

HISTORY/CHEMISTRY 309 (History of Chemistry)

Spring, 2002
4020 Wescoe
MWF 10:30-11:20

Professor DeKosky
2015 Wescoe
MWF 9:30-10:20
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REQUIRED TEXTS

Trevor Levere, *Transforming Matter: A History of Chemistry from Alchemy to the Buckyball*
William H. Brock, *The Norton History of Chemistry*

EXAMINATIONS/GRADING

Four exams: One in-class (20%)
Two take-homes (20% apiece)
Final (20%)
Essay on chosen topic (15%)
Attendance/participation (5%)

CLASS SCHEDULE AND READING ASSIGNMENTS

| <u>Date</u> | <u>Topic</u> | <u>Reading Assignment</u> |
|-------------|--|---|
| Jan. 18 | Introduction | |
| 23 | Greek philosophies of nature (400s-300s BCE) | |
| 25 | Greek alchemy (300 BCE-300 CE) | L, 1-6. B, 1-19 |
| 28 | Fate of ancient Greek philosophical, scientific, and magical heritage | |
| 30 | Discussion/review | |
| Feb. 1 | Medieval Islamic and Western (Latin) alchemy | L, 6-9. B, 19-26. |
| 4 | Early-modern European chemical technology and chemical medicine | L, 9-11. B, 26-29, 43-48. |
| 6 | The "Scientific Revolution" in Western Europe (1500-1700) | B, 29-40. |
| 8 | Discussion/review and distribute take-home exam | |
| 11 | NO CLASS (work on take-home exam) | |
| 13 | Robert Boyle and the origins of modern chemistry in the latter 1600s (t-h exam due) | L, 11-27. B, 54-70 (recommend 70-78). |
| 15 | New twists on old themes in Paracelsian tradition | L, 28-38. B, 49-54, 78-86. |
| 18 | 18th-century background to chemical revolution—salts, affinities, and airs | L, 39-61 |
| 20 | FIRST CONSULTATION ON YOUR ESSAY | |
| 22 | Antoine Lavoisier and the revolution in chemistry | L, 62-79. B, 87-127. |
| 25 | " | |
| 27 | Discussion/review | |
| Mar. 1 | Chemical atomism—background and thought of John Dalton | L, 80-87. B, 128-147. |
| 4 | Electrochemistry, Dualism, and affinity in the early 1800s | L, 87-93. B, 147-155 (recmnd 156-160) |
| 6 | Determining atomic weights and chemical formulas up to 1860 | L, 107-114. B, 160-165. |
| 8 | Discussion/review | |
| 11 | Examination (in class) | |
| 13 | Organic chemistry 1: the critical role of analysis | B, 173-198. |
| 15 | Organic chemistry 2: radicals and types | L, 94-106. B, 210-240. |
| | SPRING BREAK | |
| 25 | Organic chemistry 3: emergence of valency and structural theory | L, 136-148. B, 241-269. |
| 27 | Discussion/review | |
| 29 | SECOND CONSULTATION ON YOUR ESSAY | |
| Apr. 1 | Institutional & professional development: British & French traditions | L, 121-135. B, 199-207, 446-454. |
| 3 | Institutional & professional development: German tradition | |
| 5 | Chemistry and technology 1: heavy chemicals | B, 270-310, 640-662. |
| 8 | Chemistry and technology 2: synthetic dyes & the industrial research laboratory | |
| 10 | Chemistry in the USA 1 | B, 429 (last paragraph)-432 (1st paragraph) |
| 12 | Chemistry in the USA 2 | |
| 15 | Women in chemistry | |
| 17 | Discussion/review and distribute take-home exam | |
| 19 | NO CLASS (work on take-home exam) | |
| 22 | Explaining chemical reaction and combination in the 19th century (t-h exam due) | L, 152-164. (Recommend B, 355-395). |
| 24 | The elements: periodic relations and spectroscopic identification | L, 114-120, 166-169. B, 311-330 |
| 27 | THIRD CONSULTATION ON YOUR ESSAY (Outline due) | |
| 29 | The perplexing 19th-century atom | |
| May 1 | An internal structure for the atom based on laboratory evidence 1 | L, 169-181. B, 462-505, (recmd 506-569). |
| 3 | An internal structure for the atom based on laboratory evidence 2 | |
| 6 | The modern chemical bond | |
| 8 | Discussion/review | |
| 18 | FINAL EXAMINATION (7:30 - 10:00 AM, 4020 Wescoe) | |