**Georgia Institute of Technology**

**Wallace H. Coulter Department of Biomedical Engineering**

*New Course Syllabus*

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| Course Title: **Medical Markets and Clinical Specialties** | Instructor: Rafael Andino, MS, MBA |
| Course Number: **BMED 6503** | Credit Hours: 3 |
| Co-requisites: BMED 6501 |  |

#### Course Description: In order to effectively direct their careers, BioID graduates should have an understanding of the breath industry, its structure, markets, specialties and commercial opportunities. The medical device and biologics markets in the USA generate over $40 billion in annual commercial sales. This business relies on continued research, innovation and translational development to deliver advancements in medical diagnosis techniques, therapies and treatment modalities, rehabilitation and home healthcare. Change in technologies, demographics of the patient population, national healthcare policies, reimbursement continue to reshape the industry and healthcare delivery in the USA, Europe and developing countries.

#### Catalogue Description: Overview of the medical device and biologics industry, interdependencies of commercial companies, vendors and suppliers required for development, commercialization and sales of products and equipment.

**Course Objectives:**

### Students will also gain an understanding of breath of the medical practice markets and needs for innovation and development of new cost-effective, safe and efficacious products.

### The US Food and Drug Administration (FDA) groups medical specialties and products into 19 different categories, each with an independent advisor panel. There are over 1,000 different product codes within the 19 specialties and more that 3,000 companies in the USA servicing the medical device industry.

### Special attention will be given to: Orthopedics, Cardiology, Musculoskeletal, Neuro, Imaging and Radiology, Nephrology, Urology, Surgical Specialties, Emergency Medicine, Pediatrics, Nursing Services, Preventive Medicine, Homecare, and world health issues.

* significant trends in global health conditions, including: cardiovascular disease, diabetes, obesity, and degenerative diseases.

### Societal influences and public policies influencing healthcare innovation and delivery.

**Course Format:**

There will be two (2) class sessions of 1.5 hours each per week. Instructional mode of the course includes: Weekly lectures (1.5 hrs/week) and in-class exercises and discussions (1.5 hrs/week). Industry speakers will give perspectives on markets and trends in innovation. Readings will be assigned in the designated books, supplemented with reading from reference materials and contemporary case information on medical device. Grading will be from a combination report assignments and oral presentations on market analysis and business components of team projects.

**Grading:**

* Class assignments (20%)
* Individual project (30%)
* Exams (30%)
* Class participation (20%)

**Class Materials:**

Required Books/Reference Materials:

* Author…

Recommended Reference Materials:

* Author…

**Course Topics, Topics and Presentations**

1. Medical Markets Overviews and Organization
   1. Special Attention to Orthopedics, Cardiology, Musculoskeletal, Neurosurgery, Diagnostic Imaging and Radiology, Nephrology, Urology, Surgical Specialties, Emergency Medicine, Pediatrics, Nursing Services, Preventive Medicine, and Homecare Devices.
   2. American Board of Medical Specialties (ABMS) - 145 medical specialties and subspecialties for physicians
2. Trends in medical device innovation
   1. Biomedical innovation and development requires multiple skills and a multi-disciplinary team approach; needs for biomedical engineering design innovation at all stages of development
3. Commercial medical device and equipment entities, vendors and material suppliers
   1. Mega companies – $Multi-billion
   2. Midsize companies - $500 million - $1 billion
   3. Small companies - $10 million - $500 million
   4. Start-up entities – <$10 million
4. U.S. healthcare – significant trends in physical conditions and patient populations
   1. Cardiovascular diseases
   2. Diabetes
   3. Obesity
   4. Degenerative diseases – cartilage, Alzheimer’s, other
   5. U.S. preventive healthcare
5. Societal influences and public policies affecting healthcare innovation and delivery
   1. Needs, funding, consumer education
6. Globalization of healthcare industry; localization of products and delivery.
   1. Multi-nationals, multi-divisional companies
7. Engineering World Heath issues
   1. Clean water, vaccine delivery and cold-chain devices, other

*Attach here - Course General Guidance*