

**Grande Prairie Regional College
Department of Science and Technology**

- Course Outline :** Genetics 2700 - Foundations of Molecular Genetics Winter 2002
- Description :** Genetics 2700 is a course dealing with the molecular genetics of prokaryotes. Basic concepts on the organization of genetic material and its expression will be developed from experiments on bacteria and viruses.
- Instructor :** Dr. Sean Irwin
Office - J223
Telephone - 539-2860 (office)
 - 538-1278 (home)
- Prerequisites :** BI 2070
- Required Text :** Microbial Genetics (2nd ed.), Maloy et. al., Jones and Bartlett (1994).
ISBN 0-86720-248-3
Selected readings in Molecular Genetics
- Lectures :** Place : J201
Time : Mon./Wed, 14:30-13:50
- Seminar :** Place : B303
Time : Thur. 10:00 – 11:20
- Evaluation :**
- | | |
|-----------------|-------|
| Quizzes | - 15% |
| Midterm Exam I | - 20% |
| Midterm Exam II | - 25% |
| Final Exam | - 40% |

Students are advised to attend all lectures and seminars as they will be responsible for all course material presented in the lectures and seminars.

Office Hours : Monday - 13:00 - 14:20 pm
Thursday - 11:20 - 12:50 pm
Friday -10:00 - 11:20 am

GN 2700 Course Outline

| | <u>Date</u> | <u>Topic</u> | <u>Text</u> |
|-----|-------------|---|-------------|
| 1. | Jan. 7 | Introduction; Genetic Concepts | |
| 2. | Jan. 9 | DNA Structure / The Central Dogma | Ch. 2, 6 |
| 3. | Jan. 14 | Bacteria and Phage | Ch. 1, 4 |
| 4. | Jan. 16 | T4 Genetic Analysis | Ch. 15 |
| 5. | Jan. 21 | T4 Genetic Analysis | Ch. 15 |
| 6. | Jan. 23 | Transformation / Conjugation | Ch. 13, 14 |
| 7. | Jan. 28 | Conjugation / Transduction | Ch. 14, 18 |
| 8. | Jan. 30 | Transduction / Transposition | Ch. 18, 12 |
| 9. | Feb. 4 | DNA Replication | Ch. 8 |
| 10. | Feb. 6 | Midterm I | |
| 11. | Feb. 11 | DNA Replication | Ch. 8 |
| 12. | Feb. 13 | Mutation | Ch. 10 |
| | Feb. 18 | Family Day | |
| 13. | Feb. 20 | Mutation | Ch. 10 |
| | Feb. 25 | Winter Break | |
| | Feb. 27 | Winter Break | |
| 14. | Mar. 4 | Mutation | Ch. 10 |
| 15. | Mar. 6 | DNA Repair | Ch. 9 |
| 16. | Mar. 11 | DNA Repair | Ch. 9 |
| 17. | Mar. 13 | Recombination | Ch. 14, 15 |
| 18. | Mar. 18 | Midterm II | |
| 19. | Mar. 20 | Recombination | Ch. 15, 17 |
| 20. | Mar. 25 | Gene expression; <i>lac</i> | Ch. 7 |
| 21. | Mar. 27 | Gene expression; <i>lac</i> , <i>trp</i> | Ch. 7 |
| 22. | Apr. 1 | Gene expression; Lambda | Ch. 16, 17 |
| 23. | Apr. 3 | DNA cloning | Ch. 20 |
| 24. | Apr. 8 | DNA cloning | Ch. 20 |
| 25. | Apr. 10 | DNA sequencing, polymerase chain reaction | Ch. 21 |

GN 2700 Seminar Schedule

| Date | Paper | Subject |
|-------------|---------------|---|
| Jan. 10 | 1.1 | DNA |
| Jan. 17 | 2.1 | T4 Phage |
| Jan. 24 | 5.1 | Fine Structure Mapping |
| Jan. 31 | 15.2 | DNA Replication |
| Feb. 7 | 11.1, 13.1 | Mutagenesis |
| Feb. 14 | 11.2, 12.2 | The Genetic Code / Mutation |
| Feb. 21 | 13.2 | DNA Repair |
| Feb. 28 | Winter Break. | |
| Mar. 7 | 17.1 | Recombination |
| Mar. 14 | 23.1, 23.3 | The Lac Operon - Polarity |
| Mar. 21 | 24.1, 24.2 | The Lac Operon – Promoters / Repressors |
| Mar. 28 | 6.3 | Restriction Enzymes |
| Apr. 4 | 8.2, 9.1 | DNA Cloning / Sequencing |
| Apr. 11 | TBA | |