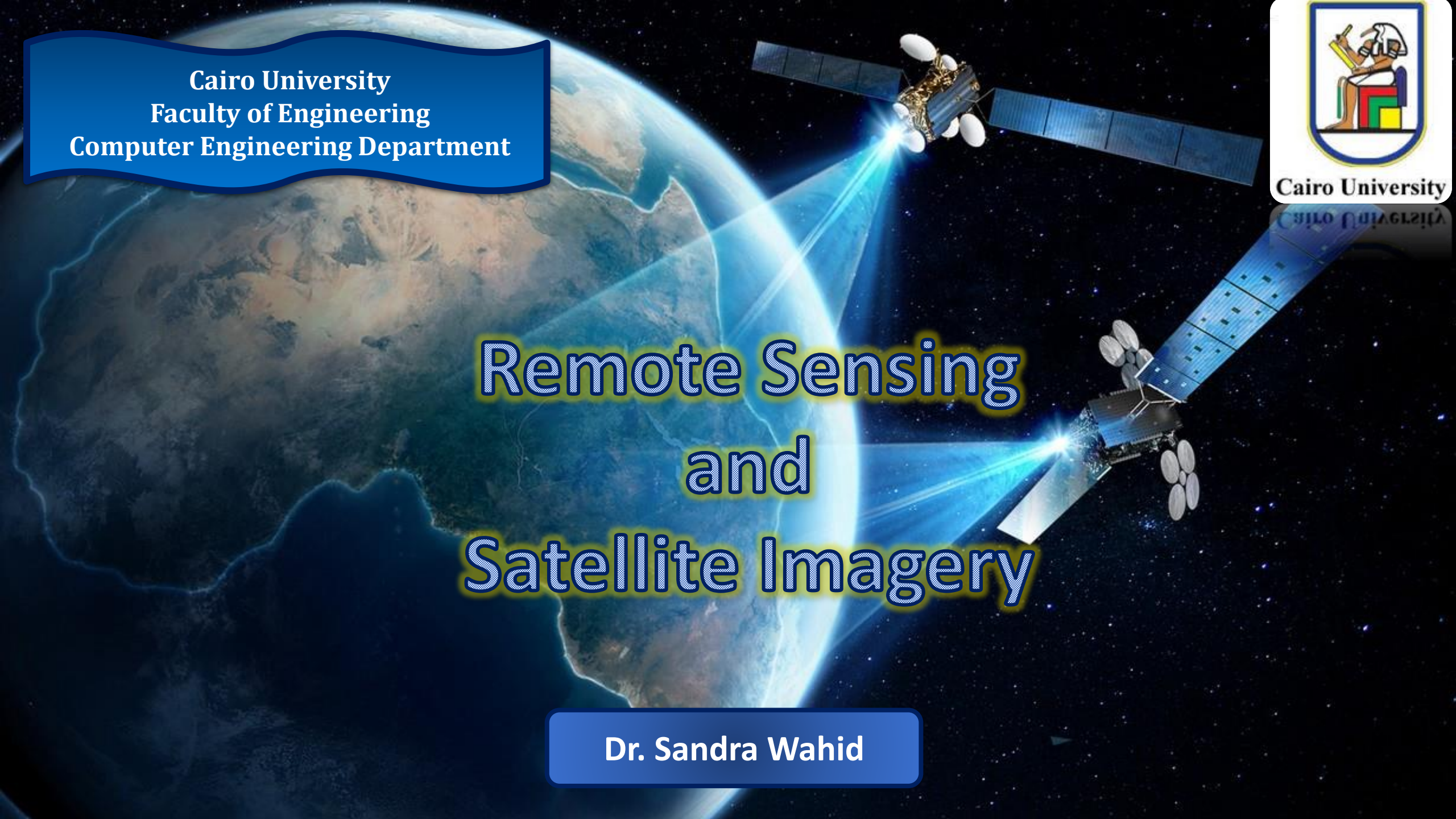
Cairo University
Faculty of Engineering
Computer Engineering Department



Remote Sensing and Satellite Imagery

Dr. Sandra Wahid

Instructor

- Dr. Sandra Wahid Amin Rizkallah
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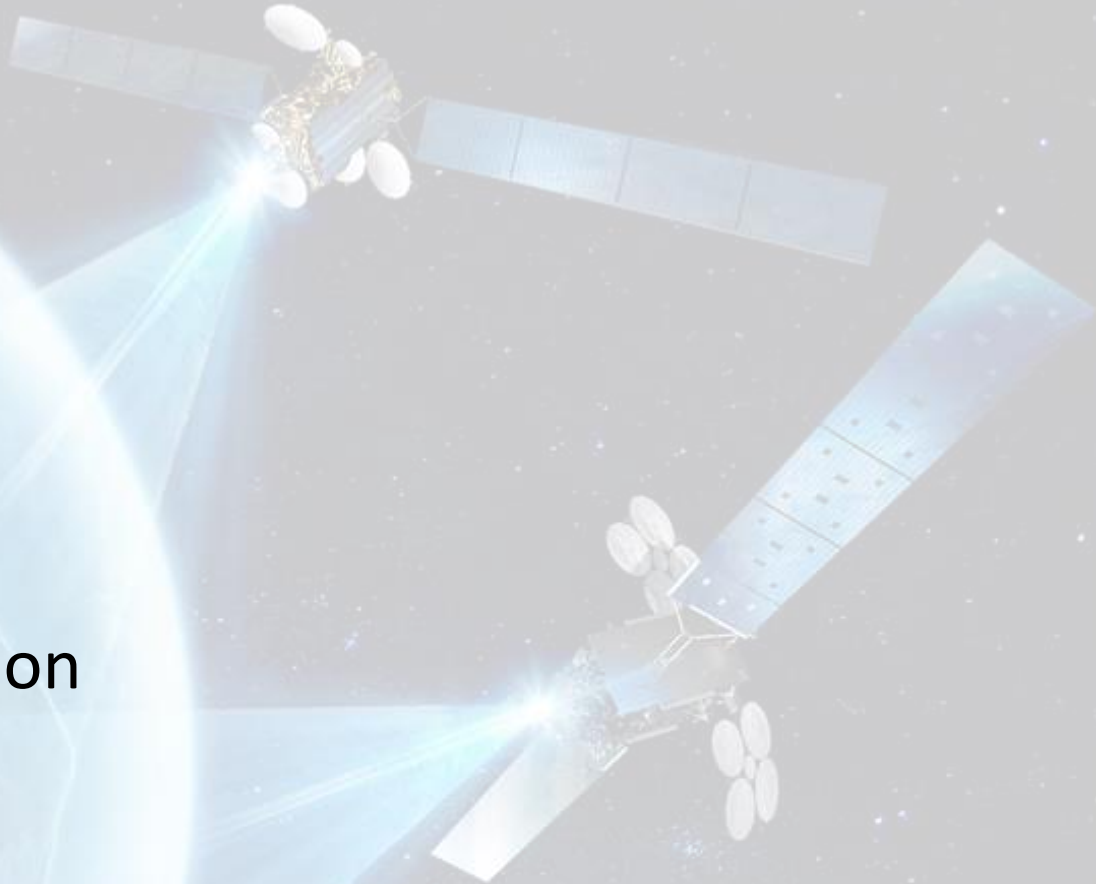
Course Contents

- Remote Sensing Image Data
- Correcting and Registering Images
- Spectral Domain Image Transforms
- Supervised Classification
  - Maximum Likelihood
- Clustering and Unsupervised Classification
  - ISODATA
- Deep Learning Techniques
  - CNN, U-Net
- Change Detection
- Generating Satellite Images
  - GANs

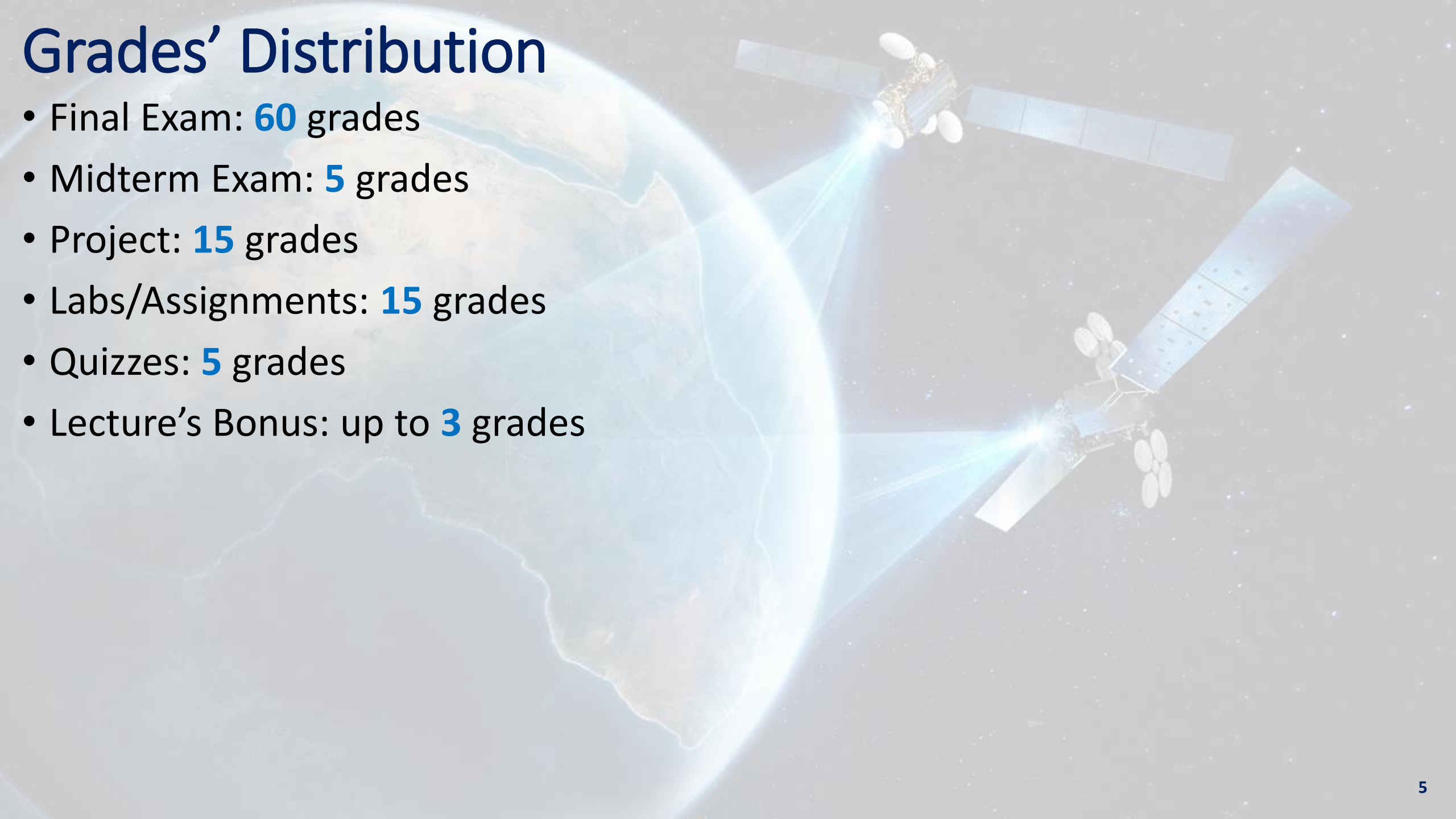


Learning Outcomes (LOs)

- Apply image correction and registration techniques. A1.
- Apply spectral domain image transforms. A1.
- Implement image classification techniques. C2.
- Describe and apply deep learning techniques on images. C1.
- Describe and analyze change detection techniques. C1.
- Apply state-of-the-art techniques on satellite images. C1.

Grades’ Distribution

- Final Exam: **60** grades
- Midterm Exam: **5** grades
- Project: **15** grades
- Labs/Assignments: **15** grades
- Quizzes: **5** grades
- Lecture’s Bonus: up to **3** grades



Written Exams Policy

- Restricted exams:
  - you are allowed to bring only **1 A4** sheet **(2 sides)**

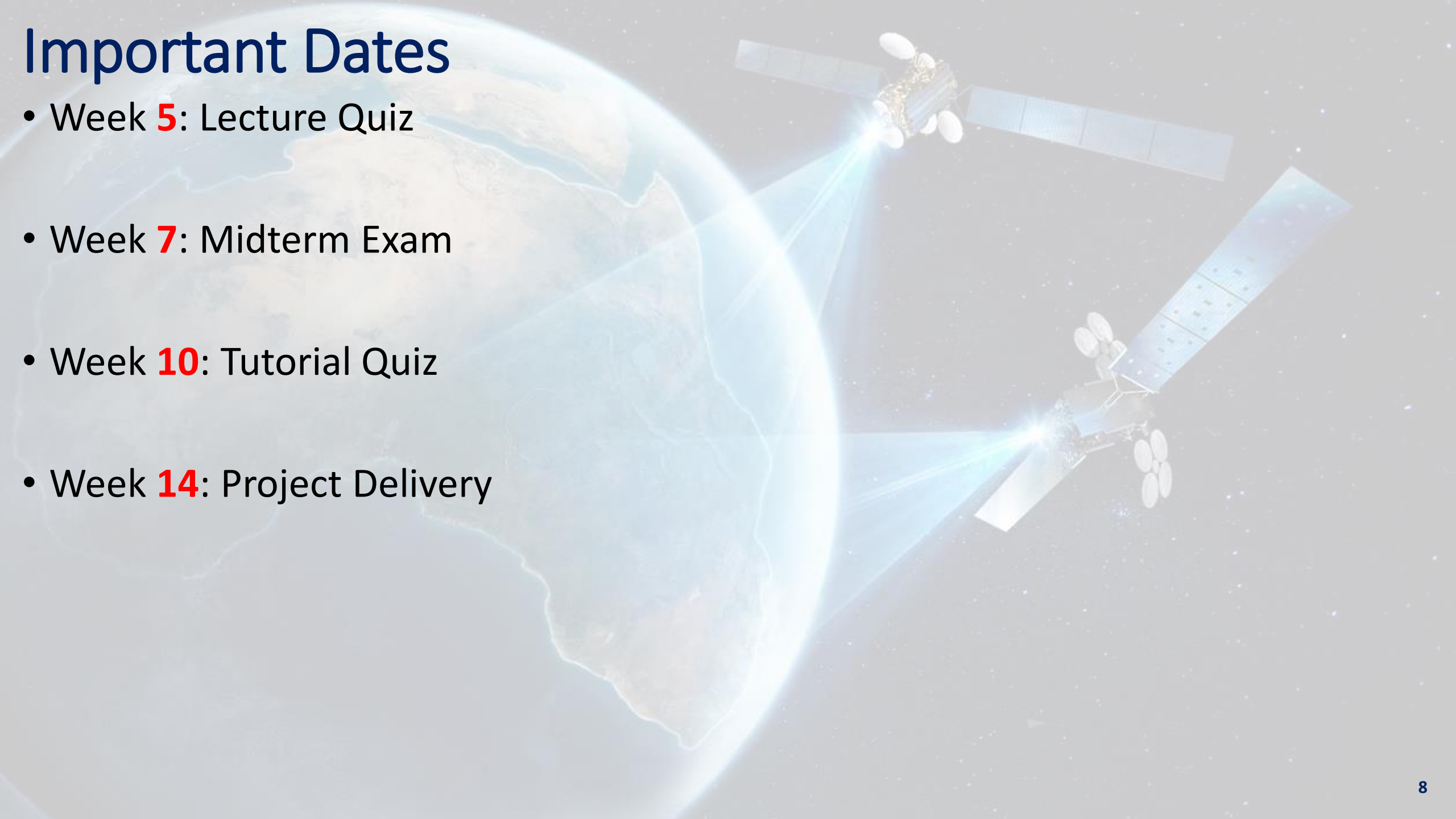
  → **Hardcopy (softcopies are not allowed).**

References

- “Remote Sensing Digital Image Analysis”. Fifth Edition. John A. Richards.
- “Introductory Digital Image Processing. A Remote Sensing Perspective”. Fourth Edition. John R. Jensen.
- “Deep Learning”. MIT press. Ian Goodfellow, Yoshua Bengio, and Aaron Courville.
- “U-net: Convolutional networks for biomedical image segmentation”. Olaf Ronneberger, Philipp Fischer, and Thomas Brox.
- “Image Analysis, Classification, and Change Detection in Remote Sensing. With Algorithms for Python”. Fourth edition. Morton John Canty.

Important Dates

- Week **5**: Lecture Quiz
- Week **7**: Midterm Exam
- Week **10**: Tutorial Quiz
- Week **14**: Project Delivery




Thank You