

## CLPS 0120, Reading Schedule 2018

### Required Readings

- *The Twenty-Four Hour Mind, The Role of Sleep and Dreaming in our Emotional Lives*, by Rosalind D. Cartwright (on Amazon.com price range = \$9.93-\$19.95). This text takes a perspective steeped in psychological theory to explain the role of sleep and dreaming, exploring the history of sleep research and sleep medicine, dreams and their role, and a taste of events during sleep (parasomnia) that have led to dramatic and tragic behaviors with legal ramifications. Readings from this book are designated **24-HR** below.
- *Sleep, A Very Short Introduction*, by SW Lockley and RG Foster (on Amazon.com price range = \$2.99-\$11.73). Just what the title indicates! Readings from this book are designated **SAVI** below.
- **Selected Teaching Materials.** This set of readings is available electronically through the course e-reserves that can be accessed on our canvas web page. Access to the course reserve readings requires a Brown Username. Readings from this list are designated as **STM** on the reading list below. New readings may be added during the semester; please watch for announcements. Some of the readings are chapters taken from the Sleep Research Society's *Basics of Sleep Guide*. If you are interested in a deeper dive into other sleep topics, the full book is available on sleepresearchsociety.org for \$50. Other readings are chapters from the *Principles and Practice of Sleep Medicine*, a text book of sleep medicine. Again, for those interested in going deeper, the newest version is available on Amazon for \$173 for the Kindle edition; we provide selected chapters in the course library reserves, so you do not need to purchase either book.

### Recommended Readings

*The Promise of Sleep*, by William C. Dement and Christopher Vaughan (designated **Dement** below). Although chapters from this book are designated for particular segments of the course (see reading list below), it may be easier to read it from front to back rather than skipping around. On the other hand, if you don't have time to read it at the start of the semester, then follow the outline given below. [NB: if you are experiencing sleep problems, skip directly to Part 4.] This book is a fairly easy read that I think you'll find enjoyable as you go through the semester. (On Amazon.com price range = \$5.99-\$15.00)

*Wide Awake and Dreaming*, by Julie Flygare (Brown '05), a personal memoir of a young person with narcolepsy. I suggest you read this book if you are interested in a patient's view of life with a sleep disorder. (On Amazon.com price range = \$4.90-\$16.26)

#### Date    Topic/Readings

9/10    Introduction to course structure and pedagogy.

**Why sleep?** A brief introduction to the topic.

**Discussion:** What do you want to learn? What do you think about sleep?

**What is sleep?** Introduction to the scientific study of behavior and sleep; introduction to the 2-process model of sleep regulation. Measurement and characteristics of normal human sleep.

**SAVI:**     **Chapter 2.** Sleep generation and regulation—a framework.

**24-HR:**    **Chapter 1.** In the beginning: The early days of sleep research.

**STM:**

Dement W. Knocking on Kleitman's door: the view from 50 years later. *Sleep Medicine Reviews*, **7(4)**: 289-292, 2003. doi:10.1053/smr.2003.0279

Dement W. History of Sleep Medicine. *Neurol Clin*, **23**: 945-965, 2005.

Aserinsky E and Kleitman N. Regularly occurring periods of eye motility, and concomitant phenomena, during sleep. *Science* **118**:273-274, 1953.

**Dement: Chapter 1.** Long night's journey into day.

9/17 **What does sleep look like?** Fundamentals of normal human sleep. States, stages, measurement, course of events through the night, NREM-REM cycle. Introduction to sleep *phenomenology*.  
**Discussion:** Introduction to your class project: what, how, when, who, etc.

**STM:** Carskadon MA and Dement WC. Normal human sleep: An overview. In: *Principles and Practice of Sleep Medicine*, M.H. Kryger, T. Roth, and W.C. Dement (Eds.), Elsevier, Philadelphia, 2016; pp 15-24.

Keenan S and Hirshkowitz M. Sleep stage scoring. In: *Principles and Practice of Sleep Medicine*, M.H. Kryger, T. Roth, and W.C. Dement (Eds.), W.B. Saunders, Philadelphia, 2016; pp 1567-1587.

Swan TH. A note on Kohlschutter's curve of the "depth of sleep." *Psychol. Bull.* **26**:607-610, 1929

**Who sleeps?** Phylogeny: Sleep in other species.

**SAVI: Chapter 4.** The reasons for sleep.

**STM: Basics of Sleep Guide, Chapter 1.** The Evolution of Sleep.

Siegel, JM. Sleep in animals: A state of adaptive inactivity. In: *Principles and Practice of Sleep Medicine*, M.H. Kryger, T. Roth, and W.C. Dement (Eds.), Elsevier, Philadelphia, 2016; pp 103-114.

Tobler I, Stalder J. Rest in the scorpion—a sleep-like state? *J Comp Physiol A* **163**:227-235, 1988.

**Recommended:**

Rattenborg NC, Voirin B, Cruz SM, Tisdale R, Dell'Omo G, Lipp H-P, Wikelski M, Vyssotski AL. Evidence that birds sleep in mid-flight. *Nature Communications* DOI: 10.1038/ncomms12468 | www.nature.com/naturecommunications

**JOURNAL CLUB ARTICLE:** Raizen DM, Zimmerman JE, Maycock MH, Ta UD, You Y, Sundaram MV, Pack AI. Lethargus is a *Canorhabditis elegans* sleep-like state. *Nature*, **451**: 569-573, 2008. doi:10.1038/nature06535

09/24 **Where is NREM sleep controlled? The sleeping brain:** What/where are the brain mechanisms of sleep? Neuroanatomy, neurocircuitry, neurochemistry.

**SAVI: Chapter 1.** Sleep through the ages. **Chapter 3.** The sleeping brain.

**STM:** Tononi, G. & Cirelli, C. The Sleeping Brain. *Cerebrum*, 2017.

Saper, G. & Fuller, P. Wake-Sleep Circuitry: An Overview. *Curr Opin Neurobiol*, **44**: 186-192. doi:10.1016/j.conb.2017.03.021.

Tononi, G. & Cirelli, C. Perchance to prune. *Scientific American*, **309(2)**:34-39, 2013.

**Recommended:** Borbely, A.A. & Achermann P. Sleep homeostasis and models of sleep regulation. In: *Principles and Practice of Sleep Medicine*, M.H. Kryger, T. Roth, and W.C. Dement (Eds.), W.B. Saunders, Philadelphia, 2004; pp 405-417.

**Recommended: Basics of Sleep Guide, Section 3:** Neurobiology, Neurochemistry, and Biochemistry of sleep—**Chapter 5.** Neurobiology of sleep. **Chapter 6.** Neurochemistry of sleep.

**JOURNAL CLUB ARTICLE:** Anaclet, C., et al. The GABAergic parafacial zone is a medullary slow wave sleep-promoting center. *Nat Neuroscience*, **17(9)**: 1217–1224, 2004. doi:10.1038/nn.3789.

10/01 **Where is REM sleep controlled? The sleeping brain:** REM sleep anatomy and chemistry, NREM-REM cycle, motor inhibition

**STM:** Jouvet, M. What does a cat dream about? *Trends in Neurosciences*, Nov., 1979.

Siegel, J.M. Rapid Eye Movement Sleep. In: *Principles and Practice of Sleep Medicine*, M.H. Kryger, T. Roth, and W.C. Dement (Eds.), Elsevier, Philadelphia, 2016; Chapter 8.

**24-HR: Chapter 8.** Warnings from the Land of Nod: Nightmares and REM sleep behavior disorder.

**JOURNAL CLUB ARTICLE:** Schenck, C.H., Bundlie, S.R., Patterson, A.L., & Mahowald, M.W. Rapid eye movement sleep behavior disorder: A treatable parasomnia affecting older adults. *JAMA*, **257**:1786-1789, 1987.

10/08 **Indigenous Peoples' Day: NO CLASS (Catch up on your reading!)**

10/15 **When sleep? how does the body keep track of time?** Circadian Process—neuroanatomy, measurement, regulatory process (phase response curve). The temporal regulation of sleeping and waking.

**SAVI: Chapter 2.** Sleep generation and regulation – a framework.

**STM:** Czeisler, C.A. & Gooley, J.J. Sleep and circadian rhythms in humans. In: *Cold Spring Harbor symposia on quantitative biology*, Cold Spring Harbor Laboratory Press, 2007; pp. 579-597.

Berson, D.M., Dunn, F.A., & Takao, M. Phototransduction by retinal ganglion cells that set the circadian clock. *Science*, **295(5557)**:1070-1073, 2002.

Czeisler, C.A., Shanahan, T.L., Klerman, E.B., Martens, H., Brotman, D.J., Emens, J.S., ... & Rizzo, J.F. Suppression of melatonin secretion in some blind patients by exposure to bright light. *N Engl J Med*, **332(1)**:6-11, 1995.

Phillips, A., Clerx, W.M., O'Brien, C.S., Sano, A., Barger, L.K., Picard, R.W., ...& Czeisler, C.A. Irregular sleep/wake patterns are associated with poorer academic performance and delayed circadian and sleep/wake timing. *Sci Rep*, **7(1)**: 1-13, 2017.

**Recommended: Basics of Sleep Guide, Section 7:** Chronobiology—**Chapter 18A.** Fundamentals of the circadian system.

**Recommended:** Roenneberg, T., Allebrandt, K.V., Mrosovsky, M., & Vetter, C. Social jetlag and obesity. *Curr Biol*, **22**:1-5, 2012.

**JOURNAL CLUB ARTICLE:** Wright, K.P, McHill, A.W., Birks, B.R., Griffin, B.R., Rusterholz, T., & Chinoy, E.D. Entrainment of the human circadian clock to the natural light-dark cycle. *Curr Biol*, **23**: 1554-1558. 2013.

**10/22 Midterm Exam in Class (no exceptions!)**

10/22 **Who sleeps?** Ontogeny: Developmental aspects of sleep behavior and sleep-wake regulation; focus on adolescence.

**SAVI:** **Chapter 5.** The seven ages of sleep.

**STM:** Carskadon, M.A. Sleep in adolescents: the perfect storm. *Pediatr Clin N Amer*, **58**:637-647, 2011.

Hafner, M., Stepanek, M., Troxel, W.M. Later school start times in the U.S.: An economic analysis. *RAND Europe*, pp. 1-41, 2017.

**Basics of Sleep Guide, Section 2:** Life Cycles in Sleep—**Chapter 3.** Infants to adolescents; **Chapter 4.** Sleep in the older adult.

**Recommended:** Edwards, F. Early to rise? The effect of daily start times on academic performance. *Econ Educ Rev*, **31**:970-983, 2012.

**JOURNAL CLUB ARTICLE: NO JC-After the Midterm Exam return to CIT 227 for lecture.**

10/29 **What happens to your body during sleep? Sleep physiology:** autonomic nervous system, hormones, temperature regulation, sexual activation, breathing.

**STM:** Glotzbach, S.F. & Heller, H.C. Central nervous regulation of body temperature during sleep. *Science*, **194(4264)**:537-539, 1976.

Eckert, D.J. & Butler, J.E. Respiratory physiology: Understanding the control of ventilation. In: *Principles and Practice of Sleep Medicine*, M.H. Kryger, T. Roth, and W.C. Dement (Eds.), Elsevier, Philadelphia, 2016; Chapter 16.

Eugene, A.R., & Masiak, J. The neuroprotective aspects of sleep. *MEDtube Sci*, **3(1)**: 35-40, 2015.

**JOURNAL CLUB ARTICLE:** Spiegel, K., Leproult, R., Van Cauter, E. Impact of sleep debt on metabolic and endocrine function. *Lancet*, **354**: 1435-39, 1999.

11/05 **The sleeping mind: Introduction to Dreaming—How are dreams made?** Biology of dreaming. **What are dreams made of?** Dream phenomenology; psychology of dreaming.

**What are dreams made for?** Problem solving, creativity, mood, psychopathology, forensics.

**24-HR:** **Chapter 2.** Collecting dreams: Watching the sleeping mind. **Chapter 6.** More NREM parasomnias: Those who injure themselves, seek food or sex, explore, and protect. **Chapter 7.** Sleepwalking and state of mind in the courtroom.

**STM:** Hartman, E. Dreaming. In: *Sleep Medicine*, T.L. Lee-Chiong, M.J. Sateia, and M.A. Carskadon (Eds.), Hanley & Belfus, Inc., Philadelphia, 2002; pp 93-98.

Cohen, D.B. Sources of bias in our characterization of dreams. *Perceptual and Motor Skills*, **45**:98, 1977.

**Dement:** **Chapter 13.** The real life of dreams.

**JOURNAL CLUB ARTICLE:** Horikawa, T., Tamaki, M., Miyawaki, Y., & Kamitani, Y. Neural decoding of visual imagery during sleep. *Science*, **340(6132)**:639-642, 2013.

11/12 **The sleeping mind—dreaming:** problem solving and what's on your sleeping mind?

**STM:** Cartwright, R.D. Dreams that work: The relation of dream incorporation to adaptation to stressful events. *Dreaming*, **1(1)**:3-9, 1991.

Lavie, P. & Kaminer, H. Dreams that poison sleep: Dreaming in holocaust survivors. *Dreaming*, **1**:11-22, 1991.

Hartman, E. Dreams that work or dreams that poison? What does dreaming do?  
*Dreaming*, **1**:23-27, 1991.

Schädlich, M., Erlacher, D., & Schredl M. Improvement of darts performance following lucid dream practice depends on the number of distractions while rehearsing within the dream – a sleep laboratory pilot study. *Jour of Sports Sci*, **35(23)**: 2365-2372, 2017. DOI: 10.1080/02640414.2016.1267387

**Recommended:** Bkrater-Bodmann, R., Schredl, M., Diers, M., Reinhard, I., Foell, J., Trojan, J. ..., & Flor, H. Post-amputation pain is associated with the recall of an impaired body representation in dreams—results from a nation-wide survey of limb amputees. *PLOS One*, **10(3)**: 1-13, 2015.

**24-HR:** **Chapter 4.** Sleep and dreams in depression. **Chapter 9.** Dreaming and the unconscious. **Chapter 10:** The role of dreams in the twenty-four hour mind.

**Dement:** **Chapter 14.** A little night muse: Creativity, productivity, and learning.

**JOURNAL CLUB ARTICLE:** Wagner, U., Gais, S., Haider, H., Verleger, R., Born, J. Sleep inspires insight. *Nat*, **427**: 352-355, 2004.

11/19 **The sleeping mind: How does sleep affect learning and memory?** Characteristics of memory formation; sleep-enhancing effects on learning.

**STM:** Stickgold, R., Hobson, J.A., Fosse, R., & Fosse, M. Sleep, learning and dreams: Off-line memory reprocessing. *Science*, **294**:1052-1057, 2001.

Siegel, J.M. The REM sleep-memory consolidation hypothesis. *Science*, **294**:1058-1063, 2001.

Payne, J.D., Stickgold, R., Swanberg, K., & Kensinger, E.A. Sleep preferentially enhances memory for emotional components of scenes. *Psych Sci*, **19(8)**:781-788, 2008.

**Recommended:** Tamaki, M., Huang, T.R., Yotsumoto, Y., Hämäläinen, M., Lin, F.H., Náñez, J.E., ... & Sasaki, Y. Enhanced spontaneous oscillations in the supplementary motor area are associated with sleep-dependent offline learning of finger-tapping motor-sequence task. *J Neurosci*, **33(34)**:13894-13902, 2013.

**Recommended:** Carskadon, M.A. Sleep's effects on cognition and learning in adolescence. *Prog Brain Res*, **190**:137-143, 2011.

**JOURNAL CLUB ARTICLE:** Yotsumoto, Y., Sasaki, Y., Chan, P., Vasios, C.E., Bonmassar, G., Ito, N., Náñez, J.E., Shimojo, S., & Watanabe, T. Location-specific cortical activation changes during sleep after training for perceptual learning. *Curr Biol*, **19**: 1278-1282, 2009.

11/26 **The sleeping mind—do we need sleep?** Sleep deprivation. Sleep function. **How alert are you?** Sleepiness/alertness: measurement and regulatory processes. Recovery from sleep deprivation

**STM:** Basner, M., Rao, H., Goel, N., & Dinges, D.F. Sleep deprivation and neurobehavioral dynamics. *Curr Op Neurobiol*, **23**, 2013.

Reynolds, A.C. & Banks, S. Total sleep deprivation, chronic sleep restriction and sleep disruption. *Prog Brain Res*, **185**:91-103, 2010.

**Recommended:** Barger, L.K., Cade, B.E., Ayas, N.T., Cronin, J.W., Rosner, B., Speizer, F.E., & Czeisler, C.A. Extended work shifts and the risk of motor vehicle crashes among interns. *N Engl J Med*, **352(2)**:125-134, 2005.

**Recommended:** Newman, R.A., Kamimori, G.H., Wesensten, N.J., Picchioni, D., & Balkin, T.J. Caffeine gum minimizes sleep inertia. *Perceptual and motor skills*, **116(1)**:280-293, 2013.

**Dement:** **Chapter 3.** Sleep debt and the mortgaged mind. **Chapter 9.** Our chronically fatigued syndrome.

**JOURNAL CLUB ARTICLE:** Lee, M.L., Howard, M.E., Horrey, W.J., Liang, Y. Anderson, C., O'Brien, C.S., Czeisler, C.A. High risk of near-crash driving events following night-shift work. *PNAS*, **113(1)**: 176-181, 2016.

12/03 **What happens when sleep goes wrong?** Sleep disorders: what they are? who has them? Focus on narcolepsy and sleep apnea.

**SAVI:** **Chapter 6.** When sleep suffers.

**STM:** Siclari, R., Khatami, R., Urbaniok, F., Nobili, L., Mahowald, M.W., Schenck, C.H., ... & Bassetti, C.L. Violence in sleep. *Brain*, **133**:3494-3509, 2010.

Morin, C.M., Beaulieu-Bonneau, S., Ivers, H., Vallieres, A., Guay, B., Savard, J., & Merette, C. Speed and trajectory of changes of insomnia symptoms during acute treatment with cognitive-behavioral therapy, singly and combined with medication. *Sleep Medicine*, **15(6)**:701-707, 2014.

**Recommended:** Henry, D., McClellan, D., Rosenthal, L., Dedrick, D., & Gosd, M. Is sleep really for sissies? Understanding the role of work in insomnia in the US. *Social Science & Medicine*, **66**:715-726, 2008.

**24-HR:** **Chapter 3.** Short sleep and its consequences: insomnia.

**Dement:** **Chapter 6.** Insomnia.

**JOURNAL CLUB ARTICLE:** Chemelli, R.M., Willie, J.T., Sinton, C.M., Elmquist, J.K., Scammell, T. Lee, C., ... & Yanagisawa, M. Narcolepsy in orexin knockout mice: molecular genetics of sleep regulation. *Cell*, **90(4)** 437-51, 1999.

12/10 **Final project presentations and peer review!**

12/19 **FINAL EXAMINATION AT 2:00 pm. NO EXCEPTIONS!** Location to be announced. Please make sure that you have no conflict.