

# Grand Valley State University

## Minutes of the University Academic Senate

### November 5, 2004

**Present:** Allison Adams, D. Robert Adams, Majd Al-Mallah, John Bender, Jan Brashler, Gayle Davis (ex officio), Kurt Fanning, Rob Franciosi (Vice Chair), Steve Glass, Linda Goossen, Dick Hall, William Hosterman, Brian Kingshott, Hal Larson, George Lundsnow, Neil MacDonald, Jean Nagelkerk (Chair), Steve Nizielski, Karen Novotny, Charles Pazdernik, John Peck, Avi Reichert, Diana Reischman, Allison Reynolds (student), Ross Reynolds, Lisa Rigby, Bill Rogers, Barbara Roos, Ellen Schendel, John Seip (student), Mack Smith, Rachel Solts, Kathleen Underwood, Don Williams

**Guests:** Deb Burg, Dave Elrod, Priscilla Kimboko, Donna Larson, Neal Rogness, Pat Thorpe

Agenda Items	Discussion	Action / Decisions
1. Approval of Agenda	The agenda of November 5, 2004 was reviewed.	The agenda was approved.
2. Approval of Minutes	The minutes of October 22, 2004 were reviewed.	The minutes of October 22, 2004 were approved, as amended.
3. Report of Chair	<p>a) Chair Nagelkerk announced that the UAS and FTLC will co-sponsor two faculty forums regarding student expectations. The forums are scheduled as follows: in Allendale on Wednesday, January 19 from 3:00pm to 5:00pm and in Grand Rapids on Friday, January 21 from 10:00am to 12:00pm.</p> <p>b) The chair reported on her attending an FSBC meeting regarding a proposed increase in medical benefit premiums and mail-in prescription coverage. FSBC and ECS will provide input to HRO regarding benefits through a set of focus groups.</p> <p>c) The chair attended the Board of Trustees meeting on October 28, 2004 and a university leadership retreat on November 4, 2004.</p> <p>d) ECS continues its strategic planning with work on the Mission, Vision &amp; Values statement underway and will be brought before UAS when a draft is complete.</p> <p>e) The chair reported that the UAS Schedule for meetings during the Winter semester may need to be shifted to cover all the personnel matters / workload. She also announced that the chair of FPCC, Teresa Beck, will be at the next ECS meeting.</p>	
4. Report of Provost	Provost Davis reported that President Murray served on Governor Granholm's Cherry Commission.	

5. Report of Student Senate	<p>a) Allison Reynolds reported that the Student Senate hosted a leadership roundtable to discuss what impediments are in the way to prevent students from graduating in four years.</p> <p>b) The Student Senate is engaging in strategic planning and will develop a two-, five-, and ten-year plan.</p>	
3. Report of Standing Committee Chairs	No Report	
4. New Business	<p>a) Donna Larson presented an overview of three Master program Final Plans: Master of Science in Medical and Bioinformatics, Master of Science in Biostatistics, and Master of Science in Biotechnology – Cell &amp; Molecular Biology.</p> <ol style="list-style-type: none"> <li>1. <u>Master of Science in Medical and Bioinformatics (UCC Log# 4016)</u> A summary of the Final Plan was presented. Discussion. A Motion was made to approve the Final Plan for the Master of Science in Medical and Bioinformatics.</li> <li>2. <u>Master of Science in Biostatistics (UCC Log # 4017)</u> A summary of the Final Plan was presented. Discussion. A Motion was made to approve the Final Plan for the Master of Biostatistics.</li> <li>3. <u>Master of Science in Biotechnology - Cell &amp; Molecular Biology (UCC Log # 4018)</u> A summary of the Final Plan was presented. Discussion. A Motion was made to approve the Final Plan for the Master of Biotechnology (Cell &amp; Molecular Biology).</li> </ol> <p>b) Discussion points that emerged when reviewing the three Masters programs included:</p> <ul style="list-style-type: none"> <li>• Consistently implement new program reviews at FSBC <ul style="list-style-type: none"> <li>o 1<sup>st</sup> / 2<sup>nd</sup> and 3<sup>rd</sup> / 4<sup>th</sup> year reviews evaluated by FSBC</li> <li>o FSBC assesses new program budget reviews and provides a report with any recommendations to ECS.</li> </ul> </li> <li>• Determine University priorities for Program Development <ul style="list-style-type: none"> <li>o Need to have some flexibility</li> <li>o Community needs should be considered</li> </ul> </li> </ul>	<p><b>MOTION:</b> The UAS recommends approval of the Final Plan for the Master of Science in Medical and Bioinformatics. <b>APPROVED: Unanimously</b></p> <p><b>MOTION:</b> The UAS recommends approval of the Final Plan for the Master of Science in Biostatistics. <b>APPROVED: Unanimously</b></p> <p><b>MOTION:</b> The UAS recommends approval of the Final Plan for the Master of Science in Biotechnology – Cell &amp; Molecular Biology <b>APPROVED: Unanimously</b></p>
9. Ideas for Future Fora	<ul style="list-style-type: none"> <li>▪ Workload equity and enlarging regular faculty</li> <li>▪ The next level</li> <li>▪ Graduate versus Undergraduate</li> </ul>	
10. Adjournment	Meeting adjourned at 4:36pm	

## Summary of Final Plan for a MS Degree in Medical and Bioinformatics

### Definitions

#### Medical and Bioinformatics

- The use of computer technology to manage and analyze information in the life and health sciences

#### Biostatistics

- The application of statistical techniques to scientific research in the life and health sciences

#### Cell and Molecular Biology

- The manipulation of developmental, genetic, biochemical and biophysical processes for human purposes.

#### Biotechnology

- The industrial use of living organisms to produce food, drugs, and other products

Three advantages to the proposed GVSU program design:

- 1) **greater cross-disciplinary technical training,**
- 2) **increased student experience in inter-disciplinary teamwork and**
- 3) **reduced costs of implementation by sharing courses between the programs.**

The field of bioinformatics is still developing as the needs of genomic biology and medicine evolve. Bioinformatics can span the entire range from hard-core computer science to hard-core molecular biology. **The program proposed here is more on the medically-oriented computer-science side, largely in response to the expressed regional needs.** This also gives the potential graduates of the program greater flexibility in possible employment venues.

**Impact on MS in Computer Information Systems.** Our new M.S. in Medical and Bioinformatics nicely complements our existing M.S. in Computer Information Systems (CIS), providing another important option for students. Each of the two programs provides courses and potential students for the other program. Our existing MS in CIS offers a combination of a traditional MS in Computer Science, and a Masters in Management Information Systems. Considerable strengths of the current master's program are its project orientation and very strong hands-on focus. The MS-CIS program consists of five concentration areas; Object-Oriented Technology, Software Engineering, Database, Information Systems Management, and Distributed Systems

The MS in Medical and Bioinformatics program combines several computing areas with non-computing disciplines such as statistics, biological science, and healthcare delivery systems. Students wishing an interdisciplinary program in bioinformatics or medical informatics will be advised into the new M.S. in Medical and Bioinformatics, while those students seeking a traditional master's program (with a thesis option) will be advised into the existing M.S. in CIS.

**Demonstrated Need.** Focus Groups were held with regional employers who would likely benefit from the implementation of our three new graduate programs and might be able to partner with us by providing internships. Participants included representatives from basic science research laboratories, private companies, community health, hospitals and healthcare institutions, and public health agencies.

**The focus group participants strongly validated the critical need for all three of our new programs.** Focus group participants also provided valuable input as to critical curricular components, outcome objectives, and internship structure, identifying potential students among their current employees,

committing to providing internship sites and mentors, networking with us to identify additional industry partners and internship sites and mentors, and pledging their continuing support by serving on our program advisory boards and assisting in discipline-focused instruction.

**Industry Survey** In early August, 2002, we conducted a mail/electronic survey of 337 relevant businesses/industries in the Midwest region. Sixty-seven (67) completed surveys were returned.

**Industry respondents agreed that there is both current and future need for graduates of our three new master's programs.** The biotechnology and healthcare sectors were the areas in which there is currently the greatest number of employees, and respondents indicated current and anticipated future need for graduates. (Numbers are number of responding companies)

What do you envision as the **current** need of your institution for graduates in Medical/Bioinformatics?

High Need	Some Need	Low Need
21	12	18

What do you envision as the **future** need of your institution for graduates in Medical/Bioinformatics?

High Need	Some Need	Low Need
25	12	13

**Student Interest** In September, 2002, we conducted a survey of GVSU students enrolled in 33 courses most relevant to the three professional science master's programs. 1004 students completed the survey. **293 of the surveyed students indicated they were interested or very interested in the Medical and Bioinformatics program**

## Curriculum

Each curriculum provides shared core courses common to all three programs, specific courses for critical content in each discipline, laboratory experiences essential for the development of requisite skill and knowledge sets, a common seminar series, a capstone course, and internships to provide essential hands-on learning in the field.

All three programs (M.S. in Medical and Bioinformatics, M.S. in Biostatistics, and the Biotechnology emphasis in the M.S. in Cell and Molecular Biology) are interdisciplinary, non-thesis, and involve both the university and its industry partners. All three programs emphasize teamwork, problem-solving, communication, and scientific knowledge and technical skills. Each program is designed to integrate university coursework with business and industrial internships to better prepare students for the variety of career pathways associated with the life science and health science industries.

The specific course requirements for the Medical/Bioinformatics MS program are:

- **4 common core courses (12 cr):**
  - CS 661: Introduction to Medical and Bioinformatics (3 cr)
  - CMB 610: Foundations of Biotechnology (3 cr)
  - Introduction to Biostatistics. Choose one of the following:
    - STA 610: Applied Statistics for Health Professionals (3 cr) or
    - STA 622: Statistical Methods for Biologists (3 cr)
  - PSM 650: Ethics and Professionalism in Science (3 cr)
- **2 common seminar courses (2 cr):**
  - PSM 661: Seminar I (1 cr)
  - PSM 662: Seminar II (1 cr)
- **Internship (minimum of 4 credits)**
  - PSM 691: Internship (1-9 credits)
- **Capstone course (3 cr)**
  - CS 691: Medical and Bioinformatics Capstone (3 cr)
- **5 Directed Courses (15 cr)**
  - CS 635: Knowledge Discovery and Data Mining (3 cr)
  - CS 671: Information Visualization (3 cr)
  - CS 673: Principles of Database Design (3 cr)
  - Choose one of the following 2-course sequences (6 cr)
    - Bioinformatics Track**
      - CS 677: High-Performance Computing (3 cr) and
      - CS 678: Machine Learning (3 cr)
    - Medical Informatics Track**
      - CS 665: Clinical Information Systems (3 cr)
      - and one of either
      - PA 630: Health Administration and Service (3 cr) or
      - PA 635: Hospital Organization and Management (3 cr)

**Part-Time Study Plan for GVSU Professional Science Master's Degree Program in  
Medical and Bioinformatics  
(38 credits)**

**Year One:**

**Fall Semester (6)**

CS 661: Intro Med/Bioinformatics (3)  
 STA 610: Applied Stat Hlth Prof (3)  
or  
 STA 622: Stat Method for Bio (3)

**Winter Semester (6)**

CS 635: Knowledge Discovery  
 & Data Mining (3)  
 CMB 610: Found of Biotech (3)

**Summer (4)**

PSM 650: Ethics &  
 Professionalism in  
 Science (3)  
 PSM 661: Seminar I (1)

**Year Two:**

**Fall Semester (6)**

CS 673: Prin. Database Design (3)  
 1 Focus Directed Course (3)

**Winter Semester (7)**

CS 671: Info Visualization (3)  
 1 Focus Directed Course (3)  
 PSM 691: Internship (1)

**Summer (3)**

PSM 691: Internship (2)  
 PSM 662: Seminar II (1)

**Year Three:**

**Fall Semester (4)**

CS 691: Medical & Bioinformatics Capstone (3)  
 PSM 691: Internship (1)

## Biostatistics Program

The specific course requirements for the Biostatistics MS program are:

- 4 Common Core Courses (11 cr):
  - CS 661: Introduction to Medical and Bioinformatics (3 cr)
  - CMB 610: Foundations of Biotechnology (3 cr)
  - Introduction to Biostatistics. Choose one of the following:
    - STA 610: Applied Statistics for Health Professions (3 cr) or
    - STA 622: Statistical Methods for Biologists (3 cr)
  - PSM 650: Ethics and Professionalism in Applied Science (3 cr)
- 2 Common Seminar Courses (2 cr):
  - PSM 661: Seminar I (1 cr)
  - PSM 662: Seminar II (1 cr)
- Internship (minimum of 4 credits):
  - PSM 691: Internship (1-9 credits)
- Capstone Course (3 cr):
  - STA 630: Perspectives in Advanced Biostatistics (3 cr)
- 5 Directed Courses (15 cr)
  - STA 616: Statistical Programming (3 cr)
  - STA 621: Design of Experiments and Regression (4 cr)
  - STA 623: Categorical Data Analysis (2 cr)
  - STA 625: Clinical Trials (2 cr)
  - Elective (minimum of 4 credits, with advisor approval)

### Part-Time Study Plan for M.S. in Biostatistics (37 credits)

#### Year One:

##### Fall (6 cr)

CS 661: Intro to Med/Bioinformatics(3 cr)  
 STA 622: Stat Methods for Biologists (3 cr)  
 or STA 610: Applied Stat Hlth Prof (3 cr)

##### Winter (6 cr)

CMB 610: Found of Biotech (3 cr)  
 STA 616: Stat Programming (3 cr)

##### Summer (4 cr)

PSM 650: Ethics and  
 Professionalism in  
 Applied Sci (3 cr)  
 PSM 661: Seminar I (1cr)

#### Year Two:

##### Fall (5 cr)

STA 623: Categorical Data Anal (2 cr)  
 Elective (2 cr)

##### Winter (7 cr)

STA 621: Design Exp/Regress (4 cr)  
 STA 625: Clinical Trials (2 cr)  
 PSM 691: Internship (1 cr)

##### Summer (3 cr)

PSM 691: Internship(2 cr)  
 PSM 622:Seminar II (1 cr)

#### Year Three:

##### Fall (6 cr)

STA 630: Perspectives in Adv Biostat (3 cr)  
 Elective (2 cr)  
 PSM 691: Internship (1 cr)

# UNIVERSITY ACADEMIC SENATE

November 5, 2004  
250 Kirkhof Center

## Agenda

1. Approval of Agenda
2. Approval of Minutes - October 22, 2004
3. Report from Chair
4. Report from the Provost
5. Report from the Student Senate President
6. New Business
  - a) Master in Bioinformatics (# 4016)
  - b) Master in Biostatistics (# 4017)
  - c) Master in Biotechnology (# 4018)
7. Ideas for Future Fora
  - Workload equity and enlarging regular faculty
  - The "next level": What is it?
  - Graduate versus Undergraduate Programs
9. Adjournment