

# EXECUTIVE COURSE ON SECURITY AND SPACE

## Aims and Objectives

The aim of this course is to provide the participants with a thorough introduction to the subject of national and international security and how space capabilities could enhance it.

The course will consist of an intensive 5-day course as outlined below. During the last eight years or so the concept of security has changed. The current thoughts of this will be discussed in as much details as possible. Present status of the development in space capabilities will be discussed and identify which areas in this development will enhance security and which will be counter productive.

By the end of the course, participants should feel confident and competent in most concepts of security and the technical issues related to space capabilities.

It is hoped that the proceeding of the course will be informal so that there could be some dialogue between the expert and the participants.

Following are three main objectives:

1. To make the participants aware of various current concepts of national and international security;
2. To make the user familiar with various security related areas such as national missile defence, confidence building measures and a number of arms control treaties and their verification requirements and problems; and
3. To give a user enough understanding of how images are acquired by various satellites in orbit, indicate different types of satellite data and introduce to basic image processing and various image enhancement techniques and interpretation issue. This is to appreciate how satellite observations could enhance security.

**Please note that this course is subject to restricted to specific nationalities.**

**Proof of citizenship will be required prior to acceptance.**

## Timetable for course on Security and Space

	Day 1	Day 2
9:00/9.40	<b>1. INTRODUCTION - CONCEPT OF SECURITY</b> <ul style="list-style-type: none"> <li>• Mutually Assured Destruction</li> <li>• Space and nuclear arms race</li> <li>• Strategic Arms Control</li> <li>• ABM Treaty</li> <li>• Strategic Defence Initiative and its impact</li> </ul>	<b>7. DESCRIPTIONS OF VARIOUS TARGETS</b> <ul style="list-style-type: none"> <li>• Nuclear weapons</li> <li>• Conventional weapons</li> </ul>
9.40/10.40	<b>2. SECURITY AND SPACE-SECURITY THROUGH AGGRESSIVE USE OF SPACE</b> <ul style="list-style-type: none"> <li>• Concept of security</li> <li>• Examination of a number of recently produced documents on the subject</li> <li>• Indicate contribution of space to improving security</li> </ul>	<b>8. DISCUSSIONS ON REASONS AND ADVANTAGES AND DISADVANTAGES OF SATELLITES</b> <ul style="list-style-type: none"> <li>• Identify various useful satellites</li> <li>• Types of collateral information</li> </ul>
10.40/11.00	COFFEE BREAK (20 mins)	COFFEE BREAK (20 mins)
11.00/11.45	<b>3. SECURITY AND SPACE-SECURITY THROUGH AGGRESSIVE USE OF SPACE (CONT...)</b> <ul style="list-style-type: none"> <li>• Discussion on military uses of satellites</li> <li>• Discussion on the aggressive use of space e.g. space weapons</li> <li>• Definition of space weapons</li> </ul>	<b>9. OPERATION OF SATELLITES FOR EARTH OBSERVATIONS</b> <ul style="list-style-type: none"> <li>• Satellite orbits</li> <li>• Types of spacecraft and data</li> <li>• Frequency of data acquisition and viewing angles</li> <li>• Data providers and costs</li> <li>• Types of existing sensors and those that may be required in the future</li> </ul>
11.45/12.30		<b>10. DATA FUSION</b> <ul style="list-style-type: none"> <li>• Different satellites carry sensors sensitive to different portions of the EM spectrum at different spatial, temporal and spectral resolutions</li> <li>• Definition of image fusion and data fusion</li> <li>• Fusion techniques</li> </ul>
12.30/13.30	LUNCH BREAK (1 hour)	LUNCH BREAK (1 hour)
13.30/14.30	<b>4. SECURITY AND SPACE-SECURITY THROUGH AGGRESSIVE USE OF SPACE (CONT...)</b> <ul style="list-style-type: none"> <li>• Various types of space weapons e.g. kinetic energy and laser weapons</li> <li>• Missile defence</li> <li>• Anti-satellites</li> </ul>	<b>11. CONSIDERATION OF NUCLEAR TREATIES</b> <ul style="list-style-type: none"> <li>• Detail introduction to nuclear fuel cycle</li> <li>• Description of various elements of the fuel cycle</li> </ul>
14.30/15.00	<b>5. SECURITY THROUGH VARIOUS ARMS CONTROL TREATIES</b> <ul style="list-style-type: none"> <li>• Arms control an important</li> </ul>	<b>12. SOME EXAMPLES OF IMAGERIES CONTAINING THE ABOVE TARGETS</b> <ul style="list-style-type: none"> <li>• This could take the form of actual</li> </ul>

	<p>security element</p> <ul style="list-style-type: none"> <li>• International and regional nuclear non-proliferation treaties</li> <li>• Their verification requirements</li> </ul>	<p>image interpretation of reactors with the participants</p>
15.00/15.20	COFFEE BREAK (20 mins)	COFFEE BREAK (20 mins)
15.20/16.50	<p><b>6. SECURITY THROUGH VARIOUS MULTILATERAL ARMS CONTROL TREATIES (CONT...)</b></p> <ul style="list-style-type: none"> <li>• CWC</li> <li>• CFE</li> <li>• CTBT</li> <li>• Fissile material cut off agreement verification requirements</li> </ul>	<p><b>13. IMAGE INTERPRETATION CONTINUED WITH NUCLEAR FUEL CYCLE</b></p> <ul style="list-style-type: none"> <li>• Interpretation of reprocessing plants in actual satellite images</li> <li>• Interpretation of enrichment plants in actual satellite images</li> </ul>
16.50/17.00	COFFEE BREAK (10 mins)	COFFEE BREAK (10 mins)
17.00/18.00	INTERACTIVE Q&A SESSION	Interactive Q&A Session

	Day 3	Day 4
9:00/9.40	<p><b>14. IMAGE INTERPRETATION CONTINUED WITH NUCLEAR FUEL CYCLE (CONT)</b></p> <ul style="list-style-type: none"> <li>• Interpretation of uranium mining in actual satellite images</li> <li>• Nuclear weapons sites</li> </ul>	<p><b>20. USE OF SATELLITES FOR CWC</b></p> <ul style="list-style-type: none"> <li>• Introduction to CWC</li> <li>• Verification issues</li> <li>• Targets</li> </ul>
9.40/10.40	<p><b>15. DESCRIPTIONS OF VARIOUS TARGETS (CONT...)</b></p> <ul style="list-style-type: none"> <li>• Chemical weapons</li> <li>• Missiles and deployment sites</li> </ul>	<p><b>21. USE OF SATELLITES FOR CWC (CONT...)</b></p> <ul style="list-style-type: none"> <li>• Examples of what can be monitored Biological weapons</li> </ul>
10.40/11.00	COFFEE BREAK (20 mins)	COFFEE BREAK (20 mins)
11.00/11.45	<p><b>16. MONITORING STRATEGIC WEAPONS</b></p> <ul style="list-style-type: none"> <li>• Strategic air bases</li> <li>• ICBMs</li> <li>• SAM sites</li> <li>• Radars</li> </ul>	<p><b>22. BIOLOGICAL WEAPONS</b></p> <ul style="list-style-type: none"> <li>• Introduction to BWC</li> <li>• Verification requirements</li> </ul>
11.45/12.30		<p><b>23. BIOLOGICAL WEAPONS (CONT)</b></p> <ul style="list-style-type: none"> <li>• Target description</li> <li>• Exercise using a satellite image</li> </ul>
12.30/13.30	LUNCH BREAK (1 hour)	LUNCH BREAK (1 hour)
13.30/14.30	<p><b>17. MONITORING CONVENTIONAL WEAPONS</b></p> <ul style="list-style-type: none"> <li>• Conventional forces targets</li> <li>• Forces deployment mode</li> </ul>	<b>24. WORKSHOP</b>
14.30/15.00	<p><b>18. ISSUES RELATED TO CONFIDENCE BUILDING MEASURES AND PEACE KEEPING OPERATIONS</b></p>	<b>25. WORKSHOP (CONT...)</b>
15.00/15.20	COFFEE BREAK (20 mins)	COFFEE BREAK (20 mins)
15.20/16.50	<b>19. WORKSHOP</b>	<b>26. WORKSHOP (CONT...)</b>

16.50/17.00	COFFEE BREAK (10 mins)	COFFEE BREAK (10 mins)
17.00/18.00	INTERACTIVE Q&A SESSION	INTERACTIVE Q&A SESSION

	Day 5
9:00/9.40	<b>27. VERIFICATION AGENCIES AND ROLE OF SATELLITES</b> <ul style="list-style-type: none"> <li>• United Nations</li> <li>• Regional e.g. EU Satellite Centre</li> </ul>
9.40/10.40	<b>28. OTHER REGIONAL AGENCIES</b> <ul style="list-style-type: none"> <li>• Middle East</li> <li>• Latin America</li> <li>• Africa</li> </ul>
10.40/11.00	COFFEE BREAK (20 mins)
11.00/11.45	<b>29. WORKSHOP</b>
11.45/12.30	
12.30/13.30	LUNCH BREAK (1 hour)
13.30/14.30	<b>30. WORKSHOP (CONT...)</b>
14.30/15.00	
15.00/15.20	COFFEE BREAK (20 mins)
15.20/16.50	<b>31. WORKSHOP (CONT...)</b>
16.50/17.00	COFFEE BREAK (10 mins)
17.00/18.00	INTERACTIVE Q&A SESSION