation in organized service<sup>2</sup>. It has been described as the "pedagogies that link community service and academic study so that each strengthens the other."<sup>(11)</sup> While few pharmacy curricula incorporate service-learning, participation can be effectively integrated in the academic environment by providing structured time for reflection on the learning process. The three primary goals of service-learning in this course were to: (i) provide opportunities for communication and interaction with children; (ii) foster civic responsibility; and (iii) meet community needs.

Potential service-learning sites were identified from telephone listings of local elementary schools, day-care centers, and after school programs. Sites were contacted prior to the beginning of the semester to determine their willingness to participate. Staff from most of the contacted sites were enthusiastically willing to work with students and 14 potential sites were confirmed. Students were given the list of confirmed sites on the first day of class and also

<sup>2</sup>National Community Service Trust Act of 1993.

**Table III. Service-learning sites for Advanced Pediatric Pharmacotherapy course**

Service-learning site	Type of site	Predetermined or student initiated site	Number of students
Carrboro Elementary School	After school program	Predetermined	2
YMCA	After school program	Predetermined	2
Abundant Life	After school program for underprivileged children	Predetermined	1
Frank Porter Graham Child Development Center	Child-development center	Predetermined	5 (3 nursery; 2 toddlers)
Balfour Elementary School	Elementary school	Student initiated	1
Carr Court	NC Head Start Program <sup>a</sup>	Predetermined	1
Glenwood Elementary School	NC Head Start Program <sup>a</sup>	Predetermined	1
Developmental Therapy Associates, Inc.	Occupational therapy clinic	Student initiated	1
McDougle Elementary School	Preschool program	Predetermined	1
Center for Child and Family Health - NC	Support program for abused and traumatized children	Student initiated	1

<sup>a</sup>Subsidized day-care program for underprivileged children.

offered the option of completing their service-learning in a site not on the list with approval of a site preceptor and the course coordinator. Sites selected are listed in Table III.

Students were responsible for writing service-learning contracts with their preceptors. The contracts described: (i) the mission and services offered at the site; (ii) primary preceptor; (iii) total hours of commitment to the site (20 hour minimum); (iv) schedule (preferably at the same time each week for consistency); and (v) nature of activities. Some students had difficulty contacting and meeting preceptors and required a deadline extension from week four to week five of the course for contract submission, with all but one student meeting this new deadline. The contracts were generally well defined, though sometimes lacked polish and professionalism.

Activities at the service-learning sites varied from changing diapers and feeding babies to running the playground activities for older children. In the toddler day-care atmosphere, reading and playing were the primary activities. After school activities typically involved reading and helping with homework. Some students were tutors for children who were having difficulties in school and provided lesson plans for the children each week. One student assisted with therapeutic interventions primarily involving one developmentally delayed child.

Throughout the semester, students repeatedly discussed in class and in journals (see below) how much learning and satisfaction they experienced working with children. They felt they were adding value to children's lives and they were gaining value in return. Receiving waves, hugs, kisses cemented their relationships with the children. One student shared drawings and poetry elementary school students made for him. The student who worked with the developmentally delayed child frequently expressed amazement with the child's determination to work through his limitations. Many of the students' experiences triggered childhood memories that helped them relate to a child's perspective, honesty and naiveté and innocence. To facilitate future course planning, the coordinators often asked the class if they were tired or bored with their service and to answer these questions truthfully.

<sup>3</sup>The presentation this year was catered to add a professional meeting atmosphere. ASTRA, USA provided funding for the event.

Most said they looked forward to their service and that it was the highlight of their week. No students offered any complaints or dissatisfaction, even though many were initially concerned with the time requirements.

A service-learning project pertaining to medications or health was also required. Students were expected to provide oral presentations and/or written materials appropriate to children, parents and/or care providers. Site preceptors and course coordinators approved projects and evaluated project materials and/or presentations. Projects completed by the students are listed in Table IV.

Students formally presented their service-learning experiences to their classmates and faculty at the end of the semester. They were expected to dress professionally and provide a lesson learned ("pearl of wisdom") gained while working with children during their five to ten minute presentation. Presentations were enthusiastic, creative, professional and fun<sup>3</sup>. The students heeded our recommendation at the beginning of the semester to keep a photo and/or video record of the children, which added a personal touch. Three underlying themes were present in most students' "pearls:" children are special and unique; children require individualized attention and care; and working with children is challenging and enjoyable. It was a pleasure to witness the community service the students provided and the wisdom they gained by working directly with children.

### Journal Writing

Students were required to keep a bound journal to document reflections on service-learning activities and class discussions. Each week, students summarized key points from class and evaluated the class period for quality of content and presenter effectiveness. Students also reflected each week on their service-learning involvement with children, how these interactions related to concepts learned in class and how these activities might affect their future practices. Course coordinators often had questions for students to answer in their journals to help with reflection, such as "What developmental milestones have you witnessed this week?" "What traits do you admire in the children?" "What are the children teaching you?" The journals were collected randomly every week and read to ascertain the students' understanding of class material, to determine areas in need of clarification, and to monitor

**Table IV. Student initiated service-learning projects**

Project	Presentation type	Target audience
ADHD Update	Pamphlet	Parents
Asthma Program	Individual counseling and education materials	Three 8-year-old children with asthma and their parents
Children and Medications	Brochure and verbal presentation with props	Children ages 3-4 years and their parents
Ear Infection Overview	Pamphlet	Parents of infants
Immunization Review	Newsletter	Parents and elementary teachers
Medications Commonly Used in Children	Booklet	Parents and daycare teachers
Medicine vs. Drugs	Verbal	Children ages 8-11 years
Medicines vs. Drugs and Poisons	Verbal	Children ages 9-10
Pharmacist Role in Abuse Prevention	Lesson Plan	Third year pharmacy students
Poison Prevention	Pamphlet	Parents and daycare teachers
The Human Body	Verbal with interactive poster	Children 5-7 years old
Treatment of Fever and Proper Medication Administration and Storage	Verbal with dosing chart and distribution of oral syringes	Day-care teachers
Treatment of Fevers, Coughs, and Colds	Brochure and distribution of oral syringes	Parents of infants
What are germs?	Verbal with posters and props	Children ages 3-4 years.
Why do you take medicine?	Verbal and distribution of oral syringes	Children ages 3-4 years
You Can Be What You Want to Be	Motivational presentation	Multiple classrooms at elementary school in poor, rural area

service-learning activities. Journals served as self-directed learning by allowing students to determine for each class period and service-learning activity what factual information and course material was important.

Lecture summaries written in journals appeared an effective means for students to highlight and summarize course content. Most entries were sufficiently complete and accurate; areas in need of clarification were readily identified. Students were extremely blunt about their perceptions of quality of content and lecturer effectiveness. Service-learning was enthusiastically endorsed. Several students added pictures of "their children" and offered anecdotes to describe them. Although complaints were expressed concerning lectures, class discussion and grades, no complaints were offered about service activities. Along with personal feelings, students noted when they were able to apply knowledge from class, particularly information regarding normal growth and development.

### Journal Club

The purpose of journal club was to raise awareness of the difficulties in conducting research with children, reinforce the critical evaluation process for research articles, and provide students with additional experiences of delivering information to their colleagues. Originally, each student was required to evaluate two of six original research articles included in the course pack and to present the article verbally in a small group, with each person in the group evaluating different articles. Students were also required to prepare written critiques of the articles.

This journal club format was changed to include the entire class, instead of using small discussion groups. It was apparent that the students needed more guidance in this activity than the faculty could provide to five groups. We elected to critique four of the six original articles with the entire class, with students presenting different segments at least twice. Adequate participation and clarification was easily accomplished with 16 students. The students were still required to complete two written critiques.

**Table V. Student assessment criteria for Advanced Pediatric Pharmacotherapy course**

Evaluated component	Percent of final grade
Class participation	
Self evaluation	10
Peer evaluation	10
Course coordinator evaluation	20
Service-learning	
Preceptor evaluation	15
Written contract	5
Project	5
Oral presentation	5
Journal club—written critique	10 (5% for each article)
Journal writing	20

### Other Activities

Students were required to join the Pediatric Pharmacy Advocacy Group (PPAG), a national organization which promotes safe and effective medication use by children. Through membership, students received *The Journal of Pediatric Pharmacy Practice* and have access to Pedinet<sup>®</sup>, an interactive pediatric pharmacist information exchange system. Students discussed the Journal and PPAG during small group discussions and during the question period at the beginning of class.

Students were also required to join the course listserv to enhance communication. The listserv is used primarily to clarify information and deliver additional assignments. The listserv proved to be a valuable communication tool for both faculty and students. Four months after completion of the course, students still use the listserv to communicate with each other and faculty regarding clerkship experiences and pediatric pharmacy opportunities.

### STUDENT ASSESSMENT

Examinations and quizzes were not given in this course. Table V indicates the relative weighting of each evaluated class component. Students were required to satisfactorily complete each component of the course for grade assign-

**Table VI. Student course evaluation**

	Mean <sup>a</sup>	SD
1. Course goals and objectives were clearly stated.	4.6	0.8
2. The course syllabus provided useful information.	4.3	0.9
3. The course followed a logical organization and sequence of topics.	4.1	0.6
4. Classroom activities were carefully planned and well organized.	3.6	0.6
5. This course required students to prepare in advance for each class.	4.9	0.4
6. Course materials (coursepak) provided valuable information.	4.3	0.7
7. Class discussion was encouraged in this course.	4.9	0.4
8. When needed, the student was able to get personal help in this course.	4.3	0.9
9. Methods for evaluating / grading student work were clearly explained.	3.8	1.1
10. My anticipated grade accurately reflects my achievement of the course goals and objectives.	3.9	1.2
11. This course increased my knowledge and/or competence in this area.	4.8	0.4
12. This course increased my interest in pursuing further studies in this area.	4.2	0.7
13. This course emphasized understanding of concepts over memorization of facts.	4.7	0.5
14. This course challenged the student to think critically.	4.7	0.5
15. This course was fun.	4.3	0.6
16. This course was too difficult.	2.3	0.7
17. This course was too easy.	1.4	0.8
18. This course took more time than it was worth.	2.3	0.6
19. I would recommend this course to other students.	4.2	0.7
20. Knowing what I now know about this course, I would take it again.	3.9	0.3

<sup>a</sup>Scale: 1 = strongly disagree; 2 = disagree 3 = not sure/neutral; 4 = agree; 5 = strongly agree.

ment. Class attendance was mandatory, unless excused by course coordinators.

To minimize variability of subjective evaluation measures, specific criteria were developed for each course component. The criteria were then translated into checklists that were subsequently used as self, peer, and faculty evaluation tools. The checklists were distributed and explained to students during the first class meeting. Students were evaluated weekly on their class performance by at least two other students and by at least one course coordinator; course coordinators met at the end of each session to compare impressions of the session and to record students' weekly scores. Sample evaluation criteria are presented in Appendix A.

Preceptors used a standardized form to evaluate students at their service-learning sites. Overall, preceptors were very pleased with students' performance and enthusiasm. Contact between course coordinators and preceptors was limited; however, students often commented on relationships with preceptors in journals. One preceptor wrote a thank-you note to the course coordinators, expressing her pleasure with one student's performance. Preceptors have requested verbally or in writing to continue with service-learning involvement in the future.

Assigning grades for the course was more difficult than originally anticipated, primarily due to the subjective nature of evaluation (Tables VI and VII). Although checklists were used, translating subjective impressions into numerical grades was challenging. The coordinators compared subjective overall assessments to numerical assessments and used a consensus process to determine each student's grade. In the final analysis, six students received an "A," one student received a "C," and the remaining nine students received a grade of "B."

#### COURSE EVALUATION

In addition to the debriefing that occurred in the final class meeting, each student completed a 55-item course evaluation at the end of the semester. Evaluation questions addressed both content and process issues related to

the course. Categorical questions, except those relating to individual lecturers, and student responses are presented in Tables VI and VII.

The course was highly rated, particularly in the areas of learning processes used and course format (mean scores >4). The data suggest the course was effective in promoting active learning. Students indicated that they were encouraged toward active participation and challenged to think critically, and that the course emphasized understanding concepts rather than memorizing facts. The course format increased their interest in pursuing additional studies in the area. All 16 students stated that they had read the course materials provided as preparatory assignments, with ten and six students stating they always and sometimes read the assignments, respectively. The low rating for chat rooms and journal club probably reflects insufficient time for these activities.

Student evaluations indicated that participation in the service-learning activities was the most valued component of the course. Although students complained at the beginning of the semester about the time commitment required for these activities, students agreed service-learning was the most valuable learning experience, regardless of their prior experience with children. Students also enjoyed hearing about and learning from their classmates' experiences. Students unanimously agreed that this aspect of the course should not be changed and that they are more likely to volunteer in the future because of this course. Similarly, the evaluations and comments from service site preceptors were overwhelmingly positive. Without exception, the preceptors indicated that the students had brought value to their programs and that they would welcome additional students in subsequent semesters.

Students were asked if each topic enhanced their knowledge (questions 32-50, not shown). On average, students agreed that their knowledge was enhanced in 13 of the 19 lectures (mean scores for each topic >4/5). Perceptions were neutral to positive in the remaining six areas (mean scores 2.9 - 3.8). Students particularly appre-

**Table VII. Student course evaluation**

	Value		Time / emphasis	
	Mean <sup>3</sup>	SD	Mean <sup>b</sup>	SD
1. Participation in community service activities	4.9	0.4	3.1	0.3
2. Completion of a community service project.	4.3	0.8	2.9	0.3
3. In-class presentation of community service activities	4.2	0.6	3.3	0.8
4. Reading / preparation for class meetings	4.1	0.6	3.6	0.7
5. Lectures	4.6	0.5	3.0	0
6. Classroom discussion	4.7	0.6	2.7	0.7
7. Use of journal to document community service activities	3.5	0.6	3.3	0.6
8. Use of journal to summarize content from class	3.5	1.0	3.7	0.6
9. PPAG Membership	3.8	0.9	2.7	0.5
10. Review and discussion of journal articles (journal club)	3.8	1.2	2.5	1.1
11. Chat rooms	2.4	1.2	2.1	0.8

<sup>a</sup>Scale for value of activity: 1 = of no value; 2 = of little value; 3 = not sure/neutral; 4 = somewhat valuable; 5 = very valuable.

<sup>b</sup>Scale for time / emphasis devoted to activity: 1 = far too little; 2 = too little; 3 = about right; 4 = too much; 5 = far too much.

ciated the sessions “Growth and Development” and “Children as Patients: Real Kids, Real Stories.” In this second session, the children were a seven year old survivor of two liver transplants, a six year old with congenital heart defects, and a seventeen year old boy with cystic fibrosis (interviewed on videotape, as he was too ill to come to class). They often referred to these sessions and concepts learned when describing interactions with children in their service-learning activities. Students indicated that the amount of time allocated for each topic was appropriate (mean scores 2.8 - 3.2, where 2 = too little, 3 = about right, and 4 = too much).

Because grant funding covered the costs of coursepacks, PPAG memberships, and materials needed to complete community service projects, students were asked to assess the value of these items. Thirteen students stated coursepacks were preferable to textbooks and would be a valuable future resource worth the purchase price. Students also found PPAG membership valuable. Twelve students said they would have absorbed the presentation cost had the money not been available and four students said they would have completed the same or a similar project, but would have scaled down the presentation materials (e.g., slides, handouts).

Student opinions regarding the methods of evaluation were mixed. When asked to describe their preference for evaluation methods, five students (31 percent) preferred the methods used in this course to traditional methods; five students (31 percent) objected to both the methods used and traditional exams but offered no alternatives; three students (19 percent) did not comment on the subjective evaluation methods but stated that exams were not appropriate for the course; and three (19 percent) expressed a preference for written exams. A few students commented that expectations to “perform” in class made them nervous and uncomfortable. Some students expressed the belief that they were not capable of critically evaluating their classmates and that peer-evaluation should be eliminated as a basis for assigning grades.

**DISCUSSION**

Our experience indicates that implementation of an elective pediatric pharmacotherapy course with significant active and service-based learning components fosters student learning and civic responsibility and provides positive

benefits to the community. Careful planning is necessary to insure that a variety of active learning strategies and service-learning reflection time are effectively employed in the classroom, that expectations are clearly articulated to students at the beginning of the semester, and that students are not overwhelmed with competing responsibilities. Course coordinators must be clear in stating their expectations for guest presenters, if the commitment to active learning is to remain consistent throughout the course.

Evaluation of classroom participation, journal entries, and off-site service projects is subjective by comparison to traditional testing methods used in most pharmacy courses and presents a continuing challenge. While we remain committed to the concept of measuring behavioral outcomes rather than factual knowledge, more work is needed to develop effective tools for accomplishing this task. Based on our experience, we plan to decrease the evaluation emphasis on participation in classroom discussion and develop objective methods to assess student preparedness and knowledge. Our experience suggests introverted students are penalized for lack of participation, which may simply reflect their personality as opposed to their level of understanding.

Finally, faculty implementing similar courses must be flexible and willing to make mid-course adjustments. We found on many occasions that the activities we planned did not fit into the time allotted, necessitating extended deadlines, adjusted course format, and communication electronically with students between class sessions.

*Am. J. Pharm. Educ.*, **62**, 420-426(1998); received 6/29/98, accepted 9/15/98.

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3. Asks relevant questions related to assigned readings or lecture material
4. Participates fully in chat room discussions / enhances the learning of classmates and faculty by sharing relevant information and insights related to service-learning observations
5. Uses appropriate language, intonation, body language; communicates with a positive demeanor
6. Listens reflectively and responds positively to the opinions of others
7. Demonstrates collegiality and mutual respect in communicating differences of opinion
8. Able to summarize key points of and/or answer specific questions related to assigned readings
9. Able to summarize key points of and/or answer specific questions related to prior weeks' lecture material
10. Provides useful and valid feedback to classmates via peer-evaluation process

Overall assessment for this date: E = excellent A = acceptable  
M = marginal U = unacceptable

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## APPENDIX A. SAMPLE EVALUATION CRITERIA

Criteria for grading class participation:

1. Arrives on time and with necessary materials
2. Is polite and attentive to class speakers