TABLE: **MATHEMATICS** TRANSFORMATIONAL GOALS AND SAMPLE
PERFORMANCE OUTCOMES [September 19, 2006, Ralph Bremigan]

Transformational Goals	Sample Performance Outcomes
Experience into **information** (*isolate discrete, recognizable and usable facts*) Students will: 1. Accurately read, interpret, present, and use quantitative data in mathematically appropriate representations. 2. Understand that data collected in real-world contexts is related to, but different from, mathematical idealizations. 3. Differentiate the techniques of inductive and deductive reasoning as ways of gaining mathematical knowledge. 4. Develop strategies for recognizing and applying their experiences with pre-college mathematics.	Students demonstrate retention of facts, ideas, and concepts introduced in the class, and mastery of skills critical to the topic. Students demonstrate an understanding of real-world phenomena and their mathematical representations and idealizations. Assessment occurs through homework assignments, projects, and exams, at the discretion of the instructor.

| **Information** into **knowledge**
(*analyze facts within an intellectual framework*, *discover meaning in experience*)

Students will:

1. Utilize inductive reasoning to analyze data and other mathematical phenomena to reveal patterns and commonalities.

2. Understand how deductive reasoning is used to confirm mathematical facts and extend mathematical theories.

3. Understand how commonalities among mathematical phenomena are incorporated and synthesized in structured mathematical theories and frameworks.

4. Adapt their view of mathematics to accommodate college-level expectations of mathematical understanding and rigor; unify their view of mathematics by discovering connections among mathematical topics.

5. Develop effective communication using the English terminology and standard symbolic notation of the theory. | Students will master one or more structured mathematical theories/frameworks that are capable of wide application; will be able to analyze examples in the context of the theory; and will communicate effectively. Mastery will be assessed by methods at the instructor's discretion (typically exams, quizzes, homework, writing assignments, and/or extended projects). |

Knowledge into judgment (*reflect on knowledge gained to make choices and direct what they think, say and do*)*	
Students will: 1. Evaluate the strengths and weaknesses of mathematical evidence and mathematical arguments. 2. Develop effective decision-making strategies in the application of mathematical theory to solving problems.	Through methods at the discretion of the instructor, students will demonstrate their ability to apply mathematical theory to the solution of (real-world) problems; to judge whether mathematical evidence is convincing; and to analyze deductive arguments for fallacies.

*Mathematics Foundation courses are not required to meet the transformational goals beyond E -> I and I -> K. Other transformational goals have been provided for illustrative purposes only.