

JAWAHARLAL NEHRU UNIVERSITY

CENTRE FOR INTERNATIONAL POLITICS, ORGANISATION AND DISARMAMENT

MPHIL (DIPLOMACY AND DISARMAMENT)

WINTER SEMESTER 2014

COURSE NO IO621: SCIENCE, TECHNOLOGY AND NATIONAL SECURITY

COURSE TEACHERS: PROFESSOR SWARAN SINGH & DR J. MADHAN MOHAN

CLASS SCHEDULE

Tuesday and Friday: 2-3.30 p.m.

COURSE EVALUATION

PROF SWARAN SINGH – 30% (CLASS ASSIGNMENTS)

DR J. MADHAN MOHAN – 70%

Fortnightly Test - 15%

Mid-Semester Examination – 15%

Research Paper - 20 %

End-Semester Examination – 20%

COURSE OUTLINE

UNIT 1: INTRODUCTION: SCIENCE, TECHNOLOGY, AND POLITICS IN INTERNATIONAL RELATIONS

Understanding basic concepts and connotations: what is science? what is technology?
what is the relationship of science and technology to politics and national security?
What is the role of technology in war and peace?

Readings

C.P. Snow, 'The Two Cultures', *London Sunday Times*, March 1957.

John Street, *Politics and Technology*, (three chapters, Macmillan 1992)

Robert Jervis, *The Meaning of the Nuclear Revolution*, (One Chapter, Cornell 1989)

Edward Mead Earle, *Makers of Modern Strategy* (One Chapter, Princeton, 1943)

Antulio J Echevarria II, *Imagining Future Wars*, (One Chapter, Praeger, 2007)

Eliot Cohen, "Technology and Warfare", in John Baylis et al *Strategy* (Oxford, 2002)

Arnulf Grubler, *Technology and Global Change* (Two chapters, Cambridge, 1998)

UNIT 2: SCIENCE, TECHNOLOGY AND NATIONAL SECURITY

What is Science? Evolution of Scientific Method, Science versus Technology, Instrumentalists-Social Determinists-Technologists debate, technology and national security, explaining security, comprehensive-common-cooperative security, regional security, international security and national security

Readings

Barry Buzan, Ole Waever, Jaap de Wilde, *Security: A New Framework for Analysis* (1998); Barry Buzan, *People, State and Fear*; Martin van Creveld, *Technology and War, Supplying War*; Chris Hables Gray, *Post-Modern War*; Guy Hartcup, *The Effects of Science on the Second World War*; Toffler and Toffler, *War and Anti-War*, Brodie and Brodie, *From Crossbow to H-Bomb*; Art and Jervis (ed), *The Use of Force*; Cipolla, *Guns, Sails and Empire*; William McNeil, *In Pursuit of Power*; George Quester, *Offense and Defense in the International System*.

UNIT 3: SECURITY: CONCEPTUALISATION, THEORISATION AND EVOLUTION

Conceptualisation of security in mainstream International Relations theory; traditional security studies; changing notions of security; the politics and ethics of national security; non-traditional security; human security; critical theory; critical security studies; securitisation and desecuritisation.

Core Reading

David Baldwin, 'The Concept of Security', *Review of International Studies*, 23, 1997, pp. 5-26.

Edward Newman, 'Critical Human Security Studies', *Review of International Studies*, 36, 2010, pp. 7-94.

Keith Krause and Michael C. Williams, 'Broadening the Agenda of Security Studies: Politics and Methods', *Mershon International Studies Review*, vol. 40, no. 2, October 1996, pp. 229-254.

Matt McDonald 'Securitization and the Construction of Security', *European Journal of International Relations*, 14, 2008, pp. 563-587.

Stephen Walt 'The Renaissance of Security Studies', *International Studies Quarterly*, vol.35, no.2, 1991, pp. 211-239.

Steve Smith, 'The increasing insecurity of security studies: Conceptualising security in the last twenty years', *Contemporary Security Policy*, vol. 20, no. 3, 1991, pp. 72-101.

Steve Smith, "Singing Our World into Existence: International Relations

Theory and September 11”, *International Studies Quarterly*, vol. 48, no. 3, 2004, pp. 499-515.

Further Reading

Ronnie D. Lipschutz (eds.) *On Security*, (New York: Columbia University Press, 1995).

Ryerson Christie , “Critical Voices and Human Security: To Engage, To Endure or To Critique?” *Security Dialogue*, vol. 41, no. 2, 2010, pp. 169-190.

Keith Krause and Michael C. Williams (eds.) *Critical Security Studies: Concepts and Cases*, (London: UCL Press, 1997).

Columba Peoples and Nick Vaughan-Williams, *Critical Security Studies: An Introduction* (London and New York: Routledge, 2010).

UNIT 4: WEAPONS OF MASS DESTRUCTION (WMD), ESPECIALLY NUCLEAR REVOLUTION

Concepts in nuclear physics; nuclear energy and nuclear weapons; causes of nuclear proliferation; strategic consequences of nuclear proliferation; nuclear technology and forms of nuclear proliferation; contemporary proliferation challenges; counter-proliferation; nuclear terrorism; nuclear politics.

Core Reading

Arthur Beiser, *Concepts of Modern Physics* (New Delhi: Tata McGraw-Hill, 2007).

Samuel Glasstone, *Sourcebook on Atomic Energy* (New Delhi: Affiliated East-West Press, 1986).

Alexander Montgomery, “Ring in proliferation: how to dismantle an atomic bomb network”, *International Security*, vol. 30, no. 2, 2005, pp. 153-187.

Further Reading

Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton: Princeton University Press, 1993).

Scott D. Sagan, ‘The perils of proliferation: Organization theory, deterrence theory, and the spread of nuclear weapons’, *International Security*, 18(4), Spring 1994, pp. 66-107.

Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (New York: Henry Holt, 2005).

Robert Fred Mozley, *The Politics and Technology of Nuclear Proliferation* (Seattle and London: University of Washington Press, 1998).

Scott. D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A debate* (New York: W. W. Norton, 1995).

UNIT 5: WEAPONS OF MASS DESTRUCTION (WMD): CHEMICAL AND BIOLOGICAL WEAPONS

Definition of chemical and biological weapons; the threat of chemical and biological warfare in historical perspective; research and development programmes in the twentieth century; challenges to control; toxic terror and dreaded risks; bio-terrorism.

Core Reading

Richard Price, 'A genealogy of the chemical weapons taboo', *International Organization* 49/1, Winter 1995, pp. 73-103.

Jonathan B. Tucker, 'A Farewell to Germs: The US renunciation of biological and toxin warfare, 1969-70', *International Security*, vol. 27, no.1, Summer 2002, pp. 107-148.

Gregory Koblentz, "Pathogens as weapons: The international security implications of biological warfare", *International Security*, vol. 28, no. 3, Winter 2003/04, pp. 84-122.

Jonathan B. Tucker, "Preventing the misuse of biology: lessons from the oversight of smallpox virus research", *International Security*, vol. 31, no. 2, Fall 2006, pp. 116-150.

Further Reading

L. Cole, *The Eleventh Plague: The Politics of Biological and Chemical Warfare* (New York: Freeman, 1997).

Jeanne Guillemin, *Biological Weapons: From State Sponsored Programs to Contemporary Bioterrorism* (New York: Columbia University Press, 2005).

UNIT 6: SPACE WEAPONS, MISSILE TECHNOLOGIES, TECHNOLOGY TRANSFER

Space weapons; problems of controlling missile proliferation; Ballistic Missiles and National Missile Defence; collaboration and technology transfer.

Core Reading

Jonathan Tucker, 'Partners and rivals: A model of international collaboration in advanced technology', *International Organization*, vol. 45, no. 1, Winter 1991, pp. 83-120.

Dinshaw Mistry, 'Beyond the MTCR: Building a comprehensive regime to contain ballistic missile protection', *International Security*, vol. 27, no. 4, Spring 2003, pp. 119-149.

Bruce M. DeBlois et al., 'Space Weapons: Crossing the U.S Rubicon', *International Security*, vol. 29, no. 2, Fall 2004, pp. 50-84.

Further Reading

William J. Long, 'Trade and Technology incentives and Bilateral cooperation', *International Studies Quarterly*, vol. 40, no. 1, March 1996, pp. 77-106.

Steven E. Miller, 'The Flawed Case for Missile Defense', *Survival*, 43(3), 2001, pp. 95-109.

Charles L. Glaser and Steve Fetter, 'National Missile Defense and the future of U.S. nuclear weapons policy', *International Security*, 2001, vol. 27, no. 4, pp. 119-149.

UNIT 7: TECHNOLOGY, STRATEGY AND MILITARY CULTURE

Offence-defence balance and explaining war and peace in the international system; determinants of offence-defence balance; technology, warfare and international relations.

Core Reading

Jack S. Levy, 'The Offensive /Defensive Balance of military technology: a theoretical and historical Analysis', *International Studies Quarterly*, vol. 28, no. 2, June 1984, pp. 219-238.

Keir A. Lieber, 'Grasping the technological peace: The offense-defense balance and international security', *International Security*, vol. 25, no. 4, Summer 2000, pp. 71-104.

Tang Shiping, 'Offence-defence Theory: Towards a Definitive Understanding', *The Chinese Journal of International Politics*, 3(2), 2010, pp. 213-260.

Jeffrey W. Legro, 'Military culture and inadvertent escalation in World War II', *International Security*, vol. 18, no. 4, Spring 1994, pp. 108-142.

Further Reading

Sean Lynn-Jones, 'Offensive-Defensive Theory and Its Critics', *Security Studies*, vol. 4, no. 4, Summer 1994, pp. 660-91.

Stephen Van Evera, 'Offense, Defense and the Causes of War', *International Security*, vol. 22, no. 4, Spring 1998, pp. 5-43.

Charles Glaser and Charles Kaufman, 'What is the offense-defense balance and can we measure it?', *International Security*, vol. 22, no. 4, Spring 1998, pp. 44-82.

UNIT 8: NATIONAL SECURITY STRATEGIES AND DOCTRINES

Impact of Science and Technology on evolution of national security debate and doctrines, Technologies versus Strategy, Science, technology and national security strategy; nuclear revolution and revolution in warfare, Indian national security debate.

General Readings

Nayyar, Jayal, Singh, Suri, Karim, *National Security – Military Aspects*; Earle, *Makers of Modern Strategy*; Peter Paret et al, *Makers of Modern Strategy*; Lawrence Freedman, *The Evolution of Nuclear Strategy*; Miller et al, *Military Strategy and the Origins of First World War*; Preston and Wise, *Men and Arms*; T. Ropp, *War in the Modern Age*; Kissinger, *Nuclear Weapons and Foreign Policy*.

UNIT 9: IMPACT OF CULTURE AND ETHICS ON SCIENCE, TECHNOLOGIES AND NATIONAL SECURITY

Impact of culture and ethics in the evolution of military science and technologies, culture and war, culture and national security, technology as social process, technology and society, technology and governance, information revolution and national security.

General Readings

Reilly et al, *Justice and War in the Nuclear Age*; Hare and Jeoynt, *Ethics and International Affairs*; Hardin et al, *Nuclear Deterrence: Ethics and Strategy*; Johnston, *Just War Termination and Restraints of War*; Michael Howard, *Restraints of War*; Walzer, *Just and Unjust Wars*; Iain Johnston, *Cultural Realism*; Katzenstein, *Culture and Security*; George Tanham, *Indian Strategic Thought*; Pillar, *Negotiating Peace: War Termination as a Bargaining Process*; Subrahmanyam, *Nuclear Myths and Realities*.

UNIT 10: CONVENTIONAL WEAPONS

Arms racing and tactics; proliferation of conventional weapons; aviation and missiles/space

Core Reading

Charles Glaser, “Political consequences of military strategy: expanding and refining the spiral and the deterrence models”, *World Politics*, vol. 44, no. 4, 1992, pp. 497-538.

M. Wallace, “Armaments and escalation: two competing hypotheses” *International Studies Quarterly*, vol. 26, no. 1, March 1982, pp. 37-56.

Further Reading

Stephen Biddle, “Victory misunderstood: what the Gulf War tells us about future conflict”, *International Security*, vol. 21, no. 2, Fall 1996, pp. 139-179.

Daryl G. Press, "The Myth of Air Power in the Persian Gulf War and the future of warfare", *International Security*, vol. 26, no. 2, Fall 2001, pp. 5-44.

Daniel L. Byman and Matthew C. Waxman, "Kosovo and the great air power debate", *International Security*, vol. 24, no.1, Spring 2000, pp. 5-38.

UNIT 11: WAR PREVENTION/TERMINATION AND ROLE OF SCIENCE AND TECHNOLOGY

Defensive and offensive technologies, technologies supporting confidence building, hotlines, technologies of border management and surveillance, satellites etc, South Asian case studies.

General Readings

Schelling and Halperin, *Strategy and Arms Control*; Bjorn Moeller, *Common Security and Non-offensive Defence: A Neorealist Perspective*; Bill Gates, *Non-offensive Defence: An Alternative Strategy for NATO?*; Sharp, *Making Europe Unconquerable: The Potential of Civilian-based Deterrence and Defense*; Michael Krepon, *Confidence Building, Crisis Prevention and Reconciliation in South Asia*.

UNIT 12: TECHNOLOGY AND SECURITY IN DEVELOPING STATES

Evolution, politics, and efficacy of various Technology Control Regimes; and current debates on their role in international politics. Debates on new genre of technology control regimes and their impact on national security, especially of developing countries.

Core Reading

Aaron Karp, 'Ballistic Missiles in the Third World', *International Security*, vol. 9, no. 3, Winter 1984-85, pp. 166-195.

Christopher S. Parker, 'New Weapons for Old Problems: Conventional Proliferation and Military Effectiveness in Developing States', *International Security*, vol. 23, no. 4, Spring 1999, pp. 119-147.

Further Reading

Eliot A. Cohen, 'Distant Battles: Modern War in the Third World', *International Security*, vol.10, no. 4, Spring 1986, pp. 143-171.

Evan. A. Feigenbaum, 'Who is behind China's High Technology 'Revolution'? How bomb makers remade Beijing's priorities, policies and institutions', *International Security*, vol. 24, no. 1, Summer 1999, pp. 95-126.

UNIT 13: STATE, SOCIETY AND SECURITY

Legitimising, privileging and theorising state; conceptualising violence; state violence and violence by non-state actors; terrorism; counter-terrorism; war on terror; just war; risk society.

Core Reading

Damian Grenfell and Paul James, eds., *Rethinking Insecurity, War and Violence* (London and New York: Routledge, 2009).

Mikkel Vedby Rasmussen, *The Risk Society at War: Terror, Technology and Strategy in the Twenty-First Century* (Cambridge: Cambridge University Press, 2006).

Ken Booth, *Theory of World Security* (Cambridge: Cambridge University Press, 2008).

Vivienne Jabri, 'War, Security and the Liberal State', *Security Dialogue*, vol. 7, no. 1 2006, pp. 47-64.

Pin-Fat, Véronique. 'The Metaphysics of the National Interest and the "Mysticism" of the Nation State: Reading Hans J. Morgenthau', *Review of International Studies*, vol. 31, no. 2 2005: 217–36.

Further Reading

Jean Bethke Elshtain, *Just War against terror* (New York: Basic Books, 2003).

David A. Lake, 'Rational Extremism: Understanding Terrorism in the Twenty-first Century', *International Organisation*, Spring 2002, pp. 15-29.

Beau Grosscup, *Strategic Terror: the Politics and Ethics of Aerial Bombardment* (London: Zed Books, 2003).

Paul Cornish, 'Technology, strategy and counterterrorism', *International Affairs*, Spring 2002, pp. 15-29.

UNIT 14: POLITICS OF SCIENCE, TECHNOLOGY AND SECURITY

Science and technology as the site of politics; scientific progress and its limits; Science and technology: levelling the gap or creating the divide? Science, rationality, enlightenment and hegemony; the politics of security: security for whom? what ? why? how?; appreciating the expanding frontiers of science.

Core Reading

Vivienne Jabri, *War and the Transformation of Global Politics* (Hampshire: Palgrave Macmillan, 2007).

Michael Dillon, *Politics of Security: Towards a Political Philosophy of Continental Thought* (London: Routledge, 1996).

Richard Jackson, Eamon Murphy and Scott Poynting, *Contemporary State Terrorism: Theory and Practice* (Oxon: Routledge, 2010).

Further Reading

David H. Guston, *Between Politics and Science: Assuring the Productivity and Integrity of Research* (Cambridge: Cambridge University Press, 1992).

Michael C .Williams, *Culture and Security: Symbolic Power and the Politics of International Security* (London and New York: Routledge, 2007).

James Der Derian, *Critical Practices in International Theory* (London & New York: Routledge, 2009).

National security or national defence is the security and defence of a nation state, including its citizens, economy, and institutions, which is regarded as a duty of government. Originally conceived as protection against military attack, national security is now widely understood to include also non-military dimensions, including the security from terrorism, minimization of crime, economic security, energy security, environmental security, food security, cyber-security etc. Similarly, national The National Security Agency (NSA) sponsors the Science of Security (SoS) Initiative for the promotion of a foundational cybersecurity science that is needed to mature the cybersecurity discipline and to underpin advances in cyberdefense. The SoS initiative works in several ways: Engage the academic community for foundational research. Promote rigorous scientific principles. Grow the SoS community. The Science of Security initiative together with academia, industry, and other government partners is making a strong effort to create a research community dedicated to building security science.