What does it mean for a middle school teacher of mathematics to have an advanced view of the algebra that she or he teachers? What are some ways in which a prospective middle school teacher can build that advanced view? At Humboldt State University we have developed a set of intensive 2-unit (semester) courses for current and prospective middle school mathematics teachers that work together to build an advanced viewpoint of middle school mathematics, particularly with respect to algebra. The courses include: Modern Algebra for Middle Grades Teachers; Number Theory for Middle Grades Teachers, and Concepts of Calculus for Middle Grades Teachers. The content, structure, and philosophy of these courses is the content of this session. Course guides and sample activities will be provided. (Received September 13, 2000)