

METR 3223: Physical Meteorology II:  
*Cloud Physics, Atmospheric Electricity and Optics*

CLASS: Monday, Wednesday and Friday, 2:30-3:45  
National Weather Center, Rm. 5600

INSTRUCTOR:

Guifu Zhang, Associate Professor, School of Meteorology  
NWC Rm. 4620  
Tuesday 10:00-12:00 and Friday 1:00-3:00, or drop by  
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(405) 325-3507

TEXT BOOK:

Rogers and Yau: *A Short Course in Cloud Physics*, Third Edition

REFERENCE BOOKS:

Wallace and Hobbs, *Atmospheric Science*, Second Edition  
Fleagle and Businger, *An Introduction to Atmospheric Physics*, Second Edition

COURSE DESCRIPTION

This course provides fundamentals and principles for understanding of the physical states and processes of clouds and precipitation as well as atmospheric electricity and optics. Specific topics that will be covered are as follows:

*Cloud physics:*

*Review of thermodynamics*  
*Aerosols and nucleation*  
*Condensation growth*  
*Collision and coalescence*  
*Precipitation processes*  
*Observation studies*

*Atmospheric electricity:*

*Electrostatics*  
*Electromagnetic wave*  
*Thunderstorm charging*  
*Lightening*

*Atmospheric optics:*

*Reflection and refraction*  
*Optical phenomena*

GRADES

Homework problems: 20%  
Quiz questions: 10%  
Midterm examination: 30%  
Final examination: 40%