A. Neurotransmitter Systems especially as they relate to sleep stage effects and substances that cause change in this system:
1. Acetylcholine (Ach)
2. Physostigmine interactions
3. Scopolamine
4. Norepinephrine (NE)
5. Monoamine oxidase inhibitors
6. Reserpine that displaces monoamines
7. Tricyclics such as desipramine, a NE inhibitor
8. Clonidine, a potent alpha-2 agonist
9. Neuroleptics such as chlorpromazine
10. Beta antagonists such as propranolol
11. Beta agonists such as Isoprenaline
12. 5-Hydroxytryptamine (5-HT) and its precursor, tryptophan as well as inhibitors such as fluoxetine
13. Amphetamine effects and its derivatives such as methylphenidate and
14. pemoline
15. Histamine
16. Adenosine
17. REM neurophysiology such as neurotransmitters in REM atonia and others

B. Pharmacological effects or disease changes to sleep architecture:
1. Antidepressants
2. Neuroleptics
3. Stimulants
4. Anticonvulsants
5. Sedative-hypnotics
6. Antihistamines
7. Antiemetics
8. Cardiovascular medications
9. Alcohol, nicotine, and drugs of abuse
10. Drug withdrawal effects on sleep architecture
11. Caffeine effects and mechanisms

C. Brain lesion studies such as lesion location that produces wake, sleep, or REM

D. Pediatrics:
   1. Polysomnographic differences in infants
      a. Normal versus abnormal breathing patterns
      b. Active versus quiet sleep
      c. Staging normals
      d. EEG patterns such as the age of appearance of sleep spindles, K- complexes or slow eye movements
   2. Apnea definitions and etiologies
   3. Sudden infant death syndrome (SIDS)
   4. Causes of EDS and sleep fragmentation
   5. Parasomnias - REM versus NREM
   6. Nocturnal enuresis incidence, evaluation and therapy

E. Polysomnography techniques, scoring, and artifacts:
   1. Know staging criteria well
   2. Stage changes in young adults versus elderly
   3. Artifact recognition and technical intervention to resolve
   4. Technical set up of filters, time constants, impedance, and calibration
   5. Nocturnal penile tumescence techniques and evaluation
   6. Understanding the full 10-20 montage and using it to locate a disorder versus artifact
   7. Recognizing and understanding EEG patterns such as hypnagogic hypersynchrony or midline theta rhythm (MU rhythm) and others
   8. Electrocardiogram rhythm recognition
   9. Multiple sleep latency test (MSLT) procedure
   10. Maintenance of wakefulness test (MWT) procedure

F. Clinical diagnostics:
   1. Questionnaires
   2. Sleep logs and patterns of recognition of underlying sleep disorders
   3. Actigraphy and its analysis for supporting the diagnosis

G. Seizure recognition on EEG and PSG monitoring

H. Sleep deprivation:
   1. Animal research results of total sleep deprivation
   2. Human complete and partial sleep loss

I. Endocrinological patterns in the sleep-wake cycle and the circadian rhythm
J. Circadian physiology and genetics

K. Tonic versus phasic REM components in physiology and PSG

L. Cardiopulmonary physiology in sleep versus wake and with arousals

M. Sleep disorders:
   1. Sleep breathing disorders evaluation, epidemiology, pathogenesis, comorbid conditions, evaluation, and therapies including surgical evaluation and intervention, dental, and positive airway pressure equipment and troubleshooting
   2. Narcolepsy presentation, pathophysiology, genetics, diagnostics, and treatment
   3. Circadian rhythm disorders and their pathology, genetics, epidemiology, diagnosis, and treatment
   4. REM behavior disorder
   5. Psychiatric disorders such as schizophrenia or depression and sleep patterns versus drug effects
   6. Nocturnal limb movements such as periodic limb movements during sleep (PLMS) and their causes, genetics, epidemiology, and interventions
   7. Neurologic disorders such as Parkinson's or Alzheimer's disease with sleep changes and subsequent disorders
   8. Insomnia diagnostic categories, epidemiology, evaluation, and therapies
   9. Disorders associated with alpha intrusion

N. AASM practice guidelines (available online)
REFERENCES:

1. The American Board of Sleep Medicine (ABSM) web site is at: www.absm.org; Address: 6301 Bandel Road NW, Suite 101; Rochester, MN 55901; Telephone: 507-287-9819 as of the printing of this book.


