

Rutgers University-New Brunswick  
School of Engineering  
Dept. of Civil and Environmental Engineering  
Fall 2025, Monday 6:00 PM - 9:00 PM  
Classroom: Busch Campus, Weeks Hall 402

Instructor: Qizhong (George) Guo  
Weeks Suite 328  
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Office hrs: By appointment

## **16:180:590 COASTAL ENGINEERING** (COURSE OUTLINE)

### **Topics:**

1. Introduction
2. Tides
3. Estuarine Processes
4. Waves
5. Coastal Processes
6. Grey/Hard Coastal Structures
7. Green/Soft Coastal Structures (Nature-Based Solutions)
8. Contemporary Coastal Management

### **Text/Reference Books:**

1. Coastal Engineering: Processes, Theory and Design Practice, Third Edition, by D. Reeve et al., CRC Press, 2018. *[E-book accessible via Rutgers Library]*
2. Introduction to Coastal Engineering and Management, Third Edition, by J. W. Kamphuis, World Scientific, New Jersey, 2020. *[E-book accessible via Rutgers Library]*
3. An Introduction to Coastal Engineering, by M. Isaacson, Wiley, 2024. *[E-book accessible via Rutgers Library]*
4. Handbook of Coastal Engineering, by J. B. Herbich, Editor, McGraw-Hill, 2000. *[On reserve at Rutgers Library]*
5. Estuary and Coastline Hydrodynamics, by A. T. Ippen, McGraw-Hill Book Co., Inc., New York, NY, 1966. *[On reserve at Rutgers Library]*
6. Living Shorelines: The Science and Management of Nature-Based Coastal Protection, First Edition, by D. M. Bilkovic, et al. (editors), CRC Press, 2017. *[E-book accessible via Rutgers Library]*
7. Environmental Oceanography, Second Edition, by T. Beer, CRC Press, Boca Raton, FL, 1997. *[On reserve at Rutgers Library]*
8. U.S. Army Corps of Engineers (USACE) Coastal and Hydraulics Laboratory (CHL) Coastal Engineering Manual (CEM), 2002. <https://www.publications.usace.army.mil/USACE-Publications/Engineering-Manuals/u43544q/636F617374616C20656E67696E656572696E67206D616E75616C/>

### **Grading:**

The final course grade will be based on homework (30%), mini-design projects (20%), one presentation (20%), and one in-class exam (30%).