# NUCLEAR SUMMER SCHOOL

**(10 minute presentations – 6 or 7 slides with proper attribution)**

**Presentations graded on technical content, presentation, time management, and understanding of topic.**

## Suggested PowerPoint Presentation Topics

1. "Dirty" bombs.
2. $^{14}C$ dating.
3. Accelerator mass spectrometry for age determination.
4. Airline travel dose rates.
5. Anti-hydrogen atoms.
6. Boron neutron capture therapy.
7. Charged-particle activation analysis.
8. Chemical properties of the transplutonium elements.
9. Climate history through stable and radioactive nuclide records.
10. Cosmic ray induced nuclear reactions.
11. Cosmogcnic nuclides as a new tool in geochronology.
12. Clean "Dirty" bombs.
13. Double beta-decay.
14. Fission track dating.
15. Homeland Security
16. Radiation hormesis
17. Hot atom chemistry.
18. *In vivo* activation analysis.
19. Industrial applications of radionuclides.
20. Is low dose ionizing radiation harmful?
21. Laser induced nuclear reactions.
22. Mössbauer spectroscopy and its applications.
23. Neutron activation analysis applied to archaeology.
24. Non-destructive testing using radioisotopes.
25. Nuclear activation analysis in environmental studies.
26. Nuclear analytical techniques in pollution studies.
27. Nuclear energy programs: nuclear waste disposal, contaminated site remediation, nuclear waste environmental problems.
28. Nuclear fusion: "hot" or "cold".
29. Nuclear properties of the heaviest elements.
30. Nuclear reactions in astrophysics.
31. Nuclear reactors in nature.
32. Nuclear techniques in forensic science.
33. Nuclear weapons: stockpile stewardship and plutonium disposal.
34. Origin or of the elements.
35. Production and use of radioactive beams.
36. Production of elements with $Z > 100$.
37. Production of radionuclides for biology and medicine.
38. Radiation therapy for the treatment of tumors.
39. Radiation therapy with charge particle accelerators.
40. Radioactive decay by emission of fragments with $Z > 2$ (*i.e.* $Z = 4, 6, 8$)
41. Radioactive power sources for space applications.
42. Radiocarbon and historical earthquake records.
43. Radiocarbon and the carbon dioxide cycle.
44. Radioimmunoassay.
45. Radioimmunotherapy.
46. Radioisotopes and ground water resource assessment.
47. Radionuclide dating in geology.
48. Radionuclide generators for nuclear medicine.
49. Radionuclide power sources.
50. Radionuclide studies with on-line mass separators
51. Radionuclides in meteorites and moon rocks.
52. Radiopharmaceuticals for positron emission tomography (PET).
53. Remote chemical analysis using radioisotope sources.
54. Role of technetium in nuclear medicine.
55. Spallation reactions.
56. Spontaneous fission decay.
57. Stable isotope tracers of biological processes.
58. Stellar nucleosynthesis: r-process, s-process, light elements.
59. Synthesis of new elements with $Z \geq 106$.
60. The nuclear test spike in global environmental research.
61. Uranium disequilibria as a geochemical tracer.
62. Fallout from weapons tests.
63. Non-proliferation treaties.