

Benchmarks 2007

OFFICE OF SERVANT-LEADERSHIP

January 1, 2007

Authored by: Dr. Samuel P. Scheibler

Contents

PURPOSE OF SERVANT-LEADERSHIP.....	3
GOALS OF THE SERVANT-LEADERSHIP OFFICE	3
MEASURING OUTCOMES.....	4
ESTABLISHING BENCHMARKS.....	5
MEASURING SERVANT-LEADERSHIP	6
OUR BENCHMARKS	7
OUTCOME ASSESSMENT THROUGH TESTING AT MSOE - FRESHMEN	7
THE MSOE CIRP QUESTIONS (ENTERING FRESHMEN)	8
THE MSOE YFCY QUESTIONS (SPRING QUARTER EXAM)	11
OUTCOME ASSESSMENT THROUGH SURVEYS AT MSOE – BEYOND GRADUATION.....	15
THE MSOE ONE AND FIVE YEAR BACHELOR’S DEGREE SURVEY OF MSOE GRADUATES QUESTIONS RELEVANT TO SERVANT-LEADERSHIP	15
SELF-RATED QUESTIONS	15
OBSERVER-RATED QUESTIONS	19
ESTABLISHED BENCHMARKS – FRESHMAN BENCHMARKS.....	21
ESTABLISHED BENCHMARKS – GRADUATE BENCHMARK.....	25
ONE YEAR BENCHMARKS – BACHELOR DEGREE ALUMNI SURVEY	25
SELF-RATED.....	25
INSTITUTIONAL BENCHMARKS	25
FIVE YEAR BENCHMARKS – BACHELOR’S DEGREE SURVEY	27
SELF-RATED (INSTITUTIONAL BENCHMARKS).....	27
ESTABLISHED BENCHMARKS – EMPLOYER BENCHMARK	30
2004-2005 EMPLOYER EVALUATION OF MSOE GRADUATES.....	30
OBSERVER-RATED	30
INSTITUTIONAL BENCHMARKS	30
UTILIZING THE BENCHMARKS FOR ENHANCING SERVANT-LEADERSHIP AT MSOE	32
SECTION II - VISUALIZING THE BENCHMARKS & CHARTS	
A BRIEF EXPLANATION OF HOW BENCHMARKS WERE ESTABLISHED	1
FALL, 2005 - SETTING BENCHMARKS - FOUR YEARS PRECEDING CHAIR	2
FALL, 2005 - SETTING BENCHMARKS, ONE YEAR AFTER GRADUATION	3
FALL, 2005 - SETTING BENCHMARKS, ONE YEAR AFTER GRADUATION	4
SELF-EVALUATION OF MSOE ALUMNI ONE YEAR AFTER GRADUATION.....	5
ONE YEAR AFTER GRADUATION WITH STATISTICAL MARGIN OF ERRORS	6
ONE YEAR AFTER GRADUATION SINCE FOUNDATION OF THE CHAIR.....	7
ONE YEAR AFTER GRADUATION SINCE FOUNDATION OF THE CHAIR.....	8
PERSPECTIVE FOR GROWTH - ONE YEAR AFTER GRADUATION	9
PERSPECTIVE FOR GROWTH - ONE YEAR AFTER GRADUATION WITH MARGINS OF ERROR.....	10
PERSPECTIVE FOR GROWTH - ONE YEAR AFTER GRADUATION	11
EMPLOYERS EVALUATION - ONE YEAR AFTER GRADUATION	12

EMPLOYERS - ONE YEAR AFTER GRADUATION WITH MARGINS OF ERROR	13
EMPLOYERS - ONE YEAR AFTER GRADUATION SINCE FOUNDATION OF THE CHAIR	14
EMPLOYERS - ONE YEAR AFTER GRADUATION	15
COMPARING FRESHMEN TO ONE YEAR GRADUATES	16
COMPARING FRESHMEN TO ONE YEAR GRADUATES WITH MARGINS OF ERROR	17
SCOPE OF THE CHALLENGE.....	18
REVERSING THE TREND	19
ALGORITHM FOR CALCULATING BENCHMARKS	20

Benchmark Assessment 2007

Using Assessment for Positive Change

PURPOSE OF SERVANT-LEADERSHIP

The Office of Servant-Leadership seeks to promote a dynamic Servant-Leadership model throughout the MSOE community. We believe that Servant-Leadership provides the best standard for dealing with the changing nature of work, social relationships, and community development in an increasingly complex and globalized world. The Office of Servant-Leadership is working to create opportunities for students who “aspire to be principled, innovative and socially conscious contributors to a caring and civil society.”

Servant-leadership emphasizes increased service to others; an approach to work that emphasizes the healthy organic and functional relations between the components of our humanity and our vocational and occupational objectives, and a sharing of power in decision making.

In the Office of Servant-Leadership we firmly believe that MSOE students already possess a passion for service and a creative impulse to change the world. We believe that guiding, training, and facilitating the growth of MSOE students in Servant-Leadership is our best hope for transformative leadership in the twenty-first century.

We also seek to assist the MSOE faculty in awakening and sharpening the intellectual rigor and moral virtues that create awareness to, and dedication toward, the common good. Through teaching and program development, the Office of Servant-Leadership strives to animate, advance, and support the MSOE faculty as they develop the next generation of global leaders.

We are working to help the MSOE staff create a healthy, cooperative, and servant-oriented environment that sets a moral compass for the university.

GOALS OF THE SERVANT-LEADERSHIP OFFICE

Student formation: assisting students in vocational and professional development that takes into account careful balance and the integration of the physical, mental, emotional, and spiritual dimensions of their lives; establish within our students a respectful and cooperative relationship with others; helping our students connect their intellectual, spiritual, and leadership capacities for service to the world around them.

Community Partnerships: collaborating with civic, humanitarian, professional, industrial and business organizations to provide students with internship and other growth opportunities in service and leadership;

creating an environment of cooperation and trust that moves our students, faculty, staff, and alumni toward the building of healthier communities in southeast Wisconsin and throughout the world...

Curricular and Faculty Development: providing courses in practical ethics and Servant-Leadership studies for MSOE students; supplying resources to assist university faculty in integrating teaching, research, and community service.

Staff Support: partnering with MSOE staff in nurturing the university's commitment to promoting community and fostering a healthy, servant-leader's approach to work; helping to make MSOE the best place to work in Milwaukee.

Health and Wellness: assisting everyone in the MSOE community to make wellness-oriented lifestyle choices.

MEASURING OUTCOMES

Accountability is one of the hallmarks of effective Servant-Leadership. An Office for Servant-Leadership in any educational institution must have objective, quantifiable, and accurate standards by which progress can be measured. No amount of programming, activities or good intentions can insure that the message is taking root and growing. Both the long-range success of a Servant-Leadership program and the vital, dynamic short-range adjustments that insure the health of a program can best be identified through objective standards of measurement.

While the exact parameters of Servant-Leadership are evolving as the field expands –encompassing in an increasingly globalized world more and more areas of contemporary institutional and organizational life – certain identifiable, distinguishing characteristics represent both foundations and trajectories of the true servant-leader. We believe seven of these attributes and attitudes can be identified through testing instruments.¹

- Empathy
- Awareness
- Healing (centering on societal healing and inclinations to overcome societal barriers)
- Conceptualization
- Stewardship
- Commitment to the growth of people
- Building community

While empirical, anecdotal case-studies are necessary to give “flesh and blood” evidence as to the effectiveness of a program seeking to instill and encourage growth in servant-leadership, we believe that the careful analysis of objective responses to well-crafted questions in standardized tests will provide accurate and reasonable outcome assessment. **Through three (3) surveys given at strategic points in a student's experience at MSOE and four (4) surveys given to alumni and their employers we are confident that**

¹ Our confidence is based upon the successful use of personality and behavioral testing; especially the ground-breaking work of the Higher Education Research Institute (HERI). This program, based in the Graduate School of Education and Information Science at UCLA leads the nation as an interdisciplinary center for research, evaluation, and dissemination of information in postsecondary education. The HERI research programs cover a variety of topics including the outcomes of postsecondary education, leadership development, faculty performance, federal and state policy, and educational equity.

we can establish a paradigm for accurate, verifiable identification of concrete outcomes in our task of developing servant-leaders.

A distinguishing mark of Servant-Leadership is the ability to change. We recognize, therefore, that everything we propose and accomplish is a “work in progress.” We constantly seek the input of our colleagues and the community in fine tuning our analytical instruments.

Our benchmarks are established through the existing Freshmen Survey, Alumni Survey, and Alumni Employer Survey. With our first “Servant-Leadership” surveys in September, 2005, we plan to begin incorporating outcome-based changes and adjustments in December, 2005.

ESTABLISHING BENCHMARKS

We have previously stated that, as a concept, Servant-Leadership defies facile definition. It does not fit the neat, straight-angle warp and weft fabric of conventional management principals but rather is a rich tapestry of variegated hues and subtle patterns. The multi-dimensional and wide-ranging complexities of the practice of Servant-Leadership, however, do not preclude quantitative and qualitative analysis of its development, progress, and impact. Measurement rests, of course, upon a clear and comprehensive definition of the subject.

For the purposes of establishing benchmarks for objective, quantitative analysis, the Pieper Family Endowed Chair in Servant-Leadership defines this complicated construct as follows:

Leadership: We believe that leadership is exemplifying the qualities of moral character that enables one to inspire and improve others. Furthermore, we believe that leadership is not a position, but a process.

Servant-Leadership: We believe that Servant-Leadership means leadership whose primary purpose is to serve others by investing in their development and well-being while jointly accomplishing tasks and goals that facilitate the common good.²

Therefore, we believe that leadership begins from within the individual person. It is character in action. Servant-Leaders have a fundamental commitment to serving others with integrity and humility while encouraging excellence and growth in those whom they lead. They are leaders of vision that pursue their vision from a foundation of humility, empathy, compassion, and the highest standards of ethical behavior.

Planting Servant-Leadership: We believe that Servant-Leadership is best taught by example. We agree with Stephen Covey: "If you really want to get servant-leadership, then you've got to have institutionalization of the principles at the organizational level and foster trust through individual character and competence at the

² Being “service-oriented” is not synonymous with Servant-Leadership. As Page, Wong, and Hall observed "Doing menial chores does not necessarily indicate a servant leader. Instead a servant leader is one who invests himself or herself in enabling others, in helping them be and do their best." In addition, servant-leadership should not be equated with self-serving motives to please people or to satisfy one's need for acceptance and approval. At the very heart of servant-leadership is the genuine desire to serve others for the common good. In servant-leadership, self-interest gives way to collective human development." (Page, Wong, Hall, Trinity Western University, 1999)

personal level. Once you have trust, then you lead people by coaching, empowerment, persuasion, example, and modeling. That is servant-leadership."

MEASURING SERVANT-LEADERSHIP

The idea of quantitative measurement standards for Servant-Leadership has meet with some resistance. It is argued that a conceptual model rooted in personal character and community cohesion will be trivialized by the process of objective analysis. In 1998, Don Frick, one of the leading authorities on the concept, opined "if servant-leadership is reduced [in standard measurements] to a collection of admirable qualities and learned skills that are displayed in organizational settings, it is all too easy to forget that servant-leadership is, first about deep identity."

To again reference Page and Wong:

"This argument reminds us of the objections against any scientific study of romantic love. Critics claimed that love was to be best left to the poets and lovers, and it was too subjective and complex a subject to be studied scientifically. However, history has proved otherwise. Hundreds of studies have shown that romantic love can be quantified and that scientific inquiry has helped us gain a better understanding of the complex processes of passionate love. By the same token, it is possible to quantify servant-leadership without losing sight of its deeper meanings. Scientific research does require operational definitions, quantification and reductionism, but it does not negate a holistic appreciation of the richness of the construct and its broad social implications."

Reiterating our belief that leadership is a process, not a position, we agree with J. M. Kouzes observation that "[leadership] is an observable, understandable, learnable set of skills and practices available to everyone anywhere in the organization." If leadership is learnable, it is transferable; if it transferable, it is measurable. We do not desire to strip away the phenomenological mystery of Servant-Leadership, but rather to identify its key, quantifiable components so that we can better communicate this remarkable, life-changing process to others.

The communication, inculcating and intelligent application of Servant-Leadership principles is the goal of the Pieper Family Endowed Chair. We firmly believe that the best Servant-Leaders hold themselves and others to the highest standards of accountability. Careful application necessitates careful design. To quote Basil Walsh: "An intelligent plan is the first step to success. The man who plans knows where he is going, knows what progress he is making and has a pretty good idea when he will arrive."

We have developed, created, or expanded seven (7) quantitative instruments at Milwaukee School of Engineering in the Office of Servant-Leadership to measure and analyze progress in our stated goals.

We believe that these indices will provide:

- a. An objective measurement of Servant-Leadership development in our students, faculty, staff, alumni, and the wider community with whom MSOE comes in contact
- b. Assistance in training students, staff, faculty, alumni and the wider community in Servant-Leadership by focusing our attention on key areas of necessity and success
- c. A framework of accountability for individuals, the university, and the organizations and corporations served by MSOE
- d. An objective standard for the replication of Servant-Leadership programs in other institutions

In establishing objective standards of measurement, however, we must stress one overarching caveat. Servant-Leadership is a life-long learning process based upon the deeply imbedded qualities of humility, integrity, and a “servant’s heart.” Without a highly developed moral and spiritual character, the lessons of Servant-Leadership may be heard, but they will be like seeds sown on stony ground.

To make the best use of existing MSOE research/survey instruments, we have amalgamated the seven Servant-Leadership attributes and attitudes found on page two of this document into four categories.³ Our deductive benchmarks measurements are based upon the Mayers/Scheibler Model of Conceptual Binaries in Static Demographics.⁴

The four categories upon which our benchmarks are based:

1. Character: integrity, humility, the “servant’s heart”
2. Community: empathy, compassion, awareness
3. Goals: conceptualization, foresight, vision
4. Process: stewardship, team-building, role modeling

OUR BENCHMARKS

MSOE has established self-rating and observer-rating mechanisms for student and alumni evaluation. As our conceptual model of analysis folds Servant-Leadership into the broader range of “leadership” principles, we have been able to establish benchmarks from which our progress can be measured.

Following are our current survey questions for the seven (7) evaluations either currently given or beginning in September, 2005. Our analytical benchmarks are based upon the five (5) surveys currently given at MSOE within established survey parameters. We anticipate “fine-tuning” of the surveys but firmly believe that the current questions provide a valid baseline for Servant-Leadership evaluation. The benchmark tables follow the survey questions on page

OUTCOME ASSESSMENT THROUGH TESTING AT MSOE - FRESHMEN

The Office of Servant-Leadership has been working with the Higher Education Research Institute (HERI) at UCLA to develop two (2) survey instruments for freshmen. We completed both tests and administered the CIRP to the incoming freshmen class, September, 2005.

We cannot measure progress if we do not know where we are starting. As stated above, we firmly believe (intuitively) that MSOE students already possess a passion for service and a creative impulse to change the world. We have developed a testing vehicle; therefore, that surveys our freshmen in the second week of their first quarter. Our goal is to establish the strengths and weaknesses of the “raw material” out of which we hope to construct edifices of servant-leadership.

³ Empathy, awareness, healing (centering on societal healing and inclinations to overcome societal barriers), conceptualization, stewardship, commitment to the growth of people, and building community.

⁴ Scheibler, 1992

A survey dedicated only to questions of leadership and service runs the risk of skewing its results. If a student is only thinking about leadership attributes a conscientious tester can expect to receive answers that put leadership in the “best possible light.” For this reason we have chosen to amalgamate our survey questions into a larger instrument that forces a student to think about a wide variety of topics. We believe we are far more likely to receive basic, honest, accurate information in this format.

With HERI, we have arranged to administer the *Cooperative Institutional Research Program* (CIRP) survey to every freshman at MSOE. This survey is a combination of questions written by the Office of Servant-Leadership and a national longitudinal study of the American higher education system.

One of the advantages of the CIRP is that it is designed to be of immediate use of institutions. Participating institutions receive a detailed profile of their entering freshman class, as well as national normative data for students in similar types of institutions (e.g., public four-year colleges, moderately selective Protestant colleges, highly selective Catholic colleges, public two-year colleges). This material provides a potential wealth of information for advancing, adjusting, and improving the MSOE Servant-Leadership program.

The CIRP contains sixty-one (61) questions designed for a thirty (31) minute testing session. The section relevant to servant-leadership entails seventy-eight (78) specific responses divided into eleven (11) questions. The questions appear here as a list, however, in the MSOE CIRP the questions are spread throughout the survey to insure greater probability of accuracy.

The testing format for all Office of Servant-Leadership surveys is Scantron® computer-scored answer sheets.

The MSOE CIRP Questions (Entering Freshmen)

1. How would you describe your involvement during high school in school-related extracurricular activities (including athletics)?
 - a. Highly involved (more than 10 hours/week)
 - b. Moderately involved (5-10 hours/week)
 - c. Slightly involved (1-5 hours/week)
 - d. Not involved

2. How would you describe your involvement during high school in organized, non-school related extracurricular activities (church, non-school clubs, etc.)?
 - a. Highly involved (more than 10 hours/week)
 - b. Moderately involved (6-10 hours/week)
 - c. Slightly involved (1-5 hours/week)
 - d. Not involved

3. Did you have a leadership role in organized, extracurricular activities in high school?
 - a. Yes, I was a leader in more than one organization
 - b. Yes, I was a leader in one organization
 - c. No, I was not a leader but was active in an organization(s)
 - d. No, I was not a leader and was not active in an organization(s)

4. How would you describe your involvement during high school in activities (organized or informal) that helped people (outside your family)?

- a. Highly involved (more than 10 hours/week)
 - b. Moderately involved (6-10 hours/week)
 - c. Slightly involved (1-5 hours/week)
 - d. Not involved
5. The greatest indicator of success, as you see it, is:
- a. A high paying job
 - b. The respect of your peers
 - c. Service to the community
 - d. Awards and honors
 - e. None of these
6. If you had a lot of extra money, you would prefer to:
- a. Use it to promote industrial and commercial growth.
 - b. Use to help advance people's spiritual needs.
 - c. Contribute to the development of scientific research.
 - d. Give it to family- and child-oriented charities.
 - e. None of these
7. For the activities below, indicate which ones you did during the past year. If you have engaged in an activity frequently, mark F (Frequently) next to the subject. If you have engaged in an activity one or more times, but not frequently mark an O (Occasionally). Mark N (Not at all) if you have not preformed the activity during the past year. (Mark only one for each item)
- a. Attended a religious service
 - b. Participated in organized demonstrations
 - c. Tutored another student
 - d. Studied with other students
 - e. Performed volunteer work
 - f. Socialized with someone of another racial/ethnic group
 - g. Performed community service as part of a class
 - h. Worked on local, state, or national political campaign
8. In deciding to go to college, how important was each of the following reasons? Mark V for Very Important, S for somewhat important, and N for not important. (Mark only one answer for each possible reason)
- a. My parents wanted me to go
 - b. I could not find a job
 - c. Wanted to get away from home
 - d. To be able to get a better job
 - e. To gain a general education and appreciation of ideas
 - f. There was nothing better to do
 - g. To make me a more cultured person
 - h. To be able to make more money
 - i. To learn more about things that interest me
 - j. To prepare myself for graduate or professional school
 - k. A mentor/role model encouraged me to go
 - l. To get training for a specific career
 - m. To find my purpose in life

9. Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself. Mark H for Highest 10%, AA for Above Average, A for Average, B for Below Average, and L for Lowest 10%. (Mark one for each trait)
- Academic ability
 - Artistic ability
 - Cooperativeness
 - Creativity
 - Drive to achieve
 - Emotional health
 - Leadership ability
 - Religiousness
 - Self-confidence (intellectual)
 - Self-understanding
 - Spirituality
 - Understanding of others
10. Please indicate the importance to you personally of each of the following. Mark E for Essential, V for Very Important, S for Somewhat Important, and N for Not Important. (Mark one for each item)
- Becoming accomplished in one of the performing arts (acting, dancing, etc.)
 - Becoming an authority in my field
 - Obtaining recognition from my colleagues for contributions to my special field
 - Influencing the political structure
 - Influencing social values
 - Raising a family
 - Having administrative responsibility for the work of others
 - Being very well off financially
 - Helping others who are in difficulty
 - Making a theoretical contribution to science
 - Writing original works (poems, novels, short stories, etc.)
 - Creating artistic work (painting, sculpture, decorating, etc.)
 - Becoming successful in a business of my own
 - Becoming involved in programs to clean up the environment
 - Developing a meaningful philosophy of life
 - Participating in a community action program
 - Helping to promote racial understanding
 - Keeping up to date with political affairs
 - Becoming a community leader
 - Integrating spirituality into my life
 - Improving my understanding of the countries and cultures
11. What is your best guess as to the chances you will do the following. Mark G for Good Chance, S for Some Chance, L for Little Chance, and N for No Chance. (Mark only one for each item)
- Change major field
 - Change career choice
 - Participate in student government
 - Get a job to help pay for college expenses
 - Work full-time while attending college
 - Join a social fraternity or sorority
 - Play varsity/intercollegiate athletics

- h. Make at least a “B” average
- i. Participate in student protests or demonstrations
- j. Transfer to another college before graduating
- k. Be satisfied with your college
- l. Participate in volunteer or community service work
- m. Seek personal counseling
- n. Communicate regularly with your professors
- o. Socialize with someone of another racial/ethnic group
- p. Participate in student clubs/groups
- q. Strengthen your religious beliefs/convictions
- r. Participate in a study abroad program

The CIRP results allows the Office of Servant-Leadership to evaluate the freshmen class and prepare materials, programs, activities, and curriculum that meet specific needs and hones specific strengths.

We should not wait, however, until our freshmen are juniors or seniors to evaluate our progress. We want to know if Servant-Leadership is taking firm root in our young people as they complete their first year at MSOE. By measuring the freshmen class in the late spring, we believe we can accurately measure the effectiveness of their exposure to servant-leadership while they are still in the most impressionable stage of their collegiate experience and more accurately meet their needs as they move forward into their sophomore year.

With HERI, we arranged to administer the *Your First College Year* (YFCY) survey to every freshman at MSOE. This survey is also combination of questions written by the Office of Servant-Leadership and a national longitudinal study of the American higher education system.

The YFCY contains fifty-seven (57) questions designed for a thirty (30) minute testing session. The section relevant to servant-leadership entails one hundred eight (108) specific responses divided into sixteen (16) questions. The questions appear here as a list, however, in the MSOE YFCY the questions are spread throughout the survey to insure greater probability of accuracy. (Note: many of the questions repeat CIRP; however, the possible responses have been expanded).

Due to an unwillingness of several General Studies faculty members to allow tracking of CIRP surveys, we were unable to successfully complete the YFCY.

The MSOE YFCY Questions (Spring Quarter Exam)

1. Since entering this college, how successful have you felt at the following items? Mark C for Completely Successful, S for Somewhat Successful, and U for Unsuccessful. (Mark one for each item)
 - a) Understanding what your professors expect of you academically
 - b) Developing effective study skills
 - c) Adjusting to the academic demands of college
 - d) Managing your time effectively
 - e) Getting to know faculty
 - f) Developing close friendships with other students
 - g) Utilizing campus services available to students

2. Did you have a leadership role in organized, extracurricular activities this year?
 - a) Yes, I was a leader in more than one organization
 - b) Yes, I was a leader in one organization

- c) No, I was not a leader but was active in an organization(s)
 - d) No, I was not a leader and was not active in an organization(s)
3. How would you describe your involvement during this year in activities (organized or informal) that helped people (outside your family)?
- a) Highly involved (more than 10 hours/week)
 - b) Moderately involved (5-10 hours/week)
 - c) Slightly involved (1-5 hours/week)
 - d) Not involved
4. Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself. Mark H for Highest 10%, AA for Above Average, A for Average, B for Below Average, and L for Lowest 10%. (Mark one for each item)
- a) Academic ability
 - b) Compassion
 - c) Cooperativeness
 - d) Creativity
 - e) Drive to achieve
 - f) Emotional health
 - g) Forgiveness
 - h) Generosity
 - i) Leadership ability
 - j) Public speaking ability
 - k) Religiousness
 - l) Risk-taking
 - m) Self-confidence (intellectual)
 - n) Self-confidence (social)
 - o) Spirituality
 - p) Understanding others
 - q) Ability to work as a part of a team
 - r) Critical thinking skills
 - s) Analytical/problem solving skills
5. Indicate the importance to you personally of each of the following. Mark E for Essential, V for Very Important, S for Somewhat Important, and N for Not Important. (Mark one for each item)
- a) Becoming accomplished in one of the performing arts (acting, dancing, etc.)
 - b) Becoming an authority in my field
 - c) Obtaining recognition from my colleagues for contributions to my special field
 - d) Influencing the political structure
 - e) Influencing social values
 - f) Raising a family
 - g) Having administrative responsibility for the work of others
 - h) Being very well off financially
 - i) Helping others who are in difficulty
 - j) Making a theoretical contribution to science
 - k) Writing original works (poems, novels, short stories, etc.)
 - l) Creating artistic work (painting, sculpture, decorating, etc.)
 - m) Becoming successful in a business of my own
 - n) Becoming involved in programs to clean up the environment

- o) Developing a meaningful philosophy of life
 - p) Participating in a community action program
 - q) Helping to promote racial understanding
 - r) Keeping up to date with political affairs
 - s) Becoming a community leader
 - t) Integrating spirituality into my life
 - u) Working to find a cure for a health problem
 - v) Improving my understanding of other countries and cultures
 - w) Reading the newspaper to be informed of national and global issues
 - x) Improving the health of minority communities
6. Please indicate the extent to which you agree or disagree with the following statements. Mark SA for Strongly Agree, A for Agree, D for Disagree, and SD for Strongly Disagree. (Mark one for each item)
- a) I have been singled out because of my race/ethnicity, gender, or sexual orientation
 - b) I see myself as part of the campus community
 - c) I have heard faculty express stereotypes about racial/ethnic groups in class
 - d) The admission/recruitment materials I received accurately portrayed the campus
 - e) I feel I am a member of this college
 - f) Faculty here are interested in students' personal problems
 - g) There is a lot of racial tension on this campus
 - h) Most students here are treated like "numbers in a book"
 - i) There is strong competition among most of the students for high grades
 - j) Faculty here are interested in students' academic problems
 - k) I feel I have a sense of belonging to this college
 - l) Faculty feel that most students here are well-prepared academically
7. To what extent have you experienced the following with students from a racial/ethnic group other than your own? Mark V for Very Often, O for Often, S for Sometimes, R for rarely, and N for Never. (Mark one for each item)
- a) Dined or shared a meal
 - b) Had meaningful and honest discussions about race/ethnic relations outside of class
 - c) Had guarded, cautious interactions
 - d) Shared personal feelings and problems
 - e) Had tense, somewhat hostile interactions
 - f) Had intellectual discussions outside of class
 - g) Felt insulted or threatened because of race/ethnicity
 - h) Studied or prepared for class
 - i) Socialized or partied
 - j) Attended events sponsored by other racial/ethnic groups
8. Compared with when you entered this college, how would you describe the following? Mark MS for Much Stronger, S for Stronger, N for No Change, W for Weaker, and MW for Much Weaker. (Mark one for each item)
- a) General knowledge
 - b) Knowledge of a particular field or discipline
 - c) Knowledge of people from different races/cultures
 - d) Religious beliefs and convictions
 - e) Ability to get along with others
 - f) Understanding of the problems facing your community

- g) Understanding of national issues
 - h) Understanding of global issues
 - i) Ability to make your own decisions
 - j) Ability to conduct research
9. Since entering this college, how much time have you spent during a typical week doing the following activities? Please mark according to the hours spent doing these activities, ranging from none, less than 1 hr., 1-2, 3-5, 6-10, 11-15, 16-20, 21-30, or over 30 hours.
- a) Attending classes/labs
 - b) Studying/homework
 - c) Socializing with friends
 - d) Exercising or sports
 - e) Partying
 - f) Working (for pay) on campus
 - g) Working (for pay) off campus
 - h) Student clubs and groups
 - i) Watching TV
 - j) Household/childcare duties
 - k) Reading for pleasure
 - l) Commuting
 - m) Playing video/computer games
 - n) Prayer/meditation
 - o) Surfing the internet
 - p) Communication via e-mail, Instant Messenger, etc.
10. Please rate your satisfaction with this institution on each of the aspects of campus life listed below. Mark VS for Very Satisfied, S for Satisfied, N for Neutral, D for Dissatisfied, and VD for Very Dissatisfied. (Mark one for each item)
- a) Opportunities for community service
 - b) Relevance of coursework to everyday life
 - c) Overall sense of community among students
11. The greatest indicator of success, as you see it, is:
- a) A high paying job
 - b) The respect of your peers
 - c) Service to the community
 - d) Awards and honors
 - e) None of these
12. A good government should aim chiefly at...
- a) More aid for the poor, sick, and old.
 - b) The development of manufacturing and trade.
 - c) Introducing the highest ethical principles into its policies.
 - d) Establishing a position of power and respect among nations.
13. Someone who works all week would best spend the weekend...
- a) Keeping up on the latest in scientific advances.
 - b) Trying to win at golf or other sport.

- c) Going to a classical music concert or art museum.
 - d) Reading religious or philosophical books.
14. If I could influence the educational policies of the public schools of some city, I would try to...
- a) Promote the study of and participation in music and the fine arts.
 - b) Encourage the study of social problems.
 - c) Provide additional laboratory facilities.
 - d) Increase the practical value of courses.
 - e) Encourage the building of moral character in students
15. I would prefer a friend who...
- a) Is practical, efficient, and hard working.
 - b) Is seriously interested in thinking out his or her philosophy of life.
 - c) Has leadership and organizational skills.
 - d) Shows artistic sensitivity.

OUTCOME ASSESSMENT THROUGH SURVEYS AT MSOE – BEYOND GRADUATION

The MSOE Committee on Academic Assessment has developed three instruments to survey graduates at one (1) and five (5) years after graduation; they include the Bachelor’s Degree Alumni Survey; the Master’s Degree Alumni Survey, and Employer Evaluation of MSOE Graduates.

The Bachelor’s and Master’s Degree Surveys are sent to approximately seven hundred (700) graduates on an annual basis and have elicited a 20% - 25% response rate.

The Employer Evaluation of MSOE Graduates is also administered on an annual basis and has better than a 25% response rate.

In all Assessment Surveys subjective, written comments are encouraged in addition to the survey responses.

Through these survey instruments we are able to establish benchmarks for measuring the impact of Servant-Leadership principles as communicated to both undergraduate and graduate students well-beyond the four or six years of their academic careers.

The MSOE One and Five Year Bachelor’s Degree Survey of MSOE Graduates Questions Relevant to Servant-Leadership

Self-Rated Questions

1. Since entering MSOE, how successful have you felt at the following items? Mark C for Completely Successful, S for Somewhat Successful, and U for Unsuccessful. (Mark one for each item)
 - a) Understanding what your professors expect of you academically
 - b) Developing effective study skills
 - c) Adjusting to the academic demands of college
 - d) Managing your time effectively
 - e) Getting to know faculty
 - f) Developing close friendships with other students
 - g) Utilizing campus services available to students

2. Did you have a leadership role in organized, extracurricular activities during your time at MSOE?
 - a) Yes, I was a leader in more than one organization
 - b) Yes, I was a leader in one organization
 - c) No, I was not a leader but was active in an organization(s)
 - d) No, I was not a leader and was not active in an organization(s)

3. How would you describe your involvement during your time at MSOE in activities (organized or informal) that helped people (outside your family)?
 - a) Highly involved (more than 10 hours/week)
 - b) Moderately involved (6-10 hours/week)
 - c) Slightly involved (1-5 hours/week)
 - d) Not involved

4. Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself. Mark H for Highest 10%, AA for Above Average, A for Average, B for Below Average, and L for Lowest 10%. (Mark one for each item)
 - a) Academic ability
 - b) Compassion
 - c) Cooperativeness
 - d) Creativity
 - e) Drive to achieve
 - f) Emotional health
 - g) Forgiveness
 - h) Generosity
 - i) Leadership ability
 - j) Public speaking ability
 - k) Religiousness
 - l) Risk-taking
 - m) Self-confidence (intellectual)
 - n) Self-confidence (social)
 - o) Spirituality
 - p) Understanding others
 - q) Ability to work as a part of a team
 - r) Critical thinking skills
 - s) Analytical/problem solving skills

5. Indicate the importance to you personally of each of the following. Mark E for Essential, V for Very Important, S for Somewhat Important, and N for Not Important. (Mark one for each item)
 - a) Becoming accomplished in one of the performing arts (acting, dancing, etc.)
 - b) Becoming an authority in my field
 - c) Obtaining recognition from my colleagues for contributions to my special field
 - d) Influencing the political structure
 - e) Influencing social values
 - f) Raising a family
 - g) Having administrative responsibility for the work of others
 - h) Being very well off financially
 - i) Helping others who are in difficulty
 - j) Making a theoretical contribution to science
 - k) Writing original works (poems, novels, short stories, etc.)

- l) Creating artistic work (painting, sculpture, decorating, etc.)
 - m) Becoming successful in a business of my own
 - n) Becoming involved in programs to clean up the environment
 - o) Developing a meaningful philosophy of life
 - p) Participating in a community action program
 - q) Helping to promote racial understanding
 - r) Keeping up to date with political affairs
 - s) Becoming a community leader
 - t) Integrating spirituality into my life
 - u) Working to find a cure for a health problem
 - v) Improving my understanding of other countries and cultures
 - w) Reading the newspaper to be informed of national and global issues
 - x) Improving the health of minority communities
6. Please indicate the extent to which you agree or disagree with the following statements. Mark SA for Strongly Agree, A for Agree, D for Disagree, and SD for Strongly Disagree. (Mark one for each item)
- a) I have been singled out because of my race/ethnicity, gender, or sexual orientation
 - b) I see myself as part of the campus community
 - c) I have heard faculty express stereotypes about racial/ethnic groups in class
 - d) The admission/recruitment materials I received accurately portrayed the campus
 - e) I feel I am a member of this college
 - f) Faculty here are interested in students' personal problems
 - g) There is a lot of racial tension on this campus
 - h) Most students here are treated like "numbers in a book"
 - i) There is strong competition among most of the students for high grades
 - j) Faculty here are interested in students' academic problems
 - k) I feel I have a sense of belonging to this college
 - l) Faculty feel that most students here are well-prepared academically
7. To what extent have you experienced the following with students from a racial/ethnic group other than your own? Mark V for Very Often, O for Often, S for Sometimes, R for rarely, and N for Never. (Mark one for each item)
- a) Dined or shared a meal
 - b) Had meaningful and honest discussions about race/ethnic relations outside of class
 - c) Had guarded, cautious interactions
 - d) Shared personal feelings and problems
 - e) Had tense, somewhat hostile interactions
 - f) Had intellectual discussions outside of class
 - g) Felt insulted or threatened because of race/ethnicity
 - h) Studied or prepared for class
 - i) Socialized or partied
 - j) Attended events sponsored by other racial/ethnic groups
8. Compared with when you entered MSOE, how would you describe the following? Mark MS for Much Stronger, S for Stronger, N for No Change, W for Weaker, and MW for Much Weaker. (Mark one for each item)
- a) General knowledge
 - b) Knowledge of a particular field or discipline
 - c) Knowledge of people from different races/cultures

- d) Religious beliefs and convictions
 - e) Ability to get along with others
 - f) Understanding of the problems facing your community
 - g) Understanding of national issues
 - h) Understanding of global issues
 - i) Ability to make your own decisions
 - j) Ability to conduct research
9. Since entering this college, how much time have you spent during a typical week doing the following activities? Please mark according to the hours spent doing these activities, ranging from none, less than 1 hr., 1-2, 3-5, 6-10, 11-15, 16-20, 21-30, or over 30 hours.
- a) Attending classes/labs
 - b) Studying/homework
 - c) Socializing with friends
 - d) Exercising or sports
 - e) Partying
 - f) Working (for pay) on campus
 - g) Working (for pay) off campus
 - h) Student clubs and groups
 - i) Watching TV
 - j) Household/childcare duties
 - k) Reading for pleasure
 - l) Commuting
 - m) Playing video/computer games
 - n) Prayer/meditation
 - o) Surfing the internet
 - p) Communication via e-mail, Instant Messenger, etc.
10. Please rate your satisfaction with this institution on each of the aspects of campus life listed below. Mark VS for Very Satisfied, S for Satisfied, N for Neutral, D for Dissatisfied, and VD for Very Dissatisfied. (Mark one for each item)
- a) Opportunities for community service
 - b) Relevance of coursework to everyday life
 - c) Overall sense of community among students
11. The greatest indicator of success, as you see it, is:
- a) A high paying job
 - b) The respect of your peers
 - c) Service to the community
 - d) Awards and honors
 - e) None of these
12. A good government should aim chiefly at...
- a) More aid for the poor, sick, and old.
 - b) The development of manufacturing and trade.
 - c) Introducing the highest ethical principles into its policies.
 - d) Establishing a position of power and respect among nations.

13. Someone who works all week would best spend the weekend...
 - a) Keeping up on the latest in scientific advances.
 - b) Trying to win at golf or other sport.
 - c) Going to a classical music concert or art museum.
 - d) Reading religious or philosophical books.

14. If I could influence the educational policies of the public schools of some city, I would try to...
 - a) Promote the study of and participation in music and the fine arts.
 - b) Encourage the study of social problems.
 - c) Provide additional laboratory facilities.
 - d) Increase the practical value of courses.
 - e) Encourage the building of moral character in students

15. I would prefer a friend who...
 - a) Is practical, efficient, and hard working.
 - b) Is seriously interested in thinking out his or her philosophy of life.
 - c) Has leadership and organizational skills.
 - d) Shows artistic sensitivity.

16. If I had a lot of extra money, I would prefer to...
 - a) Use it to promote industrial and commercial growth.
 - b) Use to help advance people's spiritual needs.
 - c) Contribute to the development of scientific research.
 - d) Give it to family- and child-oriented charities.
 - e) None of these

The MSOE One and Five Year Bachelor's Degree Employer Survey of MSOE Graduates Questions Relevant to Servant-Leadership

Observer-Rated Questions

1. The MSOE graduate demonstrates that he/she can apply the up-to-date theory necessary to perform his/her duties and advance professionally in your company. [control question]
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

2. The MSOE graduate has demonstrated that he/she has the ability to remain current in his/her professional career.
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

3. The MSOE graduate demonstrates that he/she was well prepared for immediate productivity in his/her chosen profession.
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

4. The MSOE graduate demonstrates that the non-technical education that he/she received at MSOE prepared him/her as a well-rounded professional.
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

5. The MSOE graduate demonstrates that his/her education prepared him/her for leadership and responsibility in his/her chosen profession.
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

6. The MSOE graduate has a foundation in culture and cultural values.
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

7. The MSOE graduate has a foundation in ethics and integrity.
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

8. The MSOE graduate has a foundation in social responsibility.
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

9. The MSOE graduate was taught in a climate that fostered independent thinking.
 - a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

10. The MSOE graduate demonstrates good communication skills expected of a college graduate.
- a) Strongly agree
 - b) Agree
 - c) Disagree
 - d) Strongly disagree

ESTABLISHED BENCHMARKS – FRESHMAN BENCHMARKS

The Freshman Benchmarks are based upon the current Freshman Survey. The benchmarks will be the same for the fall and spring surveys as we are making binary comparison of progress in first year development.

The percentages represent the most recent administration of the Freshman Survey. The four Servant-Leadership categories upon which our benchmark questions are based are keyed as follows:

- Character: integrity, humility, the “servant’s heart” **C¹**
- Community: empathy, compassion, awareness **C²**
- Goals: conceptualization, foresight, vision **G**
- Process: stewardship, team-building, role modeling **P**

We have identified questions at every survey level that are key indicators of Servant-Leadership (proven and potential). These questions will bear special weight in utilizing the benchmarks for developing strategy, programs, materials, and future benchmarking instruments. Each of these key indicator questions is marked with  in the benchmark charts.

How would you describe your involvement during high school in school-related extracurricular activities (including athletics)?

Highly involved (more than 10 hours/week)	C²
Moderately involved (6-10 hours/week)	C²
Slightly involved (1-5 hours/week)	C²
Not involved	C²

 Traits that describe student to a “great extent.”

Searching for meaning/purpose in life	C¹ G
Engaging in self-reflection	C¹ G
Appreciating the interconnectedness of everything	C¹ C² G P

Believing in the sacredness of life	C¹ C² G P
Being honest in my relationships with others	C¹ C² G

For the activities below, indicate which ones you did during the past year.

Attended a religious service	C¹
Participated in organized demonstrations	C²
Tutored another student 	C¹ P
Studied with other students	P
Performed volunteer work 	C²
Socialized with someone of another racial/ethnic group	C²
Performed community service as part of a class	P

In deciding to go to college, how important was each of the following reasons?

My parents wanted me to go	G P
I could not find a job	G P
Wanted to get away from home	G P
To be able to get a better job	G P
To gain a general education and appreciation of ideas	G P
There was nothing better to do	G P
To make me a more cultured person	G P
To be able to make more money	G P
To learn more about things that interest me	G P
To prepare myself for graduate or professional school	G P
A mentor/role model encouraged me to go	G P
To get training for a specific career	G P

Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself.

Academic ability	P
Artistic ability	P
Cooperativeness 	C²
Creativity	P
Drive to achieve	G P
Emotional health 	P
Leadership ability 	C² P
Persistence 	C¹ P
Religiousness	C¹
Risk-taking 	G P
Self-confidence (intellectual)	G P
Self-understanding 	C¹ G P
Spirituality 	C¹
Understanding of others 	C¹ C²

Please indicate the importance to you personally of each of the following.

Becoming accomplished in one of the performing arts (acting, dancing, etc.)	G
Becoming an authority in my field	G
Obtaining recognition from my colleagues for contributions to my special field	G
Influencing the political structure	C² G
Influencing social values 	C² G
Raising a family	C¹ C² G
Having administrative responsibility for the work of others	C¹ C² G P
Being very well off financially	G P

Helping others who are in difficulty 🔑	C¹ C²
Making a theoretical contribution to science	G P
Writing original works (poems, novels, short stories, etc.)	C² G
Creating artistic work (painting, sculpture, decorating, etc.)	G
Becoming successful in a business of my own	G
Becoming involved in programs to clean up the environment	C² G
Developing a meaningful philosophy of life 🌀	C¹ C² G P
Participating in a community action program 🌀	C² G
Helping to promote racial understanding	C² G
Keeping up to date with political affairs	C²
Becoming a community leader 🌀	C² G P
Integrating spirituality into my life 🌀	C¹
Improving my understanding of the countries and cultures	C²

What is your best guess as to the chances you will do the following.

Seek personal counseling	G P
Communicate regularly with your professors	C² G P
Socialize with someone of another racial/ethnic group	C¹ C² G P
Participate in student clubs/groups	C¹ C² P
Strengthen your religious beliefs/convictions	C¹ G
Participate in a study abroad program	C² G

ESTABLISHED BENCHMARKS – GRADUATE BENCHMARK

The MSOE Graduates Benchmarks are based upon the current Alumni and Employer Surveys. One and five year surveys are conducted on a self-rated protocol (Alumni Survey) and an observer-rated (Employer Survey) protocol.

The percentages represent the most recent administration of the surveys. The four Servant-Leadership categories upon which our benchmark questions are based are keyed as follows:

Character: integrity, humility, the “servant’s heart”	C¹
Community: empathy, compassion, awareness	C²
Goals: conceptualization, foresight, vision	G
Process: stewardship, team-building, role modeling	P

One Year Benchmarks – Bachelor Degree Alumni Survey

Self-rated

Institutional Benchmarks

Your education instilled a desire to remain current in your professional career.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P

The technical experiences that you received in your curriculum prepared you for immediate productivity in your chosen profession.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

The non-technical education that you received at MSOE prepared you as a well-rounded professional.

Strongly agree	G P
Agree	G P

Disagree	G P
Strongly disagree	G P
Neutral	G

 Your education prepared you for leadership and responsibility in your chosen profession.

Strongly agree	C ² G P
Agree	C ² G P
Disagree	C ² G P
Strongly disagree	C ² G P
Neutral	C ² G P

 Your education gave you a foundation in culture and cultural values.

Strongly agree	C ² G
Agree	C ² G
Disagree	C ² G
Strongly disagree	C ² G
Neutral	C ² G

 Your education gave you a foundation in ethics and integrity.

Strongly agree	C ¹ C ² G
Agree	C ¹ C ² G
Disagree	C ¹ C ² G
Strongly disagree	C ¹ C ² G
Neutral	C ¹ C ² G

 Your education gave you a foundation in social responsibility.

Strongly agree	C ¹ C ² P
Agree	C ¹ C ² P
Disagree	C ¹ C ² P
Strongly disagree	C ¹ C ² P
Neutral	C ¹ C ² P

🔗 Your education provided a climate that fostered independent thinking.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

Your education enhanced your communication skills.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

🔗 I am currently an active member in a civic organization.

Yes	C² P
No	C² P

Five Year Benchmarks – Bachelor’s Degree Survey

Self-rated (Institutional Benchmarks)

Your education instilled a desire to remain current in your professional career.

Strongly disagree	G P
Neutral	G P

The technical experiences that you received in your curriculum prepared you for immediate productivity in your chosen profession.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

☞ The non-technical education that you received at MSOE prepared you as a well-rounded professional.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

☞ Your education prepared you for leadership and responsibility in your chosen profession.

Strongly agree	C² G P
Agree	C² G P
Disagree	C² G P
Strongly disagree	C² G P
Neutral	C² G P

☞ Your education gave you a foundation in culture and cultural values.

Strongly agree	C² G
Agree	C² G
Disagree	C² G
Strongly disagree	C² G
Neutral	C² G

☞ Your education gave you a foundation in ethics and integrity.

Strongly agree	C¹ C² G
Agree	C¹ C² G
Disagree	C¹ C² G
Strongly disagree	C¹ C² G
Neutral	C¹ C² G

☞ Your education gave you a foundation in social responsibility.

Strongly agree	C¹ C² P
Agree	C¹ C² P

Disagree	C¹ C² P
Strongly disagree	C¹ C² P
Neutral	C¹ C² P

 Your education provided a climate that fostered independent thinking.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

Your education enhanced your communication skills.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

 I am currently an active member in a civic organization.

Yes	C² P
No	C² P

ESTABLISHED BENCHMARKS – EMPLOYER BENCHMARK

2004-2005 Employer Evaluation of MSOE Graduates⁵

Observer-rated

Institutional Benchmarks

The MSOE graduate demonstrates that he/she can apply the up-to-date theory necessary to perform his/her duties and advance professionally in your company. [control question]

Strongly agree	P
Agree	P
Disagree	P
Strongly disagree	P
Neutral	P

The MSOE graduate has demonstrated that he/she has the ability to remain current in his/her professional career.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

The MSOE graduate demonstrates that he/she was well prepared for immediate productivity in his/her chosen profession.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

⁵ Represents responses from DeMarco & Associates, Bucknell University, Ulteig Engineers, Kohler Company, Milwaukee Electric Tool Corporation, Michaels Engineering, nVisia, LLC, Superior Die Set Corporation, Adobe Systems Inc., JF Ahern, Snap-on-Tools, AVEC Enterprises, EMCS Inc., Westcoats Nielsen General Contractors, The Charles Machine Works Inc., Affiliated Steam Equipment Co., John Deere, RJR Engineering P.C., Siemens Westinghouse Power Corporation, MPC Inc., Leichti & Associates Inc., Environmental Structures Inc., the United States Navy, Johnson Dugrsey, Brady Corporation, Kimberly-Clark Corporation, Putnam Collins Scott Associates Inc., J & L Fiber, Weis Builders Inc., The Austin Company, Plexus Technology Group, Modine Manufacturing, Enercon Industries, R. H. George and Associates.

🔑 The MSOE graduate demonstrates that the non-technical education that he/she received at MSOE prepared him/her as a well-rounded professional.

Strongly agree	C ² G P
Agree	C ² G P
Disagree	C ² G P
Strongly disagree	C ² G P
Neutral	C ² G P

🔑 The MSOE graduate demonstrates that his/her education prepared him/her for leadership and responsibility in his/her chosen profession.

Strongly agree	C ² G P
Agree	C ² G P
Disagree	C ² G P
Strongly disagree	C ² G P
Neutral	C ² G P

🔑 The MSOE graduate has a foundation in culture and cultural values.

Strongly agree	C ² G P
Agree	C ² G P
Disagree	C ² G P
Strongly disagree	C ² G P
Neutral	C ² G P

🔑 The MSOE graduate has a foundation in ethics and integrity.

Strongly agree	C ¹ C ² G P
Agree	C ¹ C ² G P
Disagree	C ¹ C ² G P
Strongly disagree	C ¹ C ² G P
Neutral	C ¹ C ² G P

🔑 The MSOE graduate has a foundation in social responsibility.

Strongly agree	C ¹ C ² G P
----------------	-----------------------------------

Agree	C ¹ C ² G P
Disagree	C ¹ C ² G P
Strongly disagree	C ¹ C ² G P
Neutral	C ¹ C ² G P

 The MSOE graduate was taught in a climate that fostered independent thinking.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

The MSOE graduate demonstrates good communication skills expected of a college graduate.

Strongly agree	G P
Agree	G P
Disagree	G P
Strongly disagree	G P
Neutral	G P

UTILIZING THE BENCHMARKS FOR ENHANCING SERVANT-LEADERSHIP AT MSOE

Servant-Leadership is consummately pragmatic. While academic analysis provides reputable criteria for measuring progress, a conscientious Servant-Leader will always ask: “So, what do we do with this information to move forward in service, positive change, and the creative and constructive formation of those whom we serve?”

Our benchmarks are the reference points to establish trajectories of growth. The bi-annual, annual, or quintannual gathering of information will provide objective, quantifiable data to compare with these initial benchmarks. By this measure our successes and challenges can be qualified and our programs and strategies adjusted to make optimum use of our resources and to create the most responsive approach to positive change.

For example, we have established at only 10.4% of our entering freshmen expect to be involved in community service while attending college. If, by the spring quarter of their first year, we can demonstrate that a significant percentage have actually engaged in community service then we can safely hypothesize that the MSOE campus environment has increased their awareness, commitment, and opportunity to serve others. If we can exponentially increased the expectation and involvement of our students in “others’-centered” outreach by their senior year (measured in the Senior Exit Survey), then we are surely on the right track.

Perhaps the most important data for the health of the university, however, is the benchmark estimations of our faculty, staff, and administration. As noted earlier in this report, the current survey was taken among working professionals in our Master's Programs. The foundation of Servant-Leadership is role modeling. The principles of Servant-Leadership are best communicated by a faculty, staff, and administration that exemplify humility, integrity, openness, compassion, creativity, and service on a day-to-day basis. The Master's Alumni Survey is truly an instrument for measuring positive role modeling. We should strive to eliminate "neutral" responses (as "neutral" is rarely a positive critique in measurements of leadership) and quantitatively increase the "strongly agree" estimations of our faculty, especially in our key indicators of Servant-Leadership.

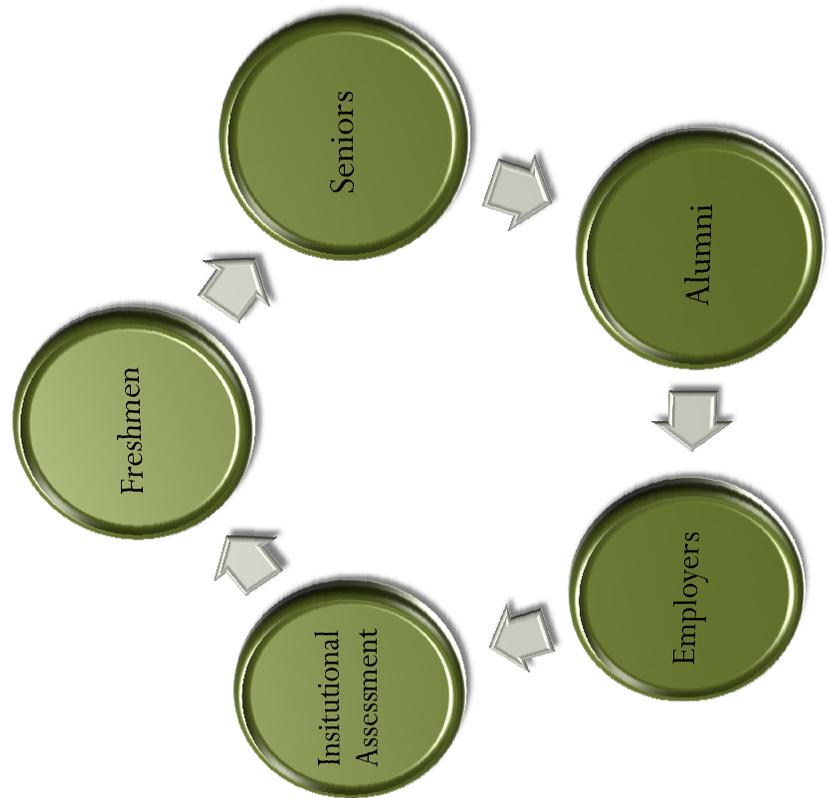
For the greater good of our community – the ultimate goal of the Office of Servant-Leadership at MSOE – the Employer Survey of our graduates should be one of our principal foci. It is our goal to broaden our gathering of information on our graduates to include both peer and employee surveys so that we have a 360° analysis of the impact made by MSOE servant-leaders. The 44.62% "strongly agree" benchmark for "The MSOE graduate has a foundation in ethics and integrity" should spur us to creative thinking and redouble our efforts to instill the highest standards of character in our students. The 35.38% "strongly agree" benchmark for "The MSOE graduate has a foundation in social responsibility" coupled with the 78.12% negative response benchmark for "I am currently involved in a civic organization" among our five-year graduates should drive us to tirelessly endeavor to redirect the priorities of those whom we serve.

These brief examples indicate the powerful potential of utilizing these benchmarking survey instruments to their fullest advantage. The Office of Servant-Leadership will continue to analyze and critique the available and incoming data with our minds always on the greater goal of the higher calling to serve and to lead.

Continuing with chart.

SECTION II - VISUALIZING THE BENCHMARKS

CHARTS



A BRIEF EXPLANATION OF HOW BENCHMARKS WERE ESTABLISHED

To establish Benchmarks we utilized the survey instrument results starting in 1994 (eleven years prior to the establishment of the Chair) factored averages. From the averages we projected a standard average annual growth ratio in the “very high” range.” The algorithm used for calculation with the relevant definitions and variables appears on Page XYZ of this Section.

For consistency (and the concomitant accuracy of analysis) the **C1 C2 G P** classification of characteristics inherent in Servant-Leadership is used in all survey evaluation. For ease of reference the classifications are shown to the left.

One of the chief challenges we faced as we began analyzing MSOE data in 2005 was the realization that students’ self-evaluation in these four categories declined during their years at the university. A comparison of Freshmen surveys with alumni questionnaires in the period stated above showed a remarkable drop in key indicators of integrity, humility, the ‘servant’s heart,’ empathy, compassion, awareness, conceptualization, foresight, vision, stewardship, team-building, and role modeling following four years at MSOE.

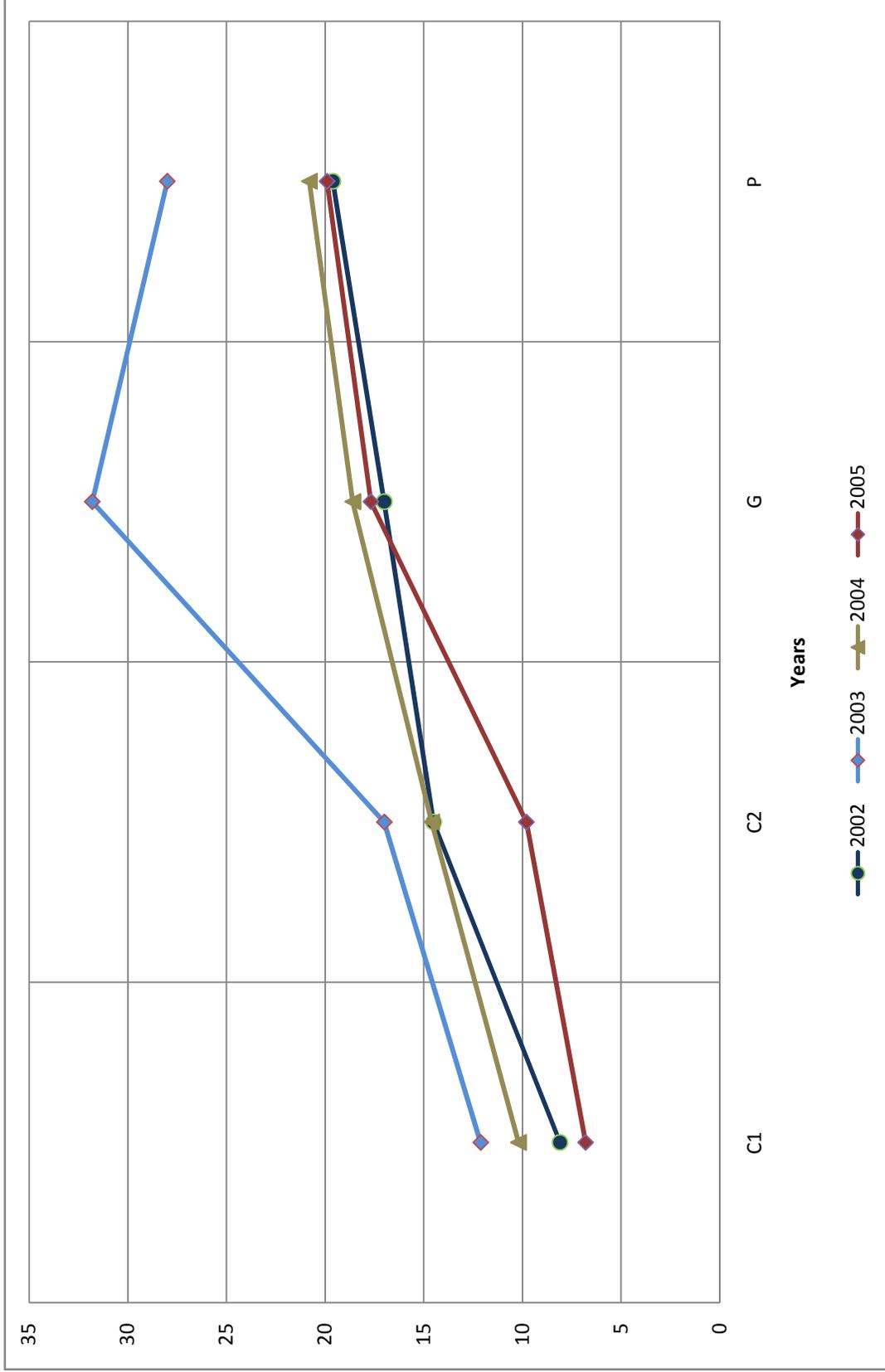
Our task, therefore, was to reverse the trend.

We begin with the Graduate Assessments as they provide the most valuable tool for analyzing the character of our students in the “real world.” The One Year Assessments represent students that have left the relatively rarified world of the university and have entered the “rest of their lives.”

Please note that margins of error for survey calculations are provided as necessary for full transparency.

C1	<i>Character: integrity, humility, the ‘servant’s heart</i>
C2	<i>Community: empathy, compassion, awareness</i>
G	<i>Goals: conceptualization, foresight, vision</i>
P	<i>Process: stewardship, team-building, role modeling</i>

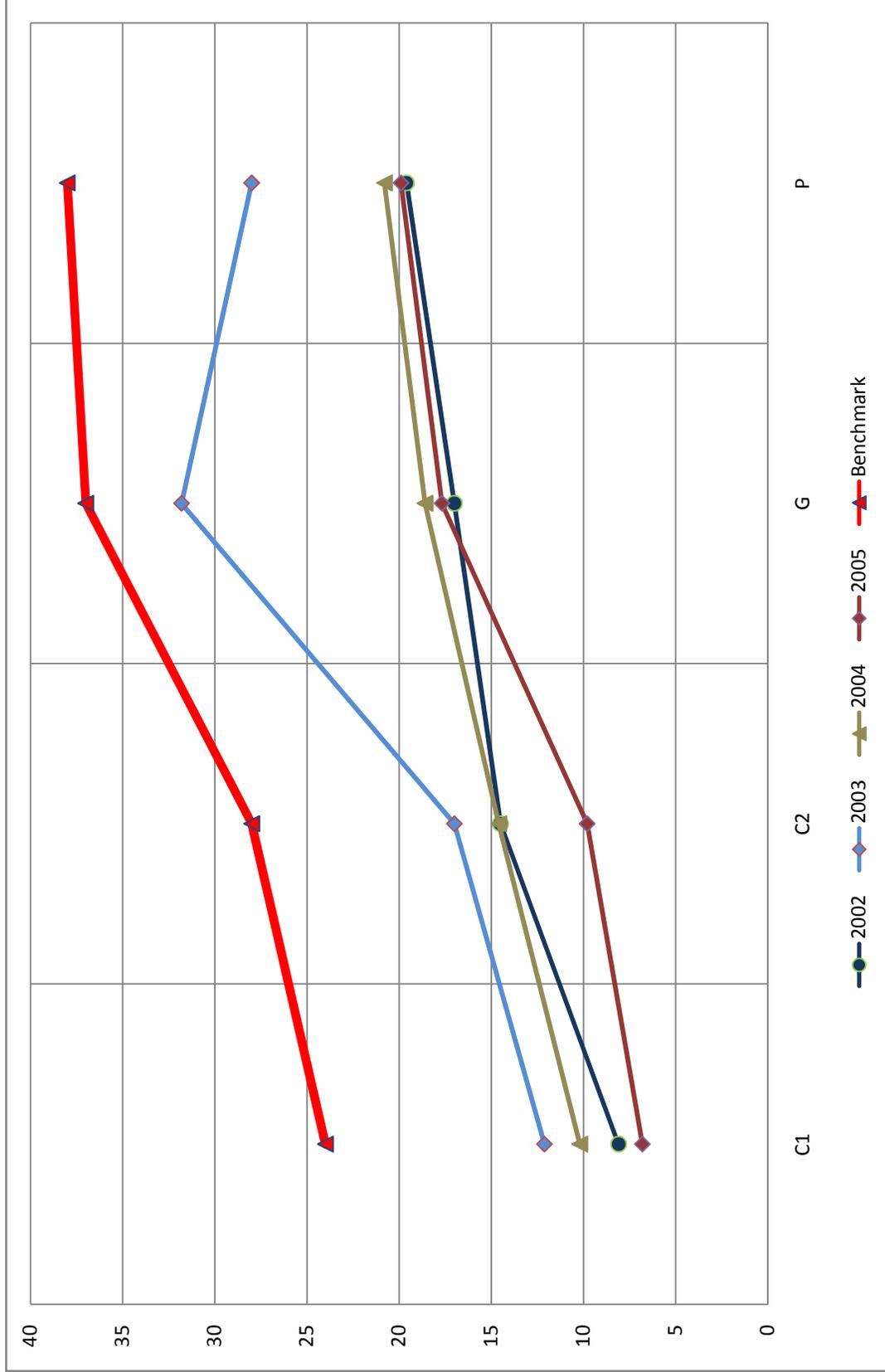
FALL, 2005 - SETTING BENCHMARKS - FOUR YEARS PRECEDING CHAIR



- C¹** Character: integrity, humility, the 'servant's heart
- C²** Community: empathy, compassion, awareness
- G** Goals: conceptualization, foresight, vision
- P** Process: stewardship, team-building, role modeling

Unless otherwise noted the "One Year After Graduation" statistics are alumni self-evaluations.

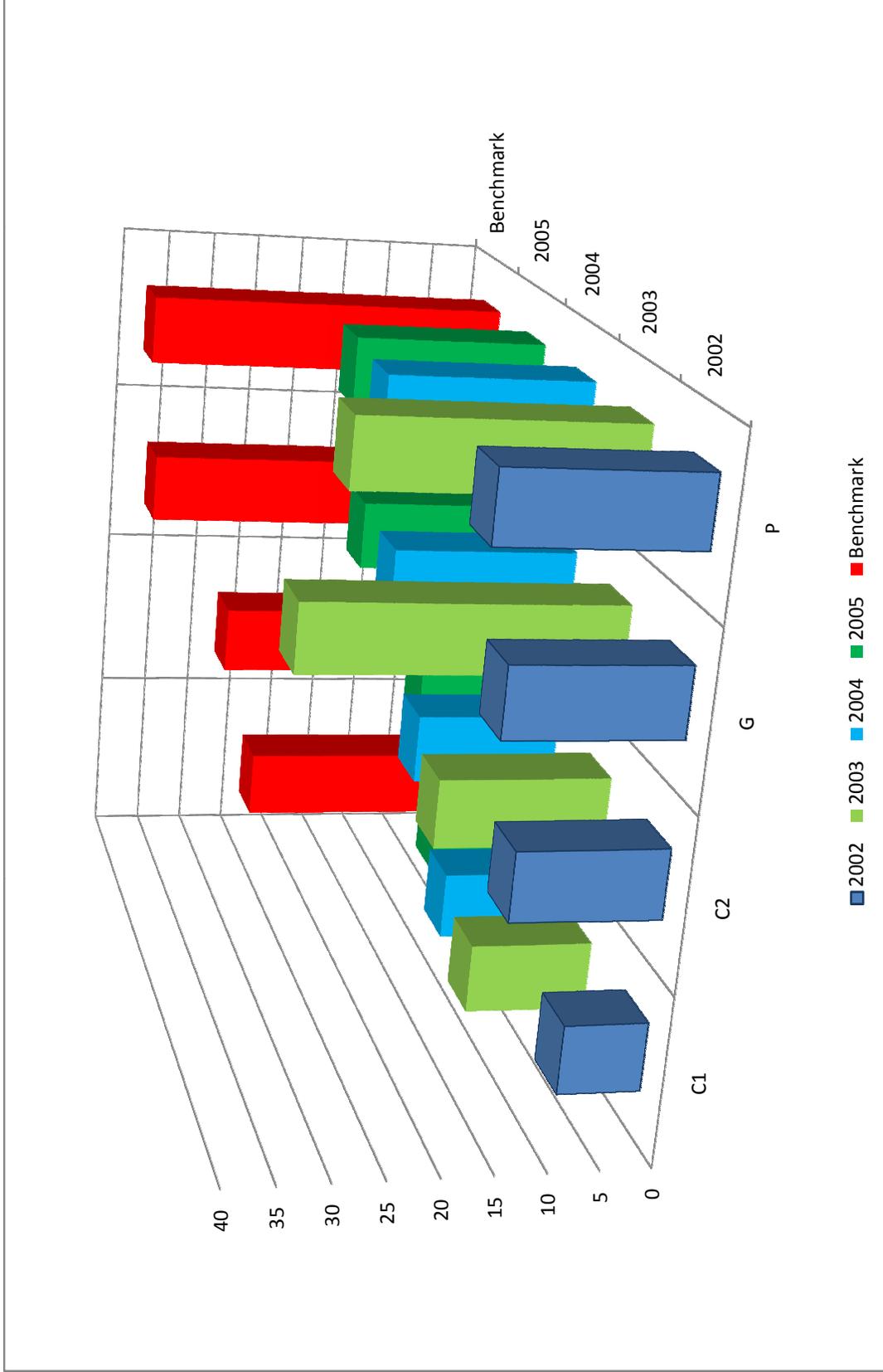
FALL, 2005 - SETTING BENCHMARKS, ONE YEAR AFTER GRADUATION



Benchmarks were set using standard projections of improvement using averages from years 2002-2005 (four years prior to first year of the Chair's placement). See Page *XX* of this Section.

- C¹** Character: integrity, humility, the 'servant's heart'
- C²** Community: empathy, compassion, awareness
- G** Goals: conceptualization, foresight, vision
- P** Process: stewardship, team-building, role modeling

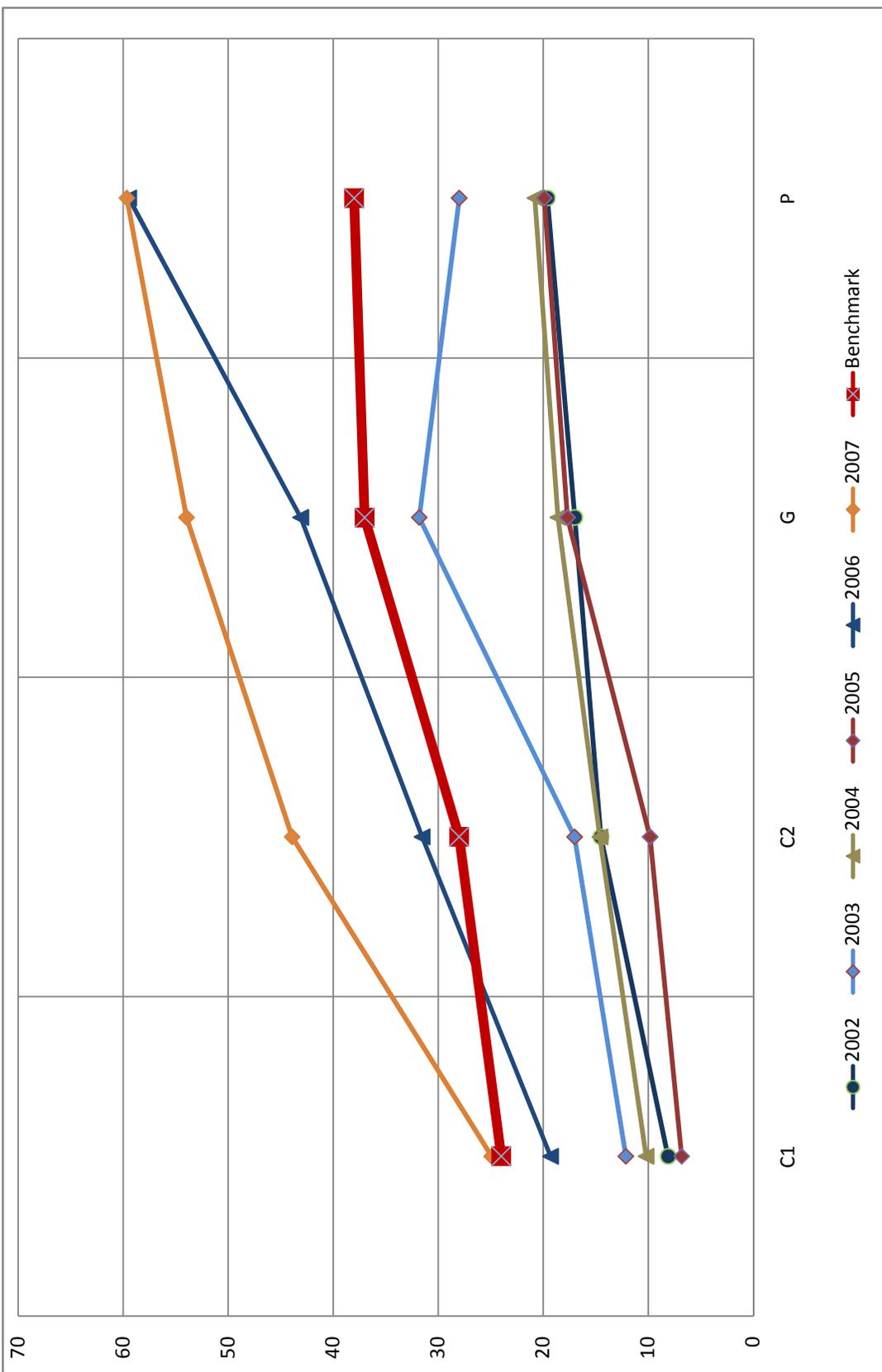
FALL, 2005 - SETTING BENCHMARKS, ONE YEAR AFTER GRADUATION



Note: I find it easier to understand patterns in three dimensions.

- C¹** Character: integrity, humility, the 'servant's heart
- C²** Community: empathy, compassion, awareness
- G** Goals: conceptualization, foresight, vision
- P** Process: stewardship, team-building, role modeling

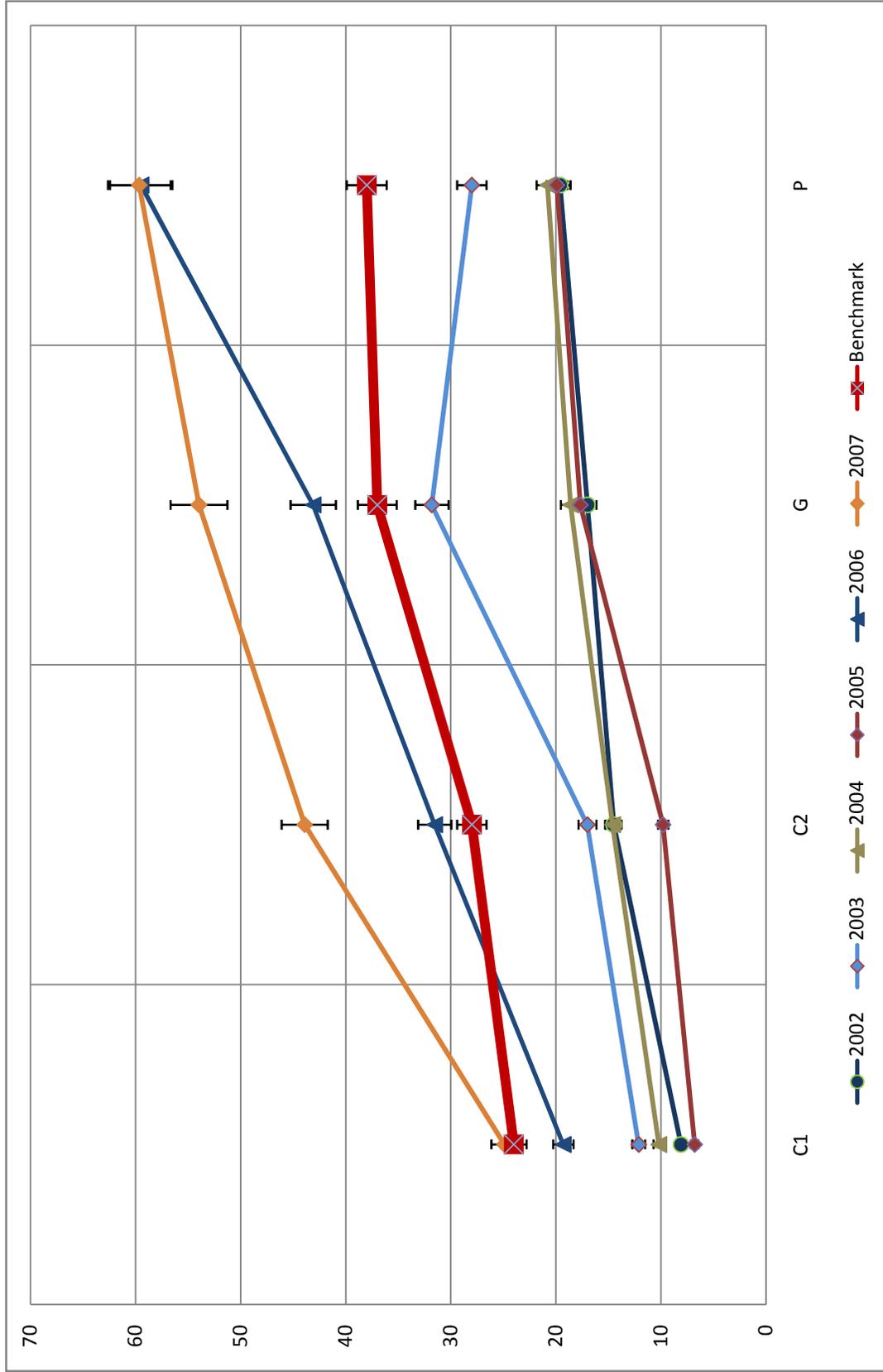
SELF-EVALUATION OF MSOE ALUMNI ONE YEAR AFTER GRADUATION



- c¹** Character: integrity, humility, the 'servant's heart'
- c²** Community: empathy, compassion, awareness
- G** Goals: conceptualization, foresight, vision
- P** Process: stewardship, team-building, role modeling

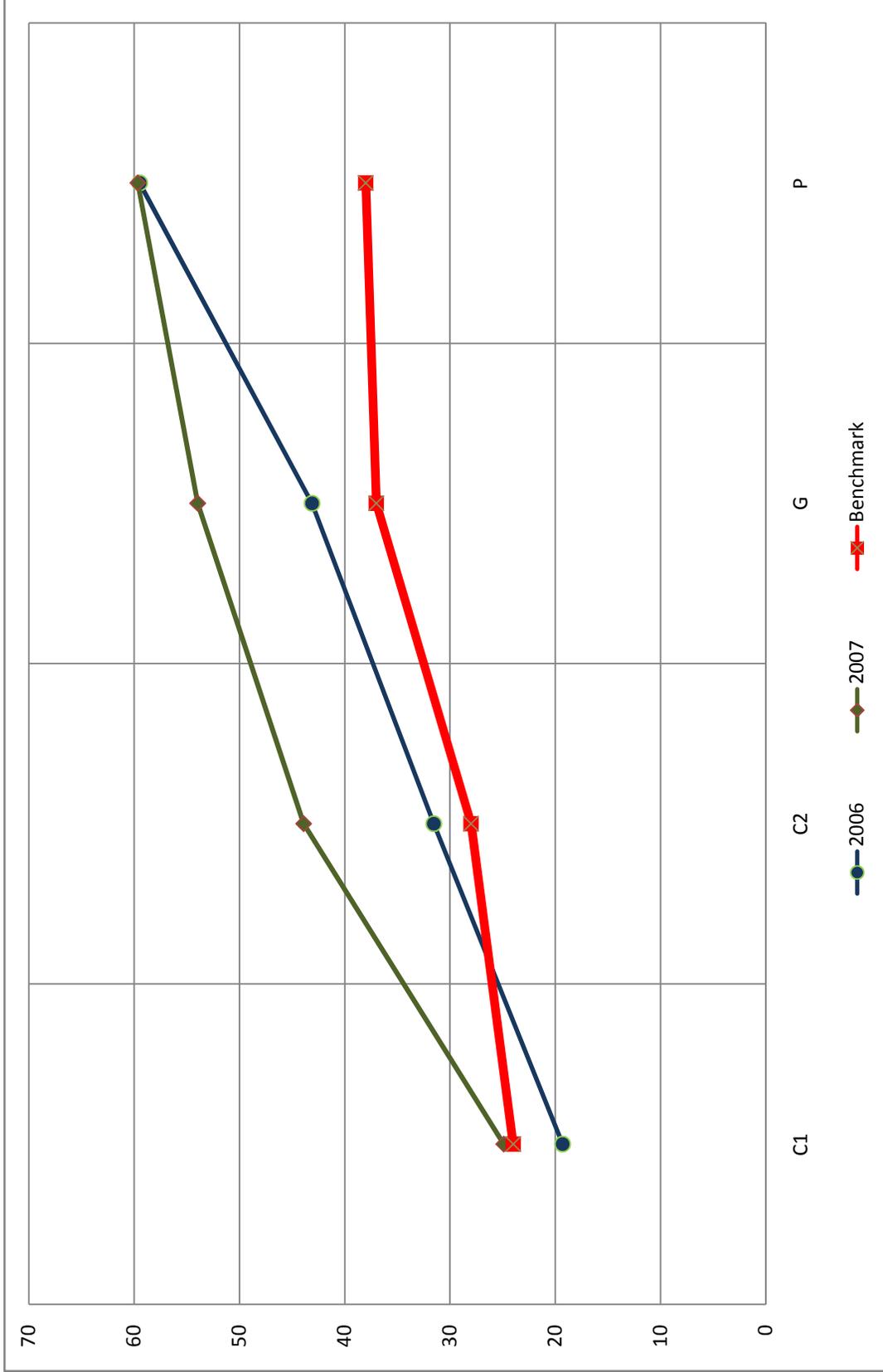
Note: The Chair was established in January, 2005; the first year that the Office for Servant-Leadership could have made an impact in this assessment, therefore, is 2006. We exceeded our established Benchmarks (set in 2005) in all categories except c¹ in 2006 and in all categories in 2007.

ONE YEAR AFTER GRADUATION WITH STATISTICAL MARGIN OF ERRORS



C¹ Character: integrity, humility, the servant's heart
 C² Community: empathy, compassion, awareness
 G Goals: conceptualization, foresight, vision
 P Process: stewardship, team-building, role modeling

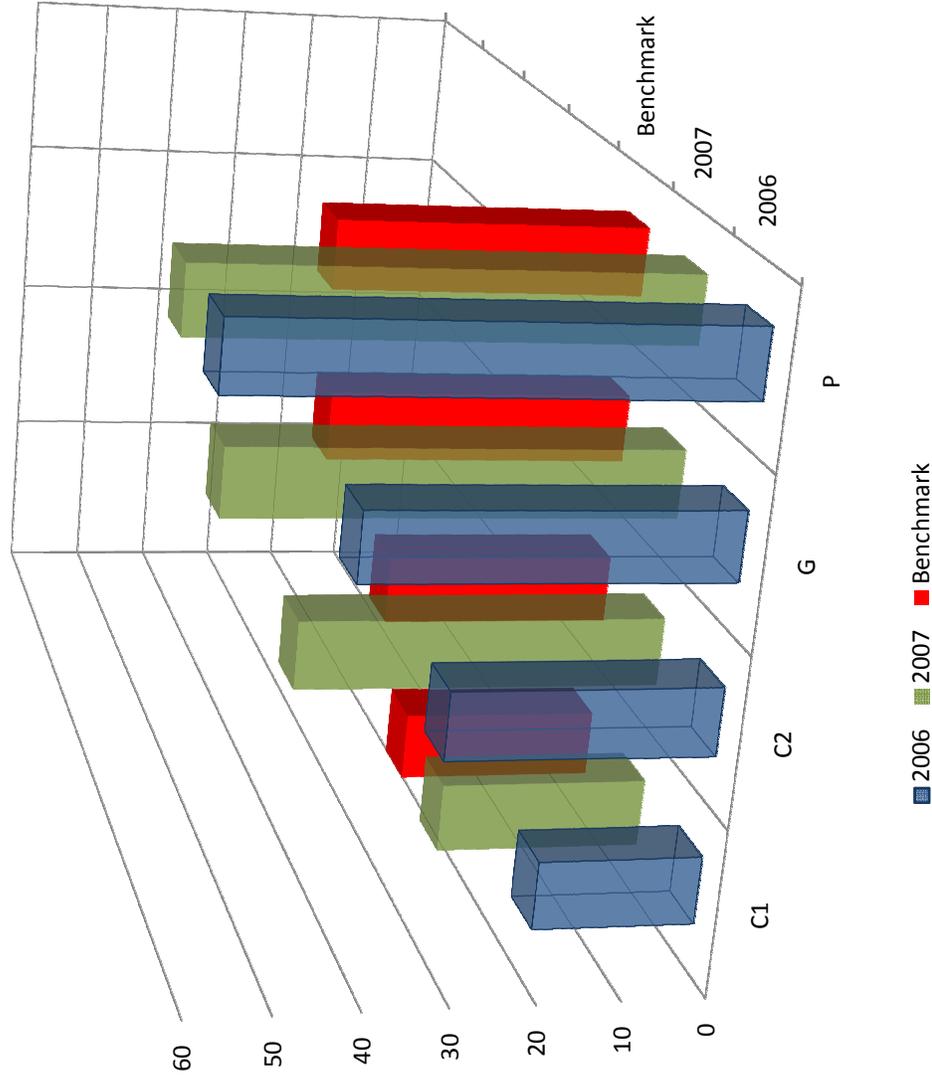
ONE YEAR AFTER GRADUATION SINCE FOUNDATION OF THE CHAIR



Represents the first “group” of MSOE alumni with exposure to Servant-Leader (graduates in 2005 surveyed in 2006) and the next year (graduates in 2006 surveyed in 2007).

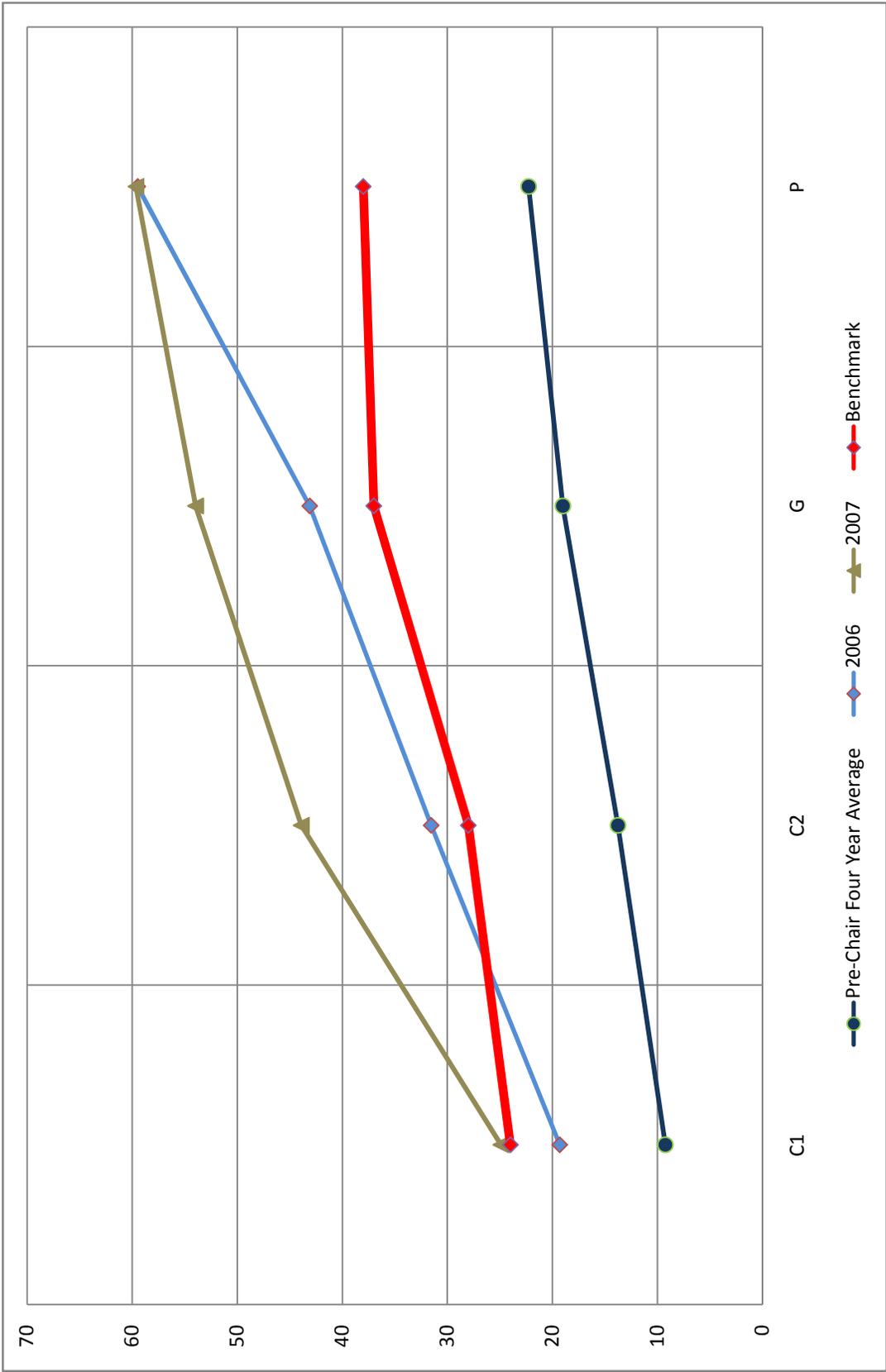
- C¹ Character: integrity, humility, the servant’s heart
- C² Community: empathy, compassion, awareness
- G Goals: conceptualization, foresight, vision
- P Process: stewardship, team-building, role modeling

ONE YEAR AFTER GRADUATION SINCE FOUNDATION OF THE CHAIR



- C¹** Character: integrity, humility, the 'servant's heart'
- C²** Community: empathy, compassion, awareness
- G** Goals: conceptualization, foresight, vision
- P** Process: stewardship, team-building, role modeling

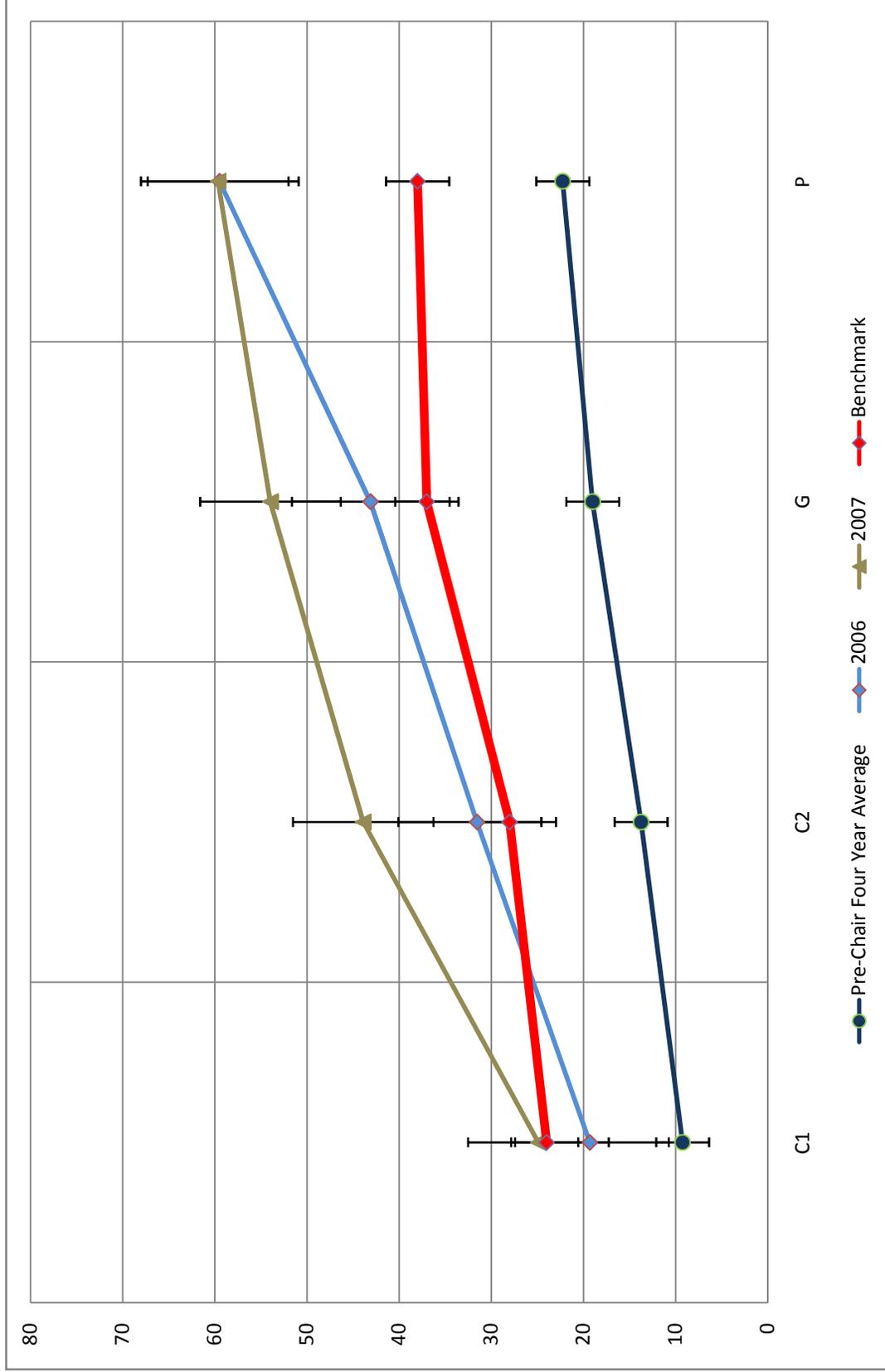
PERSPECTIVE FOR GROWTH - ONE YEAR AFTER GRADUATION



- c¹ Character: integrity, humility, the servant's heart
- c² Community: empathy, compassion, awareness
- G Goals: conceptualization, foresight, vision
- P Process: stewardship, team-building, role modeling



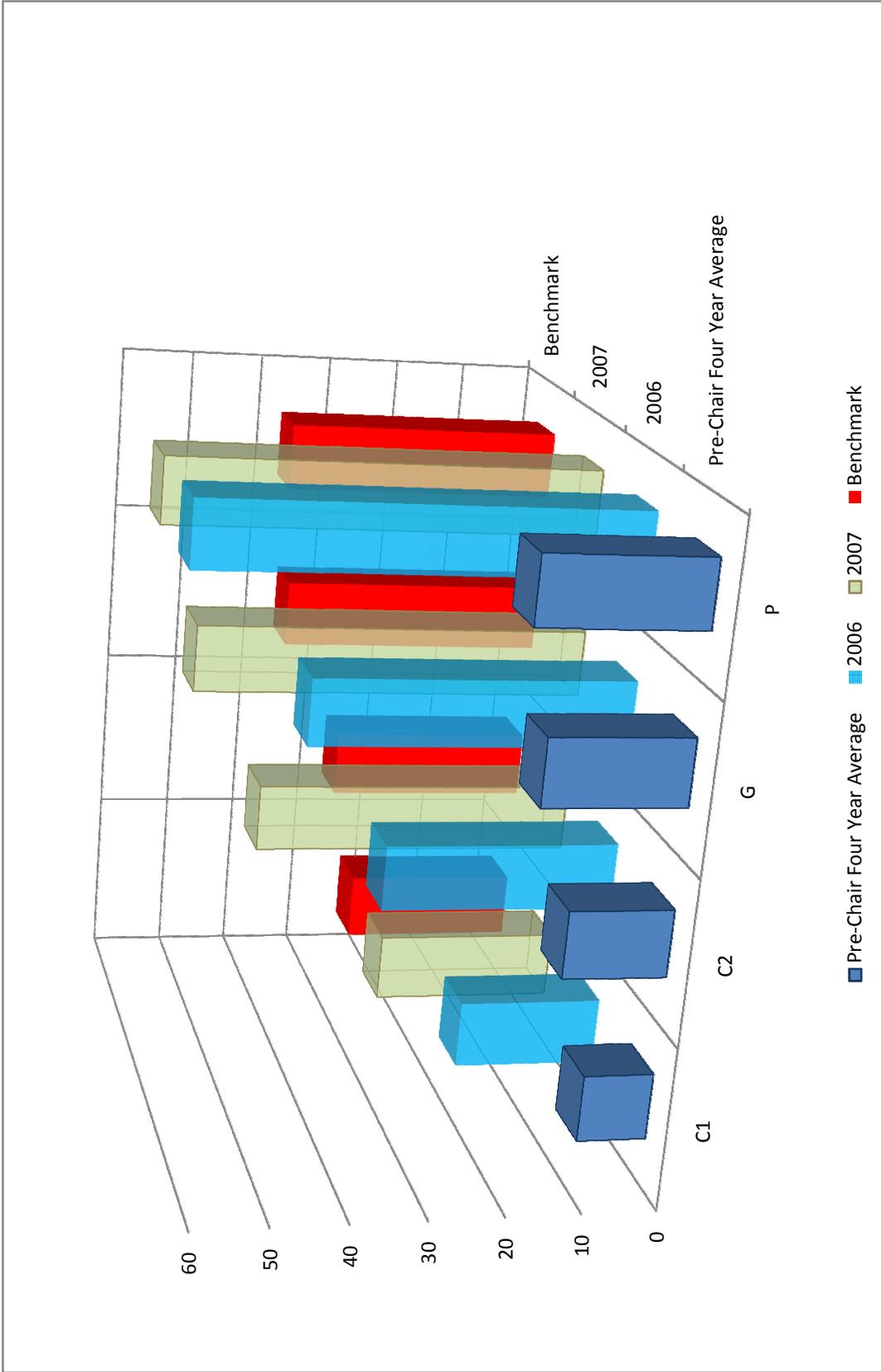
PERSPECTIVE FOR GROWTH - ONE YEAR AFTER GRADUATION WITH MARGINS OF ERROR



- c¹** Character: integrity, humility, the 'servant's heart'
- c²** Community: empathy, compassion, awareness
- G** Goals: conceptualization, foresight, vision
- P** Process: stewardship, team-building, role modeling

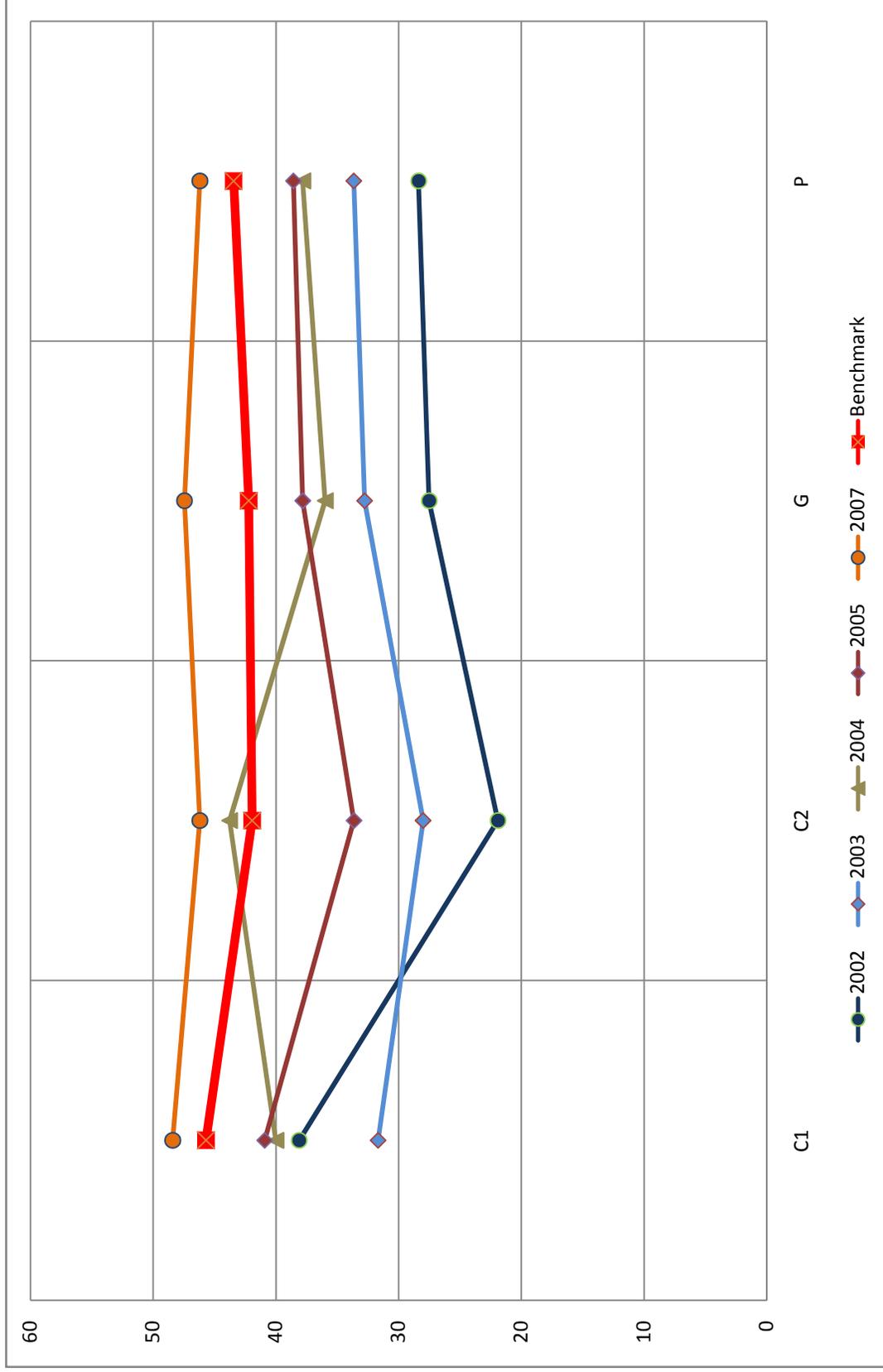
Please note that the size of chart forces margins of error lines into one another. The margins are not as daunting as they appear in a larger chart space.

PERSPECTIVE FOR GROWTH - ONE YEAR AFTER GRADUATION



- C¹** Character: integrity, humility, the 'servant's heart'
- C²** Community: empathy, compassion, awareness
- G** Goals: conceptualization, foresight, vision
- P** Process: stewardship, team-building, role modeling

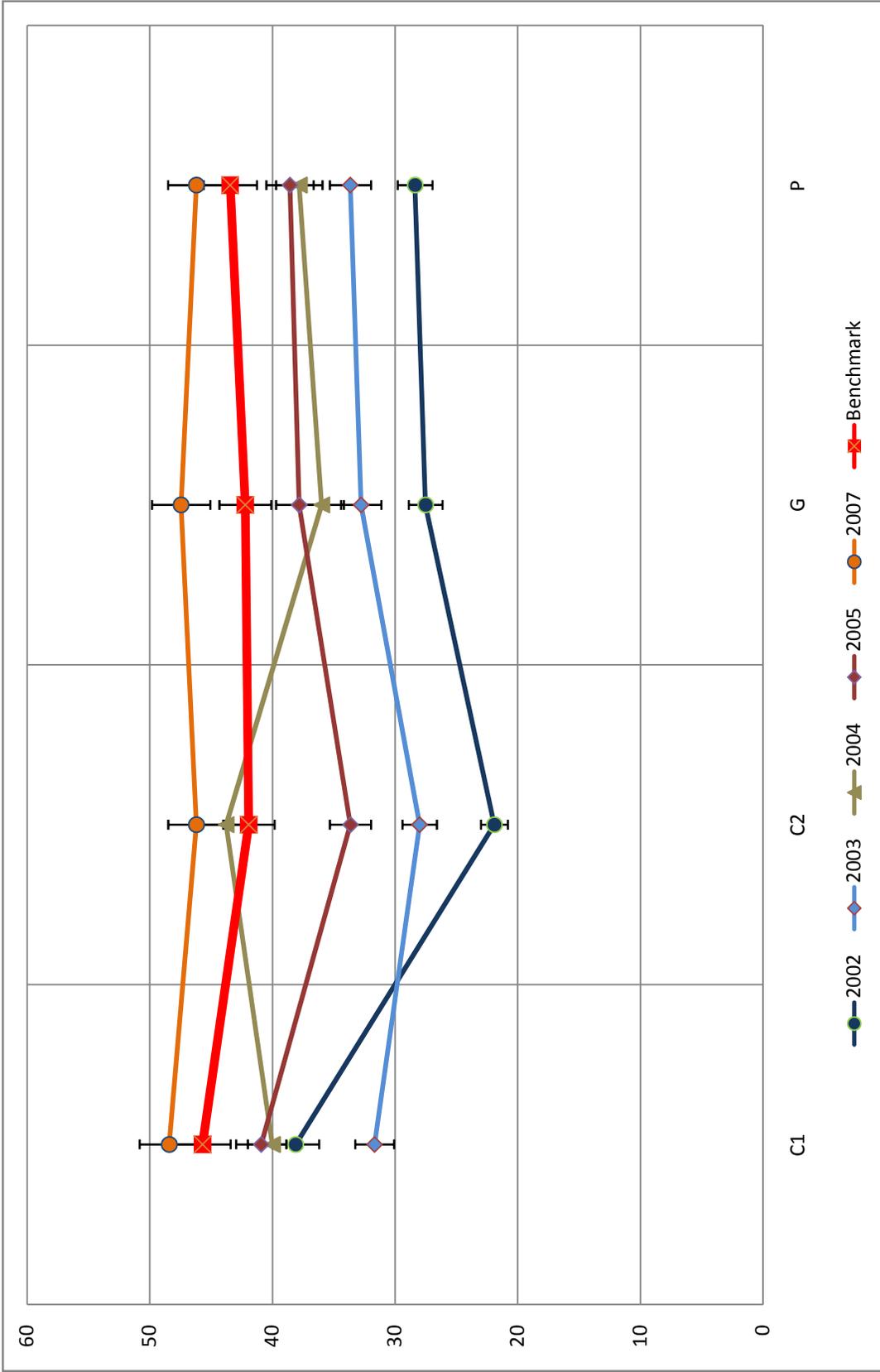
EMPLOYERS EVALUATION - ONE YEAR AFTER GRADUATION



C¹ Character: integrity, humility, the 'servant's heart'
C² Community: empathy, compassion, awareness
G Goals: conceptualization, foresight, vision
P Process: stewardship, team-building, role modeling

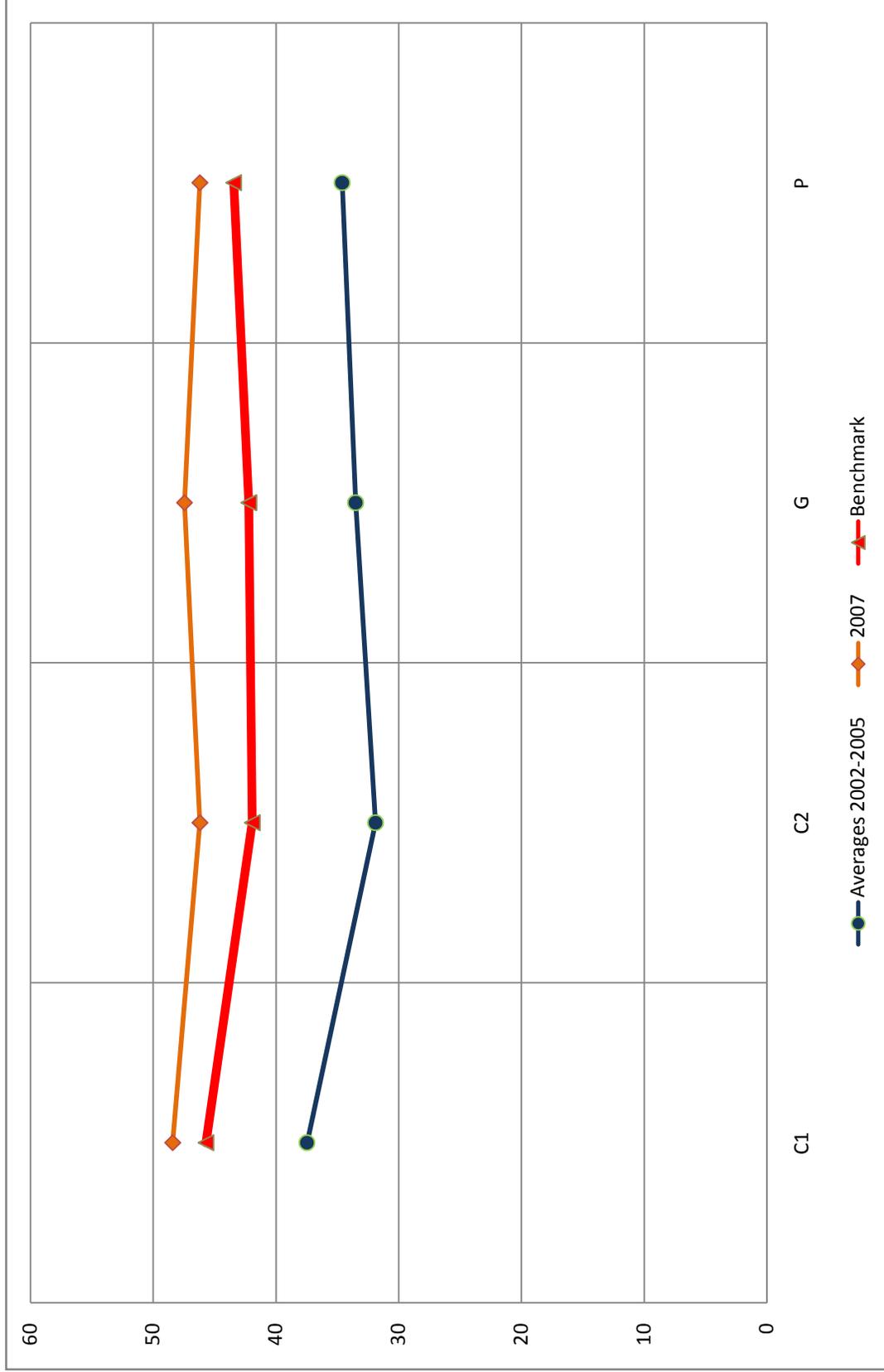
Note: Due to personnel changes in the Alumni Relations Department we have incomplete data for 2006, thus we are only including 2007 in this Report.

EMPLOYERS - ONE YEAR AFTER GRADUATION WITH MARGINS OF ERROR



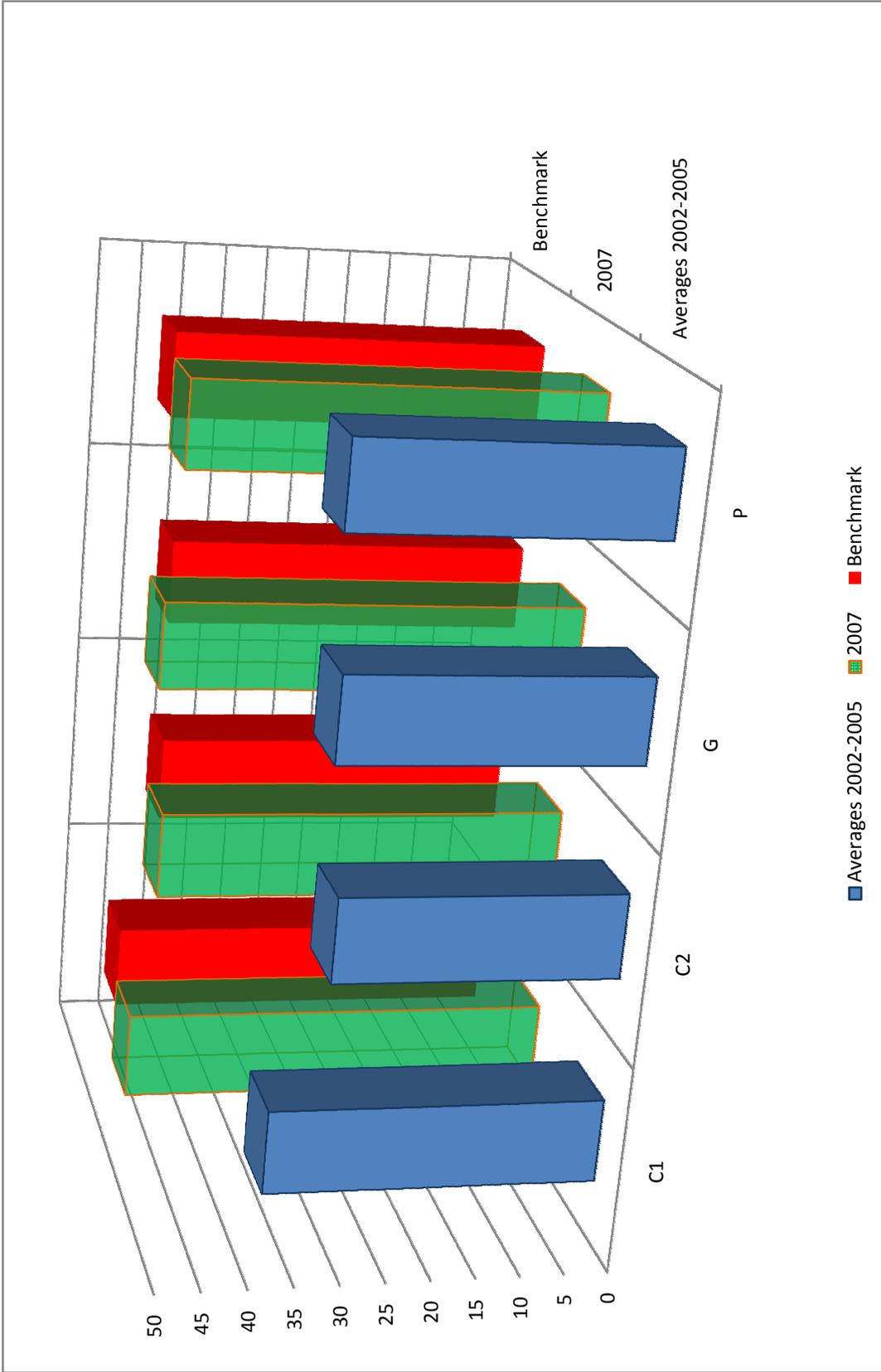
C¹ Character: integrity, humility, the 'servant's heart'
C² Community: empathy, compassion, awareness
G Goals: conceptualization, foresight, vision
P Process: stewardship, team-building, role modeling

EMPLOYERS - ONE YEAR AFTER GRADUATION SINCE FOUNDATION OF THE CHAIR



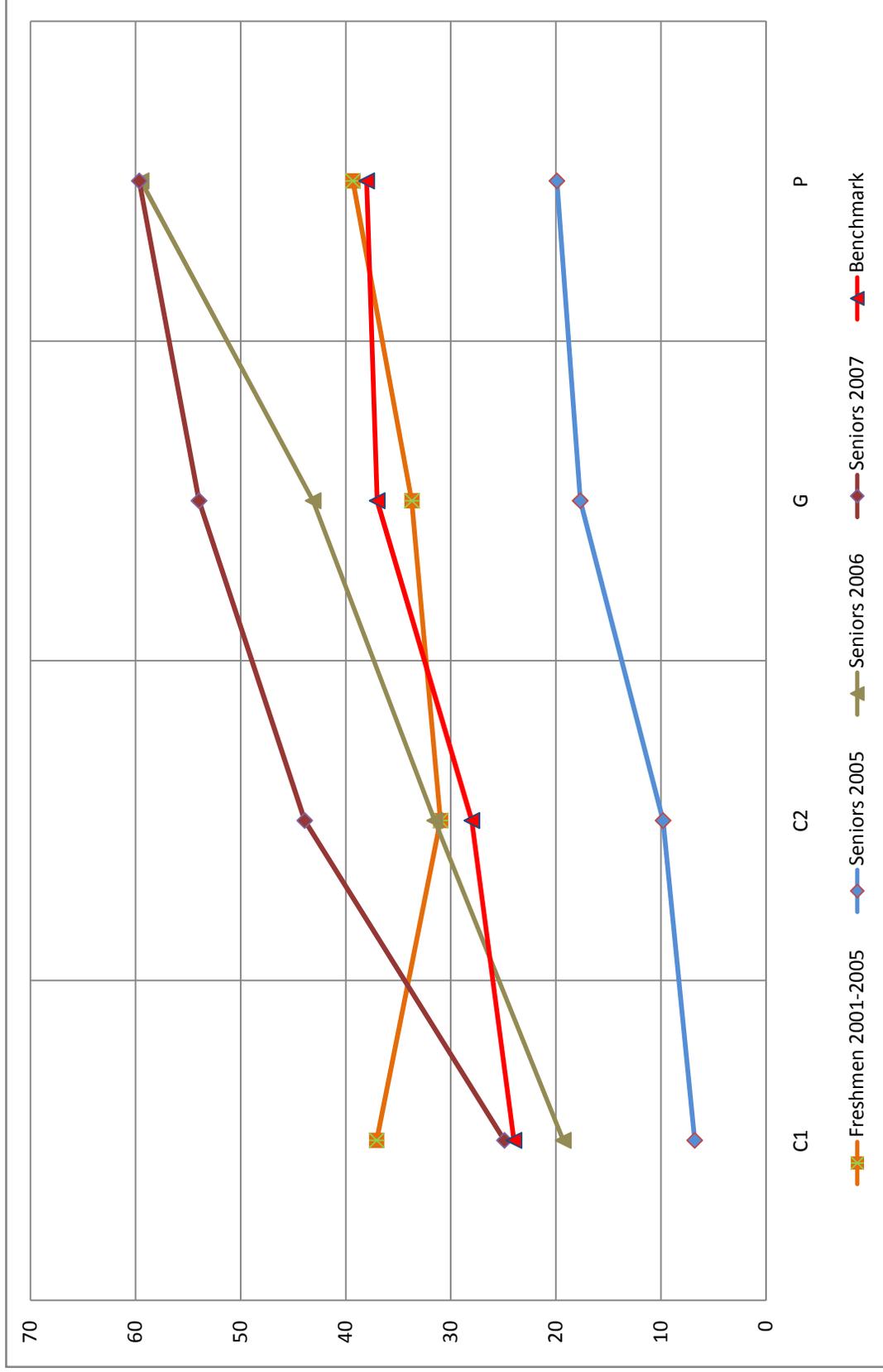
C¹ Character: integrity, humility, the 'servant's heart'
C² Community: empathy, compassion, awareness
G Goals: conceptualization, foresight, vision
P Process: stewardship, team-building, role modeling

EMPLOYERS - ONE YEAR AFTER GRADUATION



- C¹ Character: integrity, humility, the servant's heart
- C² Community: empathy, compassion, awareness
- G Goals: conceptualization, foresight, vision
- P Process: stewardship, team-building, role modeling

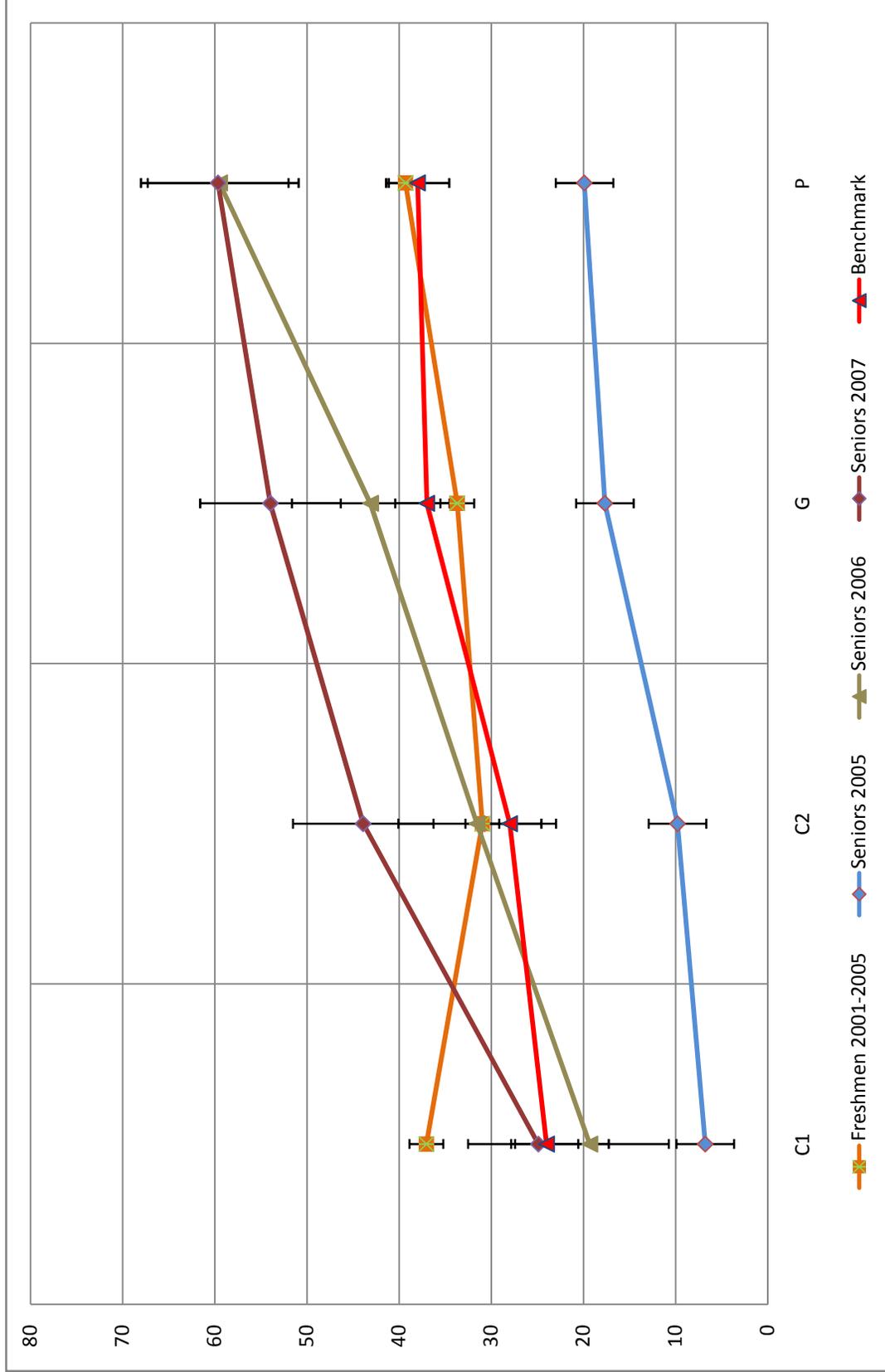
COMPARING FRESHMEN TO ONE YEAR GRADUATES



The orange line represents the five year average of Freshmen as they self-evaluated their character and engagements; the blue line represents the self-evaluation of one-year graduates in the year the Chair was founded; the red line is our benchmark; the green and brown lines are the one-year graduate self-evaluations for the years 2006 & 2007 respectively.

- C¹** Character: integrity, humility, the 'servant's heart
- C²** Community: empathy, compassion, awareness
- G** Goals: conceptualization, foresight, vision
- P** Process: stewardship, team-building, role modeling

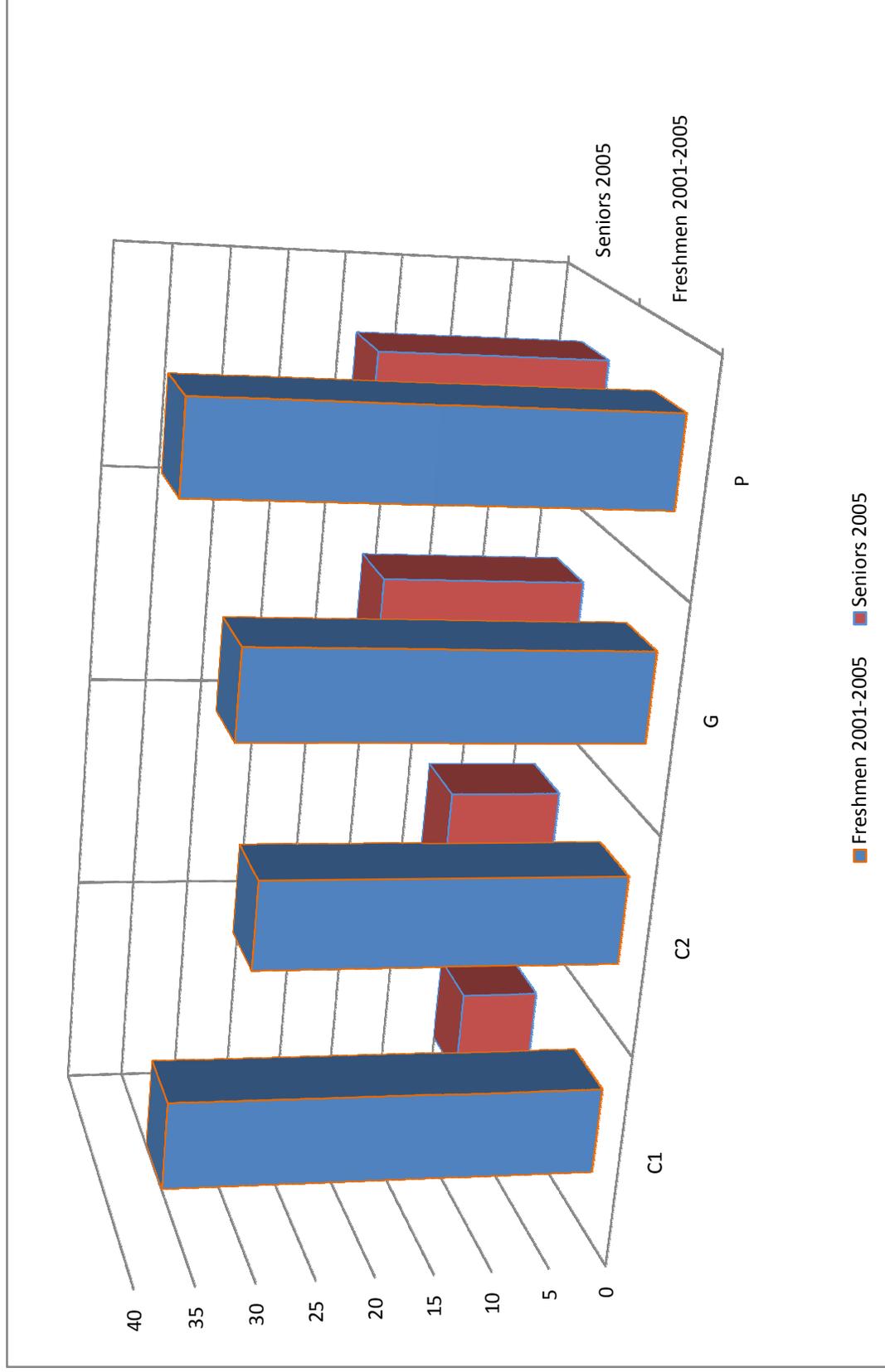
COMPARING FRESHMEN TO ONE YEAR GRADUATES WITH MARGINS OF ERROR



In 2006 exceeded Benchmark in all but one category (C1). In 2007 exceeded Benchmarks in all categories and met or passed Freshmen in all by one (C1)

- C¹ Character: integrity, humility, the servant's heart
- C² Community: empathy, compassion, awareness
- G Goals: conceptualization, foresight, vision
- P Process: stewardship, team-building, role modeling

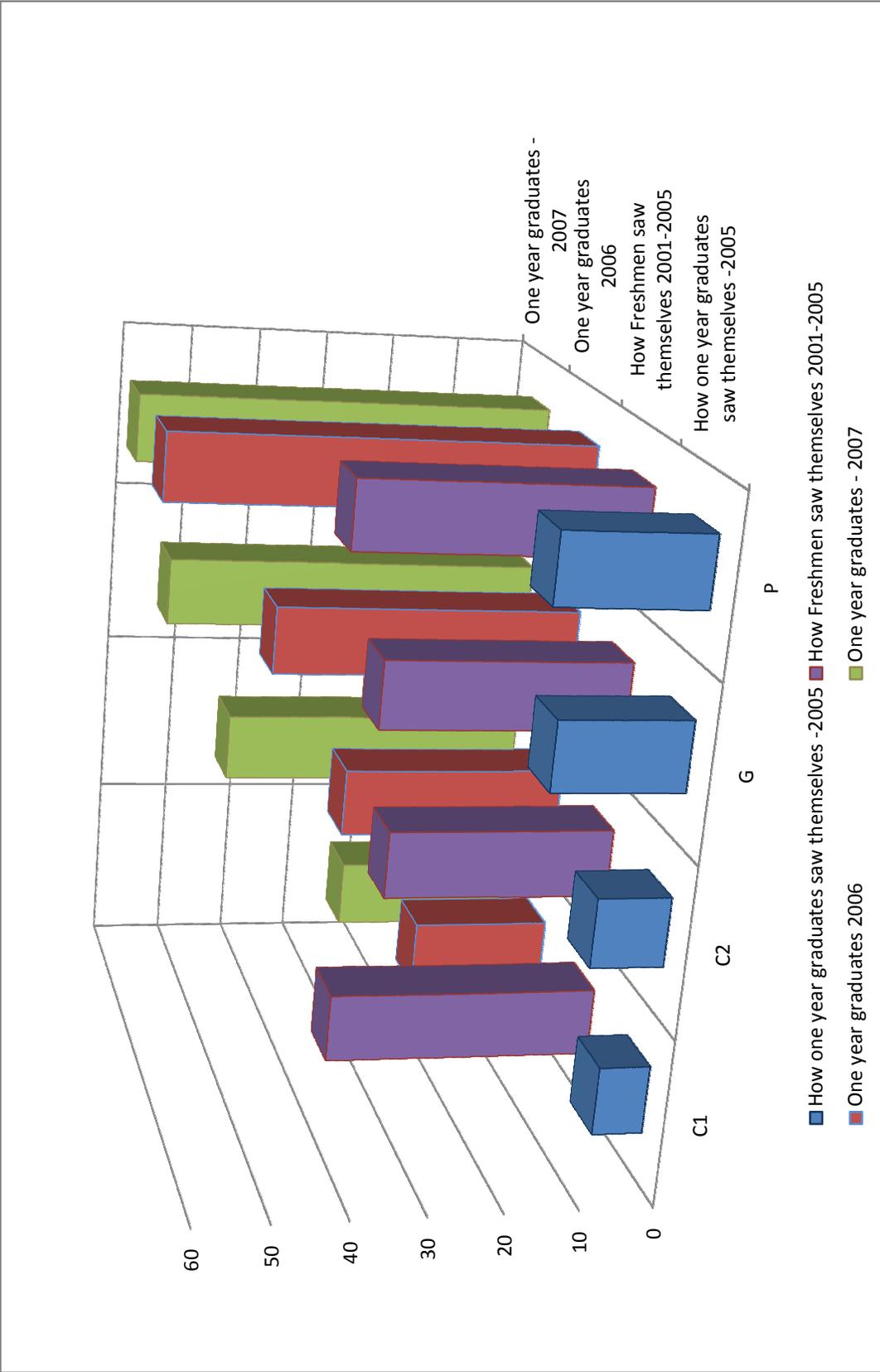
SCOPE OF THE CHALLENGE



As stated previously: One of the chief challenges we faced as we began analyzing MSOE data in 2005 was the realization that students' self-evaluation in these four categories declined during their years at the university. A comparison of Freshmen surveys with alumni questionnaires in the period stated above showed a remarkable drop in key indicators of integrity, humility, the 'servant's heart,' empathy, compassion, awareness, conceptualization, foresight, vision, stewardship, team-building, and role modeling following four years at MSOE.

Our task, therefore, was to reverse the trend

REVERSING THE TREND



C¹ Character: integrity, humility, the 'servant's heart'
C² Community: empathy, compassion, awareness
G Goals: conceptualization, foresight, vision
P Process: stewardship, team-building, role modeling

ALGORITHM FOR CALCULATING BENCHMARKS

- Def: (Big-Oh) $T(n)$ is $O(F(n))$ if there are positive constants c and n_0 such that $T(n) \leq cF(n)$ when $n \geq n_0$
- Def: (Big-Omega) $T(n)$ is $\Omega(F(n))$ if there are positive constant c and n_0 such that $T(n) \geq cF(n)$ when $n \geq n_0$
- Def: (Big-Theta) $T(n)$ is $\Theta(F(n))$ if and only if $T(n) = O(F(n))$ and $T(n) = \Omega(F(n))$
- Def: (Little-Oh) $T(n) = o(F(n))$ if and only if $T(n) = O(F(n))$ and $T(n) \neq \Theta(F(n))$

- Given (possibly negative) integers A_1, A_2, \dots, A_n , find (and identify the sequence corresponding to) the max. value of sum of A_k where $k = i \rightarrow j$. The max. contiguous sequence sum is zero if all the integer are negative.

- $\{-2, 11, -4, 13, -5, 2\} \Rightarrow \geq 20$

- $\{1, -3, 4, -2, -1, 6\} \Rightarrow \geq 7$

Algorithm

```

template <class Comparable>
Comparable maxSubSum(const vector<Comparable> a,
                    int & seqStart, int & seqEnd) {
    int n = a.size();
    Comparable maxSum = 0;
    for(int i = 0; i < n; i++) {
        for(int j = i; j < n; j++) {
            Comparable thisSum = 0;
            // for each possible start point
            // for each possible end point
            for(int k = i; k <= j; k++)
                thisSum += a[k]; // dominant term
            if( thisSum > maxSum) {
                maxSum = thisSum;
                seqStart = i;
                seqEnd = j;
            }
        }
    }
    return maxSum;
} // A cubic maximum contiguous subsequence sum algorithm
template <class Comparable>
Comparable maxSubsequenceSum(const vector<Comparable>& a,
                             int & seqStart, int & seqEnd) {
    int n = a.size();
    Comparable maxSum = 0;
    for( int i = 0; i < n; i++) {
        Comparable thisSum = 0;
        for( int j = i; j < n; j++) {
            thisSum += a[j];
            if( thisSum > maxSum) {
                maxSum = thisSum;
                seqStart = i;
            }
        }
    }
}

```

```

    seqEnd = j;
  }
}
return maxSum;
}

```

Static Searching Problem

Given an integer X and an array A , return the position of X in A or an indication that it is not present. If X occurs more than once, return any occurrence. The array A is never altered.

- Sequential search: $\Rightarrow O(n)$
- Binary search (sorted data): $\Rightarrow O(\log n)$
- Interpolation search (data must be uniform distributed): making guesses and search $\Rightarrow O(n)$ in worse case, but better than binary search on average Big-Oh performance, (impractical in general).
- A sequential search steps through the data sequentially until a match is found.
- A sequential search is useful when the array is not sorted.
- A sequential search is linear $O(n)$ (i.e. proportional to the size of input)

- Unsuccessful search --- n times
- Successful search (worst) --- n times
- Successful search (average) --- $n/2$ times

Worst case versus average case:

- A worst-case bound is a guarantee over all inputs of size N .
- In an average-case bound, the running time is measured as an average over all of the possible inputs of size N .
- We will mainly focus on worst-case analysis, but sometimes it is useful to do average one.

Algorithm developed and written by Dr. Bernard Chen