University of Maryland
Robert H. Smith School of Business

BUSI 759 Personal Spaceflight Venture Viability
Summer Session II 2006 – Independent Study

Instructor: Dr. J. Robert Baum **MBA Candidate: John P. Kavanagh**

Required Material:

- FAA/OST (2/2005). Suborbital Reusable Launch Vehicles and Emerging Markets, Federal Aviation Administration / Office of Commercial Space Transportation (Free)

- Beard, S. and Starzyk, J. (2002). Space Tourism Market Study: Orbital Space Travel & Destinations with Suborbital Space Travel, Futron Corporation (Free)

- Eilingsfeld, F. and Schaetzler, D. (2002) Developing Viable Financing Models for Space Tourism, 53rd International Astronautical Congress, IAC-02-IAA.1.2.08 (Free)

- Salt, D and Lindroos, M. (1998). The Business Case for Small Reusable Launchers, VEGA Informations Technologien (Free)

- Narayandas, N. and Quelch, J. (1997). Orbital Sciences Corp.: ORBCOMM, Harvard Business School Case 598-027 ($6.50 from HBSP)

- Horsley, N. (2005) Analysis of FAA Licensing Requirements: Focus on the Legal and Regulatory Issues Created by the New Generation of Launch Vehicles

- May, J. & Simmons, C. (2000). Every Business Needs An Angel. New York: Crown Publishing, ISBN: 0609607782

- Sahlman, W. A. (2004). The Basic Venture Capital Formula, Harvard Business School Case 9-804-042

- Rich, S. & Gumpert, D. (2001). How to Write a Winning Business Plan, Harvard Business Review

- Best, R. (2004). Market-Based Management: Strategies for Growing Value and Profitability Market-Based Management, Prentice Hall, ISBN: 013008218X

Supplementary Material:

- (5/2006). Rocket Renaissance: The era of private spaceflight is about to dawn, The Economist Print Edition

- Taylor, C. (2/2006). Profits set to soar in outer space, Business 2.0 Magazine

Course Description

This independent study provides an opportunity to analyze the condition of start-up firms in the emerging personal spaceflight industry. The student will determine the degree of rivalry between the embryonic companies, contrast the threat of substitutes from other types of travel adventure and extreme sports, evaluate the developmental and regulatory barriers to operating personal space transportation, gage the leverage that paying space tourists have on ticket price. Throughout the study, the student will identify sources of finance and obstacles to financing high-risk personal spaceflight ventures. The student will also address the types of liability, risk management and the role of government prize incentives.

Learning Objectives

As a result of completing this study, the student should be better able to

- Understand methods of gauging new venture feasibility
- Grasp business tools that mitigate liability exposure
- How to acquire government licensing and subsidy in spaceflight industry
- Identify over served and unmet needs of firms in personal spaceflight
- Develop a viable spaceflight business plan

Instructional Methods

Readings are from: (1) Government agencies, (2) private think-tanks, (3) Professional trade conferences and academic proceedings and (4) case studies. Grades are based assignment completeness, business usefulness, originality and comprehensiveness of spaceflight industry survey and viability forecast.

BUSI 759 Personal Spaceflight Industry Viability

W	*Topic and Readings*	*Deliverable*
1	**Failed Spaceflight Ventures** HBS Orbital Sciences Corp.: ORBCOMM, (pp 1-22) • Estimating demand in the US and International markets • Marketing to regulatory bodies Market-Based Management (pp 55-164) • Market demand, potential and market share	Summarize lessons not learned by early spaceflight (3 pgs)
2	**Government Regulation** Analysis of FAA Licensing Requirements (pp 1-71) • Risk allocation and financial responsibility • Licensing requirements and passenger carrying vehicles	Quantify cost/time of regulatory compliance and its role as a barrier to entry (3 pgs)
3	**Government Demand** Suborbital Reusable Launch Vehicles and Emerging Markets (pp 1-43) • Identify emerging markets • Study existing spaceflight firms	Early Term Paper Summary (10 pgs)
4	**Private Sector Demand** Space Tourism Market Study (pp 1-79) • Understand current private sector demand • Suborbital and orbital forecasts The Business Case for Small Reusable Launchers (pp 1-18) • Market projections, Current business models	Identify similar industries and model private spaceflight growth (3 pgs)
5	**Financing** Developing Viable Financing Models for Space Tourism (pp 1-10) • Space tourism cost of capital • Spacecraft development and time to market Every Business Needs an Angel (pp 57-146) • Finding the right partner for financing • Business plan due diligence	Summarize financing methods of key firms, total private investments, (3 pgs)
6	**Risk Exposure and Liability** Every Business Needs an Angel (pp 147-206) • Finding investor with spaceflight industry experience • Investor exit strategy The Basic Venture Capital Formula (pp 1-10) • Start-up venture valuation	Determine financing requirements and potential investors for venture (3 pgs)
7	**Developing a Business Plan** How to Write a Winning Business Plan (pp 1-9) • Project rate of spaceflight service acceptance • Specify number of potential customers Rocket Renaissance: The era of private spaceflight (pp 1-4) • Recent status of current private spaceflight ventures Market-Based Management (pp 195-221, 327-348) • Venture pricing and marketing plans	Term Paper (30 pgs)

Evaluation of Student Performance

Weekly Assignments	57 points
Term Project	43
	100

Weekly Assignments

- Summarize lessons not learned by early spaceflight ventures (3 pages, 6 points)
- Summarize cost of regulatory compliance, its barrier to entry (3 pages, 6 points)
- Identify similar industries, model private spaceflight growth (3 pages, 6 points)
- Early Term Paper Summary (10 pages, 27 points)
- Summarize financing methods, total private investments (3 pages, 6 points)
- Determine financing requirements and potential investors (3 pages, 6 points)

Term Project - Personal Spaceflight Venture Business Plan (57 points)

Term paper is thirty pages, double spaced, including exhibits. Four page executive summary. Begin with analysis and report of spaceflight industry environment covering the factors identified in the weekly readings. Identify excess or insufficient supply of services in spaceflight industry.

Compare and classify the strategy of personal spaceflight entrepreneurs:

- Focus on key players: Virgin Galactic, Space Exploration Technologies, Blue Origin, XCOR, Space Adventures
- Evaluate the incentive significance of cash prizes such as the Ansari X-Prize, America's Space Prize and NASA's Centennial Challenges
- Establish a criteria to predict firm viability and success in 2010

Develop a spaceflight venture business plan to include:

1. Vision for business in one, five, ten years
2. Describe the spaceflight product or service
3. Identify and quantify the target market demand and size
4. Establish start-up's competitive advantage vis a vis existing venture strategies
5. Identify and qualify a management team, experience financiers
6. Develop a marketing strategy, determine pricing and project market share
7. Plan operational strategy: make, buy or operate spaceflight product or service
8. Identify venture risks including regulatory, market and operational
9. Calculate venture valuation, plan financing method and exit strategy