CPS 302 Society, Science and Technology

Spring 2009

MWF: 10:45 – 11:45 am (Tower 1103)

Instructor: Wensheng Shen
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Office hour: TR 1:00 (pm) – 3:00 (pm) or by appointment

Prerequisite: No prerequisite is needed

Textbook: **The Science Book**
Editor: Peter Tallack
Pulisher: Weidenfeld & Nicolson
ISBN: 1-841-88254-2

Reference: **The Scientists: A History of Science Told Through the Lives of Its Greatest Inventors**
Author: John Gribbin
Pulisher: Random House, Inc.
ISBN: 0-8129-6788-7

Description: This course is designed to teach students the milestones in the history of science and technology, and the impact of science and technology on our life, the way to think, the food to consume, the leisure time to enjoy, the tools for transportation, the devices for communication, etc. It also presents the basic ideas behind the science and demonstrates how personalities give rise to these brilliant ideas. Hundreds of the most important individual scientific discoveries will be discussed. Students should be able to not only gain immediate insight into the individual discoveries that have shaped our world and lives, but also dig deeper to explore the background science from which these discoveries have sprung. Students should gain an education in science and technology that will equip them for the challenges that science and technology will pose in the twenty-first century and beyond.

Objectives: This course presents the mutual relationship between society and science and technology. The advances of science and technology have changed our society, and the modernized society calls for new ideas in science and technology. One of the most important purposes of the course is to exhibit

the facts about science and technology, and stimulate students the interests of studying science and technology. Outcome of a successful completion of the course include: (1) to obtain the knowledge of more than two hundred individual discoveries that have changed our society fundamentally, (2) to understand who made the discoveries, and when, where, and why the discoveries were made, (3) to testify how our daily life is affected by these discoveries, (4) to improve the ability of persuasive writing by using facts, (5) to be positive and confident in learning science and technology.

Topics: The topics include the stories of achievements in traditional natural sciences, such as physics, chemistry, biology, astronomy, and Earth science, as well as archaeology, anthropology, medicine and mathematics. Technology features that have led directly to scientific advances, such as the telescope, the microscope, and computer, will also be discussed. The human natures, such as imagination, creativity, competition, intuition, ingenuity and mistakes are explored as well. The software tool *Interactive Physics* will be taught to demonstrate the natural laws inside the scientific discoveries.

Grading: Homework assignments (40%)
Midterm paper (10%)
Midterm presentation (10 %)
Term project (20%)
Final paper (10%)
Final exam (10%)

Average	100 – 90.0	87.0 – 89.9	83.0 – 86.9	80.0 – 82.9	77.0 – 79.9	73.0 – 76.9
Grade	A	A-	B+	B	B-	C+
Average	70.0 – 72.9	67.0 – 69.9	63.0 – 66.9	60.0 – 62.9	57.0 – 59.9	<57.0
Grade	C	C-	D+	D	D-	E

Assignment policy: Homework assignments given in class will be due in two weeks and project assignments given in class will be due in four weeks after they are assigned. Late assignments can be accepted with a penalty at a rate of 10% per day. ***No makeup tests and no incompletes. A missed test will receive 0 points.*** Exceptions to these rules, at instructor's discretion, apply to cases of illness, personal tragedy, or extraordinary circumstances beyond a student's control, if it is documented to instructor's satisfaction. Arrangement for such an exception needs to be discussed with the instructor.

Attendance: Students are expected to attend all classes. Some of the material may not be contained in the textbook. If a student misses a class, it is his/her

responsibility to get class notes and handouts. Absences will be excused for documented illness, official representation of the College, an unfortunate death of a close relative, religious holiday, and other circumstances beyond student's control.

Authorship: Students are allowed to discuss ideas and help others by explaining concepts and possible solutions. All the work that is submitted, however, must be performed by individual students independently. Students must provide appropriate citations for any text fragments in books, journals, conference proceedings, web-based resources, etc. that have been used in their assignments. Students also need to acknowledge any help from others. A student is considered cheating if he/she submits materials as his/her own work that is not entirely his/her own work, or if he/she intentionally provides an answer to another person. If cheating has been detected, the student will receive a zero grade for that assignment. Further disciplinary procedures many also be considered.

Policies: Students with documented disabilities may be entitled to specific accommodations. SUNY Brockport's Office for Students with Disabilities makes this determination. Please contact the Office for Students with Disabilities at 395-5409 to inquire about obtaining an official letter to the course instructor detailing approved accommodations. The student is responsible for providing the course instructor with the official letter. Faculty and staff work as a team with the Office for Students with Disabilities to meet the needs of students with disabilities.

Weekly Schedule:

Week 1	Jan. 26	Class begin, syllabus, special topic: the Nobel Prizes
	Jan. 28	Reading: 10, 12, 14, 16, 18, 20, 22, 24, 26
	Jan. 30	Reading: 28, 30, 32, 34, 36, 38, 40, 42, 44
Week 2	Feb. 2	Reading: 46, 48, 50, 52, 54, 56, 58, 60
	Feb. 4	Reading: 62, 64, 66, 68, 70, 72, 74, 76
	Feb. 6	Reading: 78, 80, 82, 84, 86, 88, 90, 92
Week 3	Feb. 9	Reading: 94, 96, 98, 100, 102, 104, 106, 108
	Feb. 11	Reading: 110, 112, 114, 116, 118, 120, 122, 124
	Feb. 13	Reading: 126, 128, 130, 132, 134, 136, 138, 140
Week 4	Feb. 16	Reading: 142, 144, 146, 148, 150, 152, 154, 156
	Feb. 18	Reading: 158, 160, 162, 164, 166, 168, 170, 172
	Feb. 20	Reading: 174, 176, 178, 180, 182, 184, 186, 188
Week 5	Feb. 23	Reading: 190, 192, 194, 196, 198, 200, 202, 204
	Feb. 25	Reading: 206, 208, 210, 212, 214, 216, 218, 220
	Feb. 27	Reading: 222, 224, 226, 228, 230, 232, 234, 236
Week 6	Mar. 2	Reading: 238, 240, 242, 244, 246, 248, 250, 252
	Mar. 4	Reading: 254, 256, 258, 260, 262, 264, 266, 268
	Mar. 6	Reading: 270, 272, 274, 276, 278, 280, 282, 284
Week 7	Mar. 9	Reading: 286, 288, 290, 292, 294, 296, 298, 300
	Mar. 11	Reading: 302, 304, 306, 308, 310, 312, 314, 316
	Mar. 13	Midterm Presentations
Week 8	Spring break	Enjoy the break
Week 9	Mar. 23	Reading: 318, 320, 322, 324, 326, 328, 330, 332
	Mar. 25	Reading: 334, 336, 338, 340, 342, 344, 346, 348
	Mar. 27	Computer lab: Interactive Physics
Week 10	Mar. 30	Reading: 350, 352, 354, 356, 358, 360, 362, 364
	Apr. 1	Reading: 366, 368, 370, 372, 374, 376, 378, 380
	Apr. 3	Computer lab: Interactive Physics
Week 11	Apr. 6	Reading: 382, 384, 386, 388, 390, 392, 394, 396
	Apr. 8	Scholars day
	Apr. 10	Computer lab: Interactive Physics
Week 12	Apr. 13	Reading: 398, 400, 402, 404, 406, 408, 410, 412
	Apr. 15	Reading: 414, 416, 418, 420, 422, 424, 426, 428
	Apr. 17	Computer lab: Interactive Physics
Week 13	Apr. 20	Reading: 430, 432, 434, 436, 438, 440, 442, 444
	Apr. 22	Reading: 446, 448, 450, 452, 454, 456, 458, 460
	Apr. 24	Computer lab: Interactive Physics
Week 14	Apr. 27	Reading: 462, 464, 466, 468, 470, 472, 474, 476
	Apr. 29	Reading: 478, 480, 482, 484, 486, 488, 490, 492
	May 1	Computer lab: Interactive Physics
Week 15	May 4	Reading: 494, 496, 498, 500, 502, 504, 506, 508
	May 6	Reading: 510, 512, 514, 516, 518, 520, 522, 524
	May 8	Computer lab: Interactive Physics