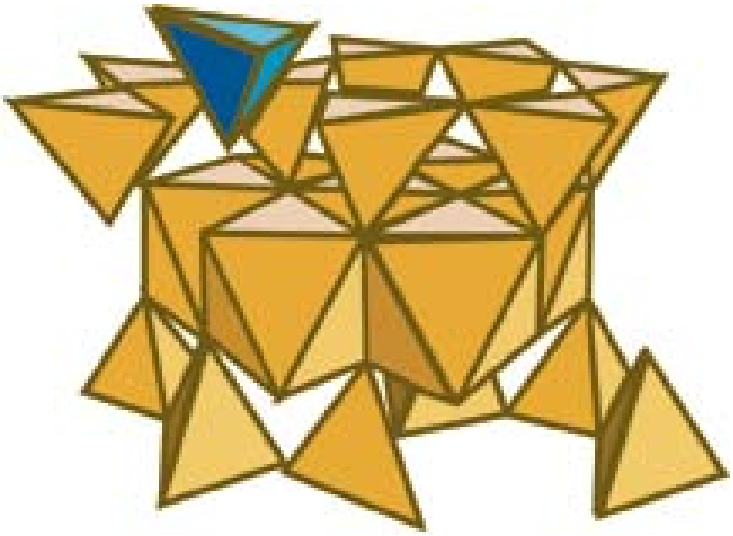
BACHELOR OF SCIENCE

in

MATERIALS SCIENCE & ENGINEERING[1]

a guide to the undergraduate degree program



School of Materials Engineering
Purdue University

Spring 2011

Last Updated
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You Can't Make It Without Materials

[1] The overwhelming majority of this helpful manual was written by Prof. Elliott Slamovich and has been updated recently to reflect recent changes in the MSE program.

INTRODUCTION

The purpose of this manual is to provide one source to address most of the questions that arise on a regular basis regarding policies and procedures in the School of Materials Engineering. The first section outlines the procedures that all of you will follow as you develop and implement your Plan of Study, ranging from the proposed sequence in which you take your courses to how you may petition for exceptions from standard procedures and requirements. The second section summarizes opportunities available to you beyond the standard curriculum including the Co-Op program, Student Societies, Study Abroad, Independent Research and our Honors program. While your coursework is very important, your experiences and the people you meet outside of the classroom by doing research, participating in student society activities or spending a semester in another country will have a major influence on how you think, and the career path that you choose. We strongly encourage you to take advantage of these opportunities.

Sincerely,

Rodney Trice, Undergraduate Committee Chair

Members of Undergraduate Committee: Prof. Edwin Garcia, Prof. David Johnson, Prof. Robert Spitzer, Prof. Carlos Martinez, and Vicki Cline (Academic Advisor for MSE)

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SECTION 1. PROCEDURES AND POLICIES

1.1. ACADEMIC AND PROFESSIONAL CONDUCT

1.1.1. Academic Dishonesty

The Purdue University Student Conduct Code is detailed in Section III-B of the Purdue University Regulations. The complete Conduct Code is available on the Office of the Dean of Students webpage. Section III-B-2 outlines misconduct subject to disciplinary penalties, and Section III-B-2a reproduced below defines academic dishonesty:

"… Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty. The commitment of the acts of cheating, lying, stealing, and deceit in any of their diverse forms (such as the use of ghost-written papers, the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest".

Given the availability of material on the web, plagiarism on writing assignments is a particular problem, in part because most students do not understand what constitutes plagiarism. The Purdue Online Writing Lab (OWL) (http://owl.english.purdue.edu/owl/) has a link "Avoiding Plagiarism" under the "Research and Citation" link that contains definitions of plagiarism as well as proper citation practices.

1.1.2. Engineering Professional Ethics

Since most of you will be practicing Engineers in a few years you should become familiar with Engineering Ethics. The Code below was adopted by the Accreditation Board for Engineering and Technology in 1977 and is posted on our website.

Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:
I. using their knowledge and skill for the enhancement of human welfare;
II. being honest and impartial, and servicing with fidelity the public, their employers and clients;
III. striving to increase the competence and prestige of the engineering profession; and
IV. supporting the professional and technical societies of their disciplines.

The Fundamental Canons

1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.
2. Engineers shall perform services only in the areas of their competence.
3. Engineers shall issue public statements only in an objective and truthful manner.
4. Engineers shall act in professional maters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.
5. Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
6. Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the profession.
7. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional development of those engineers under their supervision.

Other engineering societies have their own ethical codes. An excellent resource to learn more about engineering ethics is the website onlineethics.org.

1.2. UNDERGRADUATE DEGREE PROGRAM REQUIREMENTS

The degree requirements for a B.S. MSE from the School of Materials Engineering at Purdue University are summarized below. The following sections will take you through the process of assembling your Plan of Study to satisfy the degree requirements.

Minimum Degree Requirements for Materials Engineering (B.S.MSE)

1. Satisfy the requirements of the First Year Engineering program.
2. Satisfy the Core course sequence in Engineering, Mathematics, and Physical Sciences.
3. Have at least 18 credits of General Education coursework, as specified by the Schools of Engineering.
4. Have at least 18 credit hours of Technical Electives, at least 12 of which are Materials-specific, as designated by the School of Materials Engineering.
5. Have at least 128 credits total.
6. Minimum GPA of 2.0 in MSE 200 and 300 level courses.

See next page.

Graduation Requirements for BSMSE

Minimum Degree Requirements For Materials Engineering

Credit Hours Required for Graduation: 128	
Courses	*Credit Hours*
Mathematics and Physical Sciences	
Calculus: MA 165,166, 261, 265, 266	**18**
Chemistry: CHM 115, 116, 257	**12**
Physics: PHYS 172, 241, 252	**8**
Communication and General Education	
English Composition: ENGL 106 or equi.	**3**
Communication: COM 114 or approved Communication elective	**3**
General Education Electives: Humanities and social science elective courses selected with MSE faculty guidance in accordance with the general education requirements of the College of Engineering.	**18**
Seminars	
MSE 390	**0**
First-year (or other) electives	**2**
Core Engineering Courses	
ENGR 131, 132[a]	**4**
MSE Core: 230, 235, 250, 260, 270, 330, 335, 340, 367, 370, 382, 430, 440, and 445. Integrated MSE courses, including year-long, industry-sponsored senior design projects, on the structure, properties, processing, and performance of engineering materials.	**42**
Technical Electives A plan of study is designed with the help of a faculty advisor to meet each individual student's professional goals. At least 12 of the 18 credits must be materials-specific courses; the remaining 6 credits may be selected from an approved list of courses, including other academic disciplines.	**18**

*Students entering the School of Materials Engineering should have completed the sequence of CHM 115 and 116 or the sequence of CHM 123 and 124.

§Eighteen credit hours of general education electives are chosen in accordance with the general education requirements of the Schools of Engineering.

#Eighteen credit hours of technical electives must be selected from lists of courses approved by the faculty of the School of Materials Engineering. At least 12 of the 18 hours are to be selected from an approved list of Materials courses. Up to 6 hours can be chosen from a separate list of courses, which includes other Support Areas.

Note: Of the courses used to satisfy the minimum graduation requirements, the pass/not-pass option may be applied only to general education elective courses.

[a] Note that ENGR 100 (1 cr) and ENGR 126 (3 cr) have been recently replaced by ENGR 131 (2 cr) and ENGR 132 (2 cr). Course numbers ENGR 195 (2 cr) and ENGR 196 (2 cr) are equivalent to ENGR 131 (2 cr) and ENGR 132 (2 cr).

GPA Requirements

In addition to satisfying all of the curriculum requirements and having a Graduation Index of at least 2.0, graduation with a B.S.MSE degree also requires a GPA of at least 2.00 for all 200- and 300-level MSE courses.

Pass/Not-Pass Option

Of the courses used to satisfy the minimum graduation requirements, the pass/not-pass option may be applied only to General Education courses.

Exception to Normal Published Requirements

Exception to any and all normal published requirements for graduation requires approval by petition to the Undergraduate Committee of the School of Materials Engineering. The process for petitioning is described in section 1.6.

Credit Hour Deficiencies

Transfer students commonly satisfy the Freshman Engineering requirements with fewer than the minimum 32 credit hours stated for that program. Credit deficiencies also can arise in other approved transfers or substitutions (e.g., Study Abroad). In these cases where the program requirements are met but there is a credit hour deficiency, students may complete any Purdue course(s) to meet the minimum total of 128 credit hours for graduation. Approved transfer or substitution credits in excess of program requirements also count toward this minimum.

Transfer Credit

All students transferring into the School of Materials Engineering, whether from another university or another program within Purdue, are required to meet with the Vicki Cline to plan their petition for transferring credit and to develop a Plan of Study.

Students may also transfer credit earned from other universities during the summer or from universities attended during Study Abroad. It is best to seek prior approval for transfer credit under these circumstances because a petition may be required. Please see section 1.6.

1.3. MSE PROGRAM ACCREDITATION

The degree program offered through the School of Materials Engineering is accredited by ABET, Inc., an organization that uses a peer review process to ensure educational quality. Quoting from their website: “ABET accreditation is assurance that a college or university program meets the quality standards established by the profession for which it prepares its students”. Accreditation is voluntary, and all of Purdue’s Engineering programs are ABET accredited. This means that our program (along with all of the Purdue Engineering programs) is reviewed every six years to determine if we meet the established criteria for accreditation. There are eight criteria that must be satisfied for accreditation, below are brief descriptions of Criteria 2 and 3 that have the greatest impact on your undergraduate curriculum.

1.3.1. Criterion 2. Program Educational Objectives

Program Education Objectives are: “broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve”. In the Spring of 2006 the Undergraduate Committee developed the following new set of Objectives that were approved by all of the MSE faculty. These include:

1. Exhibit an understanding of the scientific principles and engineering practices that cut across all classes of materials.
2. Contribute their Materials Engineering expertise effectively as members of interdisciplinary teams.
3. Participate in groups and societies that enhance their profession and their community.
4. Adapt to a changing technical landscape through application of their knowledge base.
5. Possess the communication and teamwork skills to facilitate career development both in technical and nontechnical areas.

Our success in achieving these Objectives is evaluated primarily by surveying our alumni. We also receive input from our Advisory Committee consisting of individuals in business, industry and academia, and from you during your senior exit surveys and interviews. We use the input to help make decisions about curriculum changes that would better achieve our Objectives.

1.3.2. Criterion 3. Program Outcomes and Assessment

Program outcomes describe the skill set students are expected possess by the time of graduation. Program outcomes must facilitate attainment of the program education objectives described above. Graduates of the Undergraduate program in the School of Materials Engineering at Purdue University will have:

1. an ability to apply knowledge of mathematics, science, and engineering to problems in materials engineering.
2. an ability to design and conduct experiments, as well as to develop engineering judgment through the analysis and interpretation of data.
3. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
4. an ability to function on multi-disciplinary teams.
5. an ability to identify, formulate, and solve engineering problems, particularly in the context of materials selection and design.
6. an understanding of professional and ethical responsibility.
7. an ability to exhibit effective oral and written communication skills.
8. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.
9. a recognition of the need for, and an ability to engage in life-long learning.
10. a knowledge of contemporary issues, particularly as they relate to materials engineering.
11. an ability to use the techniques, skills, and experimental, computational and data analysis tools necessary for materials engineering practice.

To maintain accreditation, our curriculum must produce these outcomes, and an assessment process must be in place to measure the program's success in achieving its program outcomes. The assessment process must be designed to indicate the degree to which the program outcomes are achieved, and the assessment process must be used to develop the program through the exposure of program weaknesses and subsequent addressing of identified weaknesses. The assessment process generally includes evaluation of student work including exam performance, laboratory reports, individual and group written assignments and oral presentations, and results from student and alumni surveys.

1.4. Components of the Materials Engineering Degree Program

Links to all of the courses described below may be found in the Purdue Course Catalog, and a version of the content below with active links is available in the Undergraduate section of the MSE website. The major components of the MSE degree program are described below and summarized graphically in Figure 1.1.

1.4.1. Mathematics and Physical Sciences

A firm grasp of mathematics, chemistry and physics facilitates understanding the concepts presented in your Engineering Core Courses. Mathematics courses include Analytical Geometry and Calculus (MA 165 and MA 166), Multivariate Calculus (MA 261), Linear Algebra (MA 265) and Ordinary Differential Equations (MA 266). Chemistry courses begin with two semesters of General Chemistry (CHM 115 and 116) followed by a course focusing on Organic Chemistry (CHM 257). Physics courses cover Mechanics (PHYS 172), and Electricity and Optics (PHYS 241 and PHYS 252).

	Freshman Fall	**Freshman Spring**	**Soph. Fall**	**Soph. Spring**	**Junior Fall**	**Junior Spring**	**Senior Fall**	**Senior Spring**
General Education	ENGL 106	COM 114 or Gen Ed		3 Credits	3 Credits	3 Credits	3 Credits	6 Credits
Math & Physical Science	CHM 115 MA 165	CHM 116 PHY 172 MA 166	PHYS 241 MA 261 MA 265	MA 266 PHYS 252	CHM 257			
Engineering Core	ENGR 131	ENGR 132						
Materials Core			MSE 230 MSE 235 MSE 390	MSE 250 MSE 260 MSE 270 MSE 390	MSE 335 MSE 340 MSE 370 MSE 390	MSE 330 MSE 367 MSE 382 MSE 390	MSE 430 MSE 445 MSE 390	MSE 440 MSE 390
Technical Electives						3 Credits	9 Credits	6 Credits

Figure 1.1: Summary of the MSE degree program courses. Note that only MSE 230 is offered both Fall and Spring semesters. Note that ENGR 100 (1 cr) and ENGR 126 (3 cr) has been recently replaced by ENGR 131 (2 cr) and ENGR 132 (2 cr).

1.4.2. Materials Engineering Core Courses

The core MSE sequence begins with a general introduction into the Structure and Properties of Materials (MSE 230) and a laboratory course investigating the properties of materials (MSE 235). The second semester of the sophomore year sets a foundation of MSE fundamentals covering mechanics (MSE 250); thermodynamics (MSE 260), bonding, crystallography and statistical mechanics (MSE 270). The junior year has the highest concentration of materials courses covering Transport Phenomena (MSE 340), Electrical, Optical and Magnetic Properties of Materials (MSE 370), the Mechanical Response of Materials (MSE 382) and Properties and Processing of Materials (MSE 330). The junior year also features two laboratory courses, the first emphasizing Materials Characterization Methods (MSE 335) while the second focuses on Materials Processing (MSE 367). The senior design sequence (MSE 430 and 440) includes a yearlong group project in which students chose from a variety of industry-sponsored design projects. Senior design is complemented by Materials Engineering Systems Analysis (MSE 445), that increases the representation of design elements in the curriculum. Every semester you are expected to participate in the Materials Engineering Seminar (MSE 390). Activities in MSE 390 include alumni and other visitors from industry discussing career opportunities, planning for outreach activities, and social events. Also, MSE 390 is the best place to learn about new internship and scholarship opportunities.

1.4.3. General Education Electives

A summary of the General Education Program along with a list of approved courses is provided below. The faculty view courses in the arts, humanities and social science as an integral part of one's Engineering Education. The rationale for this view is described in the preamble to the General Education Program stating:

"Humanities and social sciences courses encompass the breadth of human experience and culture, both past and present, including individual behavior, social and political structures, aesthetic values, modes and dynamics of communication, philosophical and ethical thought, and cognitive processes. Such courses are an integral part of all engineering curricula which complements technical and professional content by enabling engineering students to appreciate the world in which they live and work, and to contribute as both educated members of society and aware, ethical professionals. Humanities and social sciences courses also provide a framework for rational inquiry, critical evaluation, judgment and decisions when dealing with issues that are non-quantifiable, ambiguous, or controversial. Of equal importance, they offer opportunities for engineering students to develop interests and insights that guide, enrich and expand their personal lives." We encourage you to make the most of this program by taking courses that are both interesting and challenging.

Courses Eligible Under the General Education Program

The list provided below represents a consensus among the Schools of Engineering of courses that are approved as General Education Electives. Engineering policy further requires that:

1. At least 9 credit hours of courses with global/societal content must be taken (see underlined departments).
2. At least 6 credit hours must be taken and no more than 12 credit hours may be taken in one department.
3. At least 6 credit hours of non-introductory courses must be taken (courses in **BOLD**). Non-introductory courses have either a prerequisite or are 300 level and above.

4. If a foreign language is taken, at least 6 credit hours are required in the same language. Credit is not allowed for language courses in the student's native tongue(s), but literature, culture, drama and related courses are allowed.
5. Credit by examination or granted credit, conditioned solely at the discretion of the awarding department, can be used to satisfy any part of the requirement.
6. No course may be used more than once, even if the offering department allows it to be repeated for credit.

General Education Courses

SOCIAL SCIENCES	
AGEC	250**, 296, 340, 406, 410, 415, 423, 450**
ANTH	100, 105, 203, 204, 205, 250**, 303, 320, 335, 336, 341, 350, 368, 379, 390, 392, 404, 414, 415, 420, 425, 435, 436, 460, 473, 478, 479**
ASL	101**, 102, 201, 202,** 280
AUS	115**, 309, 401, 419**
AUSL	227**, 368, 381**
CDFS	201**, 210, 211,** 255, **301, 311, 312, 315, 325, 411, 424, 430, 432, 434**
COM	204**, 210,** 212, 224**, 240,** 250, 251**, 253,** 256**, 303, 312, 314, 316, 318, 320, 324, 325, 329, 330, 351, 352, 368, 372, 374, 376, 381, 412, 414, 416, 424, 435,491**
ECON	251, 252**, 340, 352, 355, 361, 365, 368, 370, 375, 380, 385, 422, 456, 461, 466,470,471**
POL	101, 120, 130, 141, 190, **200**, 221, 222, 223, 230, 231, 232, 235, 237, 290**,300, 301, 303, 304, 314, 320, 322, 323, 326, 327, 338, 342, 344, 345, 347,348, 350, 351, 352, 353, 360, 364, 370, 371, 372, 373, 380, 410, 411, 412,413, 415, 416, 417, 418, 419, 423, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 444, 445, 446, 447, 449, 452, 453,454, 455, 456, 460, 461, 462, 463, 493**
PSY	120, 121, 200, **213**, 220, 235, **236, 239, 240, 241, 242**, 250, 251, 285, **310,311, 314, 333, 335, 336, 337, 338, 339, 350, 360, 361, 364, 365, 366, 367,368, 370, 372, 380, 388, 391, 392, 415, 420, 425, 426, 428, 440, 442, 443,444, 450, 463, 464, 473, 475, 476, 484, 485, 493**
SOC	100, 220**, 310, 312, 316, 324, 328, 334, 338, 339, 340, 341, 342, 350, 367, 368,374, 391, 402, 411, 416, 419, 420, 421, 425, 426, 429, 450, 454, 474, 475, 493**
HUMANITIES	
A&D	105**, 106,** 125**, 200, 205, 206,** 207**, 213, 214,** 215**,** 216**,** 217**, 221,** 226**,** 227, **230, 235**, 242, **245, 246, 250,** 255, **259, 262**, 265, 266, 270, 271, **275, 276**, **307, 311, 312, 314, 316, 327, 330, 332, 333, 341, 342, 350, 351, 353, 357, 358, 359, 362, 363, 365, 366, 368, 369, 370, 371, 376, 380, 381, 382, 383, 384, 385, 390, 391, 395, 398, 400, 421, 442, 450, 451, 452, 454, 455, 458, 462, 468, 470, 475, 476, 485, 490, 492**
ARAB	101**, 102, 201, 202, 301, 302**
CHNS	101**, 102, 201, 202, 220,** 230, 241, 280, 285**, 301, 302, 305, 313, 341, 342, 490, 493**
CLCS	230, 237**, 330, 331, 335, 336, 337, 385**
DANC	101, 102, 103**,** 130, **140, 201, 202, 203, 240, 241,** 250**, 301, 302**

ENGL	201, 227, 230, 231, 232, 233, 234, 235, 237, 238, 239, 240, 241, 250, 257, 258, 262, 264, 266, 267, 276, 279, **304, 305, 327, 331, 333, 335, 337, 350, 351, 352, 356, 358, 360, 361, 362, 364, 365, 366, 368, 372, 373, 374, 375, 376, 377, 379, 381, 382, 383, 386, 387, 396, 406, 407, 409, 411, 412, 413, 414, 441, 442, 444, 455, 460, 462, 463, 466, 468, 469, 470**
FLL	101**, 102, 201, 202,** 230, 233, 235, 239, 261, 331, 361**, 368, 371, 490**
FR	101**, 102, 103, 112, 201, 202, 211, 212,** 230, 231**, 241, 260, 280, 301, 302, 330, 341, 342, 361, 362, 380, 394, 396, 401, 402, 443, 480**
GER	101**, 102, 103, 112, 201, 202, 211, 212,** 230, 231**, 241, 260, 280, 301, 302, 323, 330, 341, 342, 360, 385, 401, 402, 441, 442, 446, 480, 483**
GREK	101**, 102, 201, 202, 344, 446, 490**
HEBR	101**, 102, 201, 202**
HIST	102, 103, 104, 105, 151, 152, 228, 229, 240, 241, 243, 245, 271, 272, 290,302, **303, 304, 307, 312, 317, 318, 320, 322, 323, 324, 326, 327, 328, 329, 330,331, 332, 333, 334, 335, 337, 339, 340, 341, 342, 343, 344, 345, 350, 351,352, 353, 355, 356, 357, 358, 359, 360, 361, 362, 365, 366, 368, 371, 372, 376, 377, 381, 382, 383, 385, 386, 387, 391, 396, 398, 399, 402, 403, 404, 405, 406, 407, 408, 409, 412, 414, 415, 416, 417, 419, 420, 427, 438, 439, 440, 441, 443, 450, 460, 461, 463, 465, 467, 468, 469, 471, 472, 473, 475, 492, 493, 494, 497**
IDIS	220, 260, 271, 280**, 330, 370, 371, 371F, 372, 373, 375, 376, 378, 380, 381, 420, 460, 473, 480, 481, 482, 483, 490, 490B**
ITAL	101**, 102, 105, 112, 201, 202, 211, 212,** 231**, 241, 260, 301, 302,** 330**, 335, 341, 342, 394**
JPNS	101**, 102, 201, 202,** 230**, 241,** 280, **301, 302, 341, 342, 361, 362, 363, 401, 402, 480, 490**
LATN	101**, 102, 201, 202, 343, 344, 345, 346, 442, 443, 444, 445, 446, 490, 492**
MUS	**250, 361, 362, 363, 364, 371, 372, 373, 374, 375, 377, 378, 490**
PHIL	110, 111, 206, 219, 221, 225, 240, 242, 260, 270, 275, 280, 290**, 293, 301, 302, 303, 304, 306, 319, 330, 331, 402, 406, 411, 421, 425, 430, 431, 432, 435, 465, 490, 493**
PTGS	101**, 102, 105, 112, 201, 202, 211, 212**
RUSS	101**, 102,** 111**, 112, 201, 202, 211, 212, 223,** 230, 231, 232, 233, 234, 236, 237, **241**, 281, 289, **301, 302, 330, 341, 342, 361, 362, 401, 402, 480**
SPAN	101**, 102, 103,** 112**, 201, 202, 211, 212, 230,** 231, 235**, 241, 260, 280, 301, 302, 330, 335, 341, 342, 361, 362, 401, 402, 480, 481, 482**
THTR	168, 201, 202**, 213, 233,** 260**, 323, 333, 334, 336, 380, 413, 433, 434, 440, 480**

Please Note: Introductory Courses are shown in normal font; non-introductory courses in **bold** font. Departments with courses considered to have global/societal content have their designators **underlined**.

1.4.5. Technical Electives

Eighteen credit hours of Technical Electives must be selected from lists of courses approved by the faculty of the School of Materials Engineering. At least 12 of the 18 credit hours are to be selected from the approved list of materials-related courses below. Up to 6 credit hours can be chosen from the list of Support Area Electives. We encourage you to develop a theme in your Technical Elective Program based on your career interests, whether you intend to take a position in industry or continue your studies as a graduate student. If you would like help developing your Technical Elective Program this please feel free to consult your faculty advisor.

Approved Technical Elective courses are listed below. Prerequisites are provided in *italics*. Detailed descriptions of MSE courses are available in the Undergraduate section of the MSE website. Most of these courses are not offered in a given semester. Therefore, each semester before registration a link to the Approved Technical Electives list is available in the Undergraduate section of the MSE website. This list highlights the courses offered during the

next semester and their descriptions, and courses tentatively planned for the semester after. The list of courses offered in a given semester and their descriptions is also available outside of the academic advisor's (i.e. Vicki's) office. The faculty instructors for technical electives present an outline of their courses in MSE 390 a week or two before registration.

Descriptions of courses in other departments may be found on their respective web pages or the Purdue University Course catalog. The list below is revised periodically by the MSE faculty. *Other courses may be acceptable, subject to approval by petition to the Undergraduate Committee*.

APPROVED TECHNICAL ELECTIVES

MSE COURSES

MSE 499	Independent Research (3 credits max. per semester, 6 credits max. overall)
MSE 502	Defects in Solids
MSE 505	Modeling and Simulation of Materials Processing (*MSE 340*)
MSE 508	Phase Transformations in Solids
MSE 510	Microstructural Characterization Techniques
MSE 512	Powder Processing
MSE 522	Rate Phenomena in Process Metallurgy *(MSE 260/340)*
MSE 523	Physical Ceramics
MSE 525	Structure, Property Relationships of Engineering Polymers
MSE 531	Quantitative Analysis of Microstructure
MSE 536	Solidification Processing *(MSE 260/340)*
MSE 540	High Temperature Alloys
MSE 547	Introduction to Surface Science
MSE 548	Deposition Processing of Thin Films and Coatings
MSE 550	Properties of Solids
MSE 553	Ceramic Materials for Electronic Devices
MSE 555	Deformation Mechanisms in Crystal Solids *(MSE 382)*
MSE 556	Fracture of Materials *(MSE 382)*
MSE 557	Deformation Processing
MSE 559	Phase Equilibria in Multicomponent Systems *(MSE 260)*
MSE 560	Production of Inorganic Materials *(MSE 260)*
MSE 567	Polymer Synthesis
MSE 575	Transport Phenomena in Solids
MSE 576	Corrosion
MSE 597A	Archeology & Materials Science
MSE 597B	Manufacturing of Composite Materials
MSE 597C	Exper. Charact. Advanced Composite Materials
MSE 597E	Materials and Devices for Solid-State Energy Conversion
MSE 597F	Dynamic Behavior of Materials (w/AAE 590F)
MSE 597G	Modeling and Simulation of Materials
MSE 597GM	Introduction to Materials Science & Rechargeable Batteries
MSE 597I	Introduction to Computational Materials Science
MSE 597M	Biomaterials
MSE 597N	Physical Properties of Crystals
MSE 597S	Steel: Proc & Prop for Applic. in Automobiles
MSE 597Z	Soft Materials

APPROVED COURSES IN OTHER DEPARTMENTS

A&AE 552	Nondestructive Evaluation of Structures & Materials
A&AE 553	Elasticity in Aerospace Engineering
A&AE 554	Fatigue of Structures & Materials
A&AE 555	Mechanics of Composite Materials *(AAE 553)*
A&AE 559	Mechanics of Friction and Wear *(AAE 204 and MA 303 or equiv)*
CHE 442	Chemistry & Engineering of High Polymers
CHE 543	Polymerization Reaction Engineering and Reactor Analysis *(CHE 348)*
CHE 544	Structure & Physical Behavior of Polymer Systems *(CHM 262 & 370)*
EE 305	Semiconductor Devices
EE 557	Integrated Circuit Fab Lab
IPPH 562	Introduction to Pharmaceutical Manufacturing Processes
ME 413	Noise Control
ME 473	Engineer Design Modem Materials
ME 507	Laser Processing
ME 554	Patents, Licensing and Tech Entrepreneurship *(1 credit hour course)*
ME 555	Composites & Polymer Processing
ME 559	Micromechanics of Materials
ME 597Z	Environmental Sustainability Design & Manufacturing
NUCL 470	Fuel Cell Engineering
PHYS 545	Solid State Physics
PHYS 547	Physics of Semiconductor Devices

1.4.5.1. Support Area Electives

The list of Support Area Electives below is divided into three categories: Communication, Mathematics and Basic Science, and Engineering Support. These courses are not directly related to Materials Engineering, but will help you improve you written or oral communication skills (e.g., Speech Writing and Analysis) or provide greater depth to topics touched on in MSE courses (e.g., Statistics). Up to 6 credit hours of your Technical Elective Program may be satisfied using Support Area Electives. The Support Area Electives list is also available in the Undergraduate section of the MSE website, or outside of Vicki's office.

SUPPORT AREA ELECTIVES

Communication:

AGEC 331	Principles of Selling in Agricultural Business
COM 252	Journalistic Writing
COM 314	Advanced Public Speaking
COM 325	Interviewing – Principle and Practice
COM 358	Newspaper Reporting
COM 414	Speech Writing and Analysis
COM 453	Reporting of Science News
COM 455	Advocacy Journalism
ENGL 304	Advanced Composition
ENGL 391	Composition for English Teachers
ENGL 406	Review Writing
ENGL 409	Introduction to Fiction Writing
ENGL 420	Business Writing

ENGL 421	Technical Writing
PSY 272	Industrial Organizational Psychology
FOREIGN Lang.	All Foreign Languages – Level III or higher (#201 or greater)

Engineering Support:

AAE 251	Introduction to Aerospace Design
AAE 372	Jet Propulsion Power Plants
CE 524	Legal Aspects in Engineering Practice
ECE 170	EPICS for Freshmen – 3 hrs total
EPICS	EPICS – 2 semesters required (EPCS 201-202, 301-302, 401-402)
ECE 201	Linear Circuit Analysis
ECE 202	Linear Circuit Analysis II
ECE 207	Electronic Measurement Techniques
ENTM 218	Intro to Forensic Science
IE 343	Engineering Cost Analysis
ME 274	Basic Mechanics II
ME 492	Technology & Values
MGMT	(courses 3XX or greater are acceptable, but MGMT 200 may be a prereq.)
MSE 497Y	Manufacturing and Assembly (Youngblood)
OBHR 300	Mgmt of Human Resources (under MGMT)

Mathematics and Basic Sciences

BIOL 230	The Biology of the Living Cell
CHM 262	Organic Chemistry
CHM 263	Organic Chemistry Lab
CHM 264	Organic Chemistry Lab
CHM 374	Physical Chemistry
EAS 243	Earth Materials
MA 303	Diff. Eqs. and Partial Diff. Eqs. for Eng. and the Sciences
MA 304	Diff. Eqs. and Analysis of Nonlinear Systems for Eng. and the Sciences
MA 362	Topics in Vector Calculus
MA 410	Elements of Vector Calculus
PHYS 330	Intermediate Electricity & Magnetism
PHYS 550	Quantum Mechanics
STAT 311	Introductory Probability
STAT 511	Statistical Methods
STAT 512	Applied Regression Analysis
STAT 513	Statistical Quality Control
STAT 514	Design of Experiment
STAT 516	Basic Probability and Applications

Support Electives <u>cannot</u> be taken pass/no pass, or satisfied by exam or test out.
Other courses may be acceptable, subject to approval by petition to the Undergraduate Committee.

#200 level or higher. These courses appear on BOTH General Education and Support Elective Lists. <u>However, they can be taken to fulfill only ONE requirement.</u>

1.4.6. Open Electives

As mentioned in section 1.2 there exist circumstances where you have satisfied the MSE program requirements without reaching the required 128 credits required for graduation. In these cases students may complete any Purdue courses to meet the minimum 128-credit total. Further, there are no rules against exceeding the 128-credit minimum with courses of your choosing.

1.5. ASSEMBLING YOUR PLAN OF STUDY

All students must maintain a written plan of study for their MSE degree program and have it approved each semester before registration. Ideally, you will follow the "Recommended Plan of Study Sequence" as shown in Table 1.1; however, alternative sequences are acceptable, especially in cases where students are involved in the Co-Op (section 2.1) or Study Abroad (section 2.3) programs. The most up to date forms needed for registration are available MSE 390 Blackboard site, or will be distributed via e-mail.

Sophomores should meet with Prof. Spitzer to develop a Plan of Study. If you have identified any general education or technical electives you plan to take in the future please indicate this on your plan of study. Following your sophomore year you will be assigned to another faculty member until you graduate.

Juniors are also assigned a specific faculty advisor, with whom they are to meet with an updated plan of study and an updated plan for their technical electives. Junior students registering for their senior year should review their academic history to determine they have fulfilled the requirement of 2.0 GPA for all MSE 200 and 300 courses. If the GPA for stated courses is below 2.0, then action should be taken to repeat necessary course(s) in the senior year to raise the GPA for that requirement to the minimum of 2.0 or greater.

Seniors Graduating seniors must also have approval from a faculty advisor, and should ensure that their final semester plan of study will meet all the requirements for graduation.

When you arrive for your academic counseling session you should bring hard copies of three forms: 1. Your Plan of Study, 2. Your Materials Engineering Graduating Checklist and 3. Your Next Semester's Registration Form. These forms are available on the MSE 390 Blackboard or will be distributed via e-mail. **We require** that you keep forms 1 and 2 electronically so that updates can be made quickly. Remember that any mistakes made that affect your graduation are your responsibility. If you are unable to access these forms through MSE 390, email vicline@purdue.edu.

After faculty advisor approval of your plan of study, he or she will sign the registration form. Next, return the completed Registration Form for the upcoming semester to Vicki Cline for the access code required to register.

1.5.1 Planning Ahead

If you are considering an alternative Plan of Study Sequence due to Co-Op, Study Abroad or any other reason, you need to be aware that MSE 335 and 367 are all prerequisites for MSE 430, the first semester of our senior design sequence. Not fulfilling these prerequisites could delay your graduation date. For Co-Op students, alternative sequences are mapped out in section 2.1. For those of you considering Study Abroad, the alternate sequence depends on your

host institution. The Undergraduate Committee will be happy to work with you to develop a Plan of Study to facilitate your participation in Study Abroad (see section 2.3). For all other students considering alternative sequences (e.g., due to internships, etc.), it is very important to work with your faculty advisor to prepare an acceptable Plan of Study.

Table 1.1: Plan of Study Sequence for the B.S. MSE Degree

Sophomore Year

Third Semester

(3) MSE 230 (Structure and Properties of Materials)
(3) MSE 235 (Materials Properties Laboratory)
(4) MA 261 (Multivariate Calculus)
(3) PHYS 241 (Electricity and Optics)
(3) MA 265 (Linear Algebra)
(0) MSE 390 (Seminar)

(16)

Fourth Semester

(3) MSE 250 (Physical Properties in Eng. Systems)
(3) MSE 260 (Thermodynamics of Materials)
(3) MSE 270 (Bonding and Crystallography)
(3) MA 266 (Ordinary Differential Equations)
(1) PHYS 252 (Elec. And Optics Lab)[2]
(3) General Education Elective
(0) MSE 390 (Seminar)

(16)

Junior Year

Fifth Semester

(3) MSE 335 (Materials Characterization Laboratory)
(3) MSE 340 (Transport Phenomena)
(3) MSE 370 (Elec,Opt, and Mag. Props. of Materials)
(4) CHM 257 (Organic Chemistry)
(3) General Education Elective
(0) MSE 390 (Seminar)

(16)

Sixth Semester

(3) MSE 330 (Proc. And Props. of Matls.)
(3) MSE 367 (Materials Processing Laboratory)
(3) MSE 382 (Mechanical Response of Materials)
(3) Technical Elective
(3) General Education Elective
(0) MSE 390 (Seminar)

(15)

Senior Year

Seventh Semester

(3) MSE 430 (Materials Processing and Design I)
(3) MSE 445 (Materials Engineering Systems Analysis)
(6) Technical Electives
(3) General Education Elective
(0) MSE 390 (Seminar)

(15)

Eighth Semester

(3) MSE 440 (Materials Processing and Design II)
(9) Technical Electives
(6) General Education Electives
(0) MSE 390 (Seminar)

(18)

[2] Phys 252 is a 1-cr hour lab course. It may be replaced by another 1-cr hour stand-alone science lab course such as Chem 257L (which compliments Chem 257, a required course for MSE) or Chem 263. Another possibility is to take PHYS 272, a 4-cr hour course which will count for PHYS 241 (3-cr hour) and PHYS 252 (1-cr hour).

1.6. PETITIONING

Exceptions to any of the published requirements for graduation require approval by petition to the Undergraduate Committee of the School of Materials Engineering. A petition from a student to the Undergraduate Committee is specifically required for the following:

A. Acceptance of credit from Study Abroad programs for courses not receiving prior approval.
B. Approval of Technical, Support Area, or General Education Electives not on current lists.
C. Consideration of any other exceptions to normal graduation requirements.

Petitions are submitted as a memo to the Undergraduate Committee and include the following:
1. A general statement of the request and its rationale.
2. In case B above, a course description and syllabus (if available) for potential addition to the General Education or Technical Electives list.

The Undergraduate Committee will consider each petition and provide a formal written response to the student.

SECTION 2. OPPORTUNITIES

2.1. THE CO-OP PROGRAM

Cooperative Education is a formal plan of education in which a student alternates sessions of full-time work with sessions of full-time study. Purdue's Cooperative Education Program (Co-Op) is a five-year professional development experience, designed to combine practical on-the-job experiences with the classroom training of a four-year college curriculum. It helps students integrate theory and practice, confirm career choices, investigate potential job opportunities, and become better graduates. At the same time, it allows students to earn money and help finance their education. For general information on the Co-Op program please see http://coop.www.ecn.purdue.edu/Coop/.

Note: Anyone interested in the Cooperative Education program should talk with Prof. Eric Kvam, who is the MSE Co-Op advisor, as there have been changes in the program, including fewer Co-Op obligations. You should note that you will complete the 8 semester program for your degree over a 5 year period rather than the traditional 4 years. You will take the same courses as all other MSE students, but the order of the courses will be different than the Recommended Plan of Study Sequence shown in Table 1.1 of section 1.5. If you begin the Co-Op Program in the fall your Plan of Study Sequence is shown in either Table 2.1. If you begin in the spring or summer see either Table 2.3.

Table 2.1.: Co-Op Plan of Study Sequence for Fall Start

	Fall	Spring	Summer
Year 1	Chem 115 Engr 131 Engl 106 COM 114 Math 165	Chem 116 Engr 131 First Year or Other Elective (2 cr. needed) Phys 172 Math 166	Math 265 (3) 7 cr Math 261 (4)
Year 2	CO-OP SESSION	MSE 230 (3) 16 credits Math 266 (3) Phys 241 (3) Phys 252 (1) MSE 270 (3) MSE 250 (3) MSE 390 (0)	CO-OP SESSION
Year 3	MSE 235 (3) 16 cr Chem 257 (4) MSE 340 (3) MSE 370 (3) MSE 335 (3) MSE 390 (0)	CO-OP SESSION	Gen. Ed. (3) 6 cr Gen. Ed. (3)
Year 4	CO-OP SESSION	MSE 330 (3) 18 credits MSE 260 (3) MSE 367 (3) MSE 382 (3) Tech. El. (3) Gen. Ed. (3) MSE 390 (0)	CO-OP SESSION
Year 5	MSE 430 (3) 15 credits Tech. El. (3) Tech. El. (3) Gen. Ed. (3) MSE 445 (3) MSE 390 (0)	MSE 440 (3) 18 credits Tech. El. (3) Tech. El. (3) Tech. El. (3) Gen. Ed. (6) – 2 classes MSE 390 (0)	

Table 2.2.: Co-Op Plan of Study Sequence for Spring/Summer Start. The undergraduate committee **does not** recommend a Spring/Summer start for the Co-Op program.

	Fall	Spring	Summer
Year 1	Chem 115 Engr 131 Engl 106 COM 114 Math 165	Chem 116 Engr 132 First Year or Other Elective (2 cr. needed) Phys 172 Math 166	CO-OP SESSION
Year 2	Chem 257 (4) 17 credits Math 261 (4) MA 265 (3) MSE 230 (3) MSE 235 (3) MSE 390 (0)	CO-OP SESSION	6 cr MA 266 (3) Gen. Ed. (3)
Year 3	CO-OP SESSION	MSE 250 (3) 18 cr. MSE 260 (3) MSE 367 (3) MSE 270 (3) Phys 241 (3) Gen. Ed. (3) MSE 390 (0)	CO-OP SESSION
Year 4	MSE 335 (3) 18 credits MSE 340 (3) MSE 370 (3) Tech. El. (3) Tech. El. (3) Gen. Ed. (3) MSE 390 (0)	CO-OP SESSION	Gen. Ed. (3) 6 cr Gen. Ed. (3)
Year 5	MSE 430 (3) 15 credits Tech. El. (3) Tech. El. (3) Tech. El. (3) MSE 445 (3) MSE 390 (0)	MSE 440 (3) 16 credits Tech. El. (3) MSE 382 (3) Gen. Ed. (3) MSE 330 (3) MSE 390 (0) Phys. 252 (1)	

2.2. INTERNSHIPS AND SUMMER RESEARCH EXPERIENCE

Even if you are not a Co-Op student, it is still important that you experience Materials Engineering outside of the classroom either in an industrial or research setting. Summer is a particularly good time for industrial internships or university or National Laboratory research experience. Vicki Cline can provide information about available industrial internships both in the Lafayette area and beyond. Also, job fairs, especially the Industrial Roundtable during the fall semester, are great settings to make contacts for internship opportunities. When looking for summer research programs at universities, a good place to start is the National Science Foundation's Research Experience for Undergraduates (REU) program that sponsors summer research at universities across the United States. You can search for more information about the REU program at www.nsf.gov. Also, the College of Engineering sponsors a Summer Undergraduate Research Fellowship Program, or SURF, that affords research experience for undergraduates. The program runs from late May through early August; information regarding this program can be found at: https://engineering.purdue.edu/Engr/Research/SURF/. Note that the application dates are early in the spring semester. It is generally best to identify a faculty

member with whom you want to work, and to discuss whether they can support you in this program. The program stipend is approximately $3600/summer.

2.3. MATERIALS ENGINEERING STUDY ABROAD (MESA)

In recent years increasing numbers of MSE students have been spending a semester or a year overseas via the Study Abroad Program. You can learn more about Purdue's Study Abroad Program in general by visiting www.studyabroad.purdue.edu. The experiences of many of the Materials Engineering students who participated in Study Abroad may be found in the Study Abroad link in the undergraduate section of the MSE webpage. The purpose of this section is to provide information to help you prepare for Study Abroad. Below are some general comments about Study Abroad followed by information about specific Study Abroad locales.

- **Start your preparations as early as possible!** Typically students take Study Abroad during their junior year, but some go as early as their sophomore year. Virtually all students deviate from the "Recommended Plan of Study Sequence" (section 1.3), so advanced planning is necessary to determine which courses should be taken earlier and which should be delayed. Please remember, you will also need to apply through the Study Abroad Program, and there are deadlines for the various programs in their office. http://www.studyabroad.purdue.edu/
- We feel very strongly that Study Abroad enhances your education, and we would like as many students as possible to take advantage of this opportunity. Therefore, we will help you accommodate your Plan of Study to Study Abroad. The specific changes needed to your Plan of Study depend on your Study Abroad locale. Below is some information; however, each individual case is different so consider the information below as only a start. Visit Vicki Cline or the Undergraduate Committee Chair for help.
- In general, it is easier to satisfy Technical and General Education electives than Core Courses during Study Abroad. This is in part due to relatively few courses equivalent to Core Courses, and in part because acceptable courses at a given university may not be offered on a regular basis. For a given Study Abroad locale there are exceptions to this general rule and they are detailed below.
- Courses from Study Abroad locales must be approved for Purdue credit, beginning with the Office of Study Abroad. Vicki Cline maintains a list of courses that have been previously approved for Study Abroad. Consulting with her before selecting your courses may save you some time and trouble.

2.3.1. Comments About Specific Study Abroad Locales

University of New South Wales – Sydney, Australia

Most students attending UNSW have done so during the spring semester. Courses equivalent to MA 266 and MSE 382 have been available in past years. For students wishing to attend UNSW in their junior year, plan on taking MSE 367 during the spring semester of your sophomore year, MSE 382 at UNSW (if available) and MSE 260 during the spring semester of your senior year. MSE 350 is a prerequisite for MSE 430 (Senior Design); however, we have made exceptions in this case to facilitate Study Abroad. Several courses acceptable as Technical or General Education electives are available at UNSW.

Tohoku University – Sendai, Japan

Study Abroad at Tohoku University may be undertaken for either one semester or for a full year. Courses equivalent to MSE 250 and MSE 260 have been available in past years. Further, students who stayed for a full year completed their Senior Design requirement (MSE 430 and 440) through laboratory research at Tohoku. Several Technical and General Education electives are also available.

Imperial College – London, England

MSE students have attended Imperial College during the spring and summer, taking General Education courses. Courses equivalent to MSE 260, 330 and MSE 370 were available during the spring semester in past years. Also available were several Technical Elective courses.

ETH-Zurich – Zurich, Switzerland and University of Grenoble, Grenoble - France

At both of these institutions students have taken Technical and General Education electives during the spring semester.

Tsinghua University – Beijing, China

MSE has recently entered into an exchange agreement with Tsinghua University. The exchange consists primarily of undergraduate research opportunities, as well as Chinese culture courses. Spring semester.

Introduction to Intercultural Teamwork in China

Two week program during Maymester involving engineering and liberal arts majors. Emphasizes collaborative strategies with cultural diversity. Students visit three universities and cities such as Beijing, Harbin, Shanghai and Ningbo and collaborating with Chinese peers and visits to industry partners. Program fee is only $2,500; made possible by a significant endowment support. Limit of twenty participants, so apply early!

Other programs recently chosen by MSE students are:

University of Madrid - Spain
National University of Ireland – Galway
University of Florence – Italy
Global Leadership and Innovation Program – Greece
Karlsruhe University – Germany
University of Grenoble – France

2.4. MSE 499 RESEARCH IN MATERIALS ENGINEERING

MSE 499 provides the opportunity for laboratory and/or library research beyond the scope of the ordinary undergraduate curriculum, working in a research environment under the direct guidance of a faculty member. MSE 499 may be taken for 1, 2 or 3 credits in a given semester, and up to 6 credits of MSE 499 can count towards fulfilling your Technical Elective Program (section 1.4.5). To enroll in MSE 499 your first step is to find a member of the faculty who is willing to supervise your research project. The best way to do this is to review the faculty research interests available on the MSE website and find a match with your own interests. Next you should arrange a meeting with the faculty member to inquire if he/she is willing to act as your research advisor and discuss possible projects. After finding a faculty advisor you should submit a petition to the Undergraduate Chairman for approval of your 499 project. In general, it

is preferred that petitions are submitted during the regular registration period; however, you may submit petitions to add MSE 499 to your schedule up to the end of the second week of classes. A petition format is provided in section 2.4.1. below. You will not be able to register for MSE 499 until the Undergraduate Chairman has approved your petition. **Please note that for every credit of MSE 499 you are expected to provide 3 hours per week of available time in your schedule during regular business hours (8 AM – 5 PM) for laboratory or library research**. MSE 499 research performed outside regular business hours must be accommodated by special arrangement and is the exception rather than the rule. **Students taking MSE 499 for 3 credits may substitute 3 of the weekly laboratory hours for a one hour research meeting with their advisor**.

2.4.1. Format for Independent Research Petition

This form is available online at:
https://engineering.purdue.edu/MSE/Academics/Undergrad/index.html The Word File is below the link to the undergraduate manual.

School of Materials Engineering
MSE 499 Independent Research Request

Date:
To: Prof. Trice, Undergraduate Committee Chair
From:
E-mail address:

RE: Approval for independent research project. (MSE 499)

Faculty Research Advisor:
Number of credit hours:
Title of proposed project: (30 characters or less, a space counts as a character, abbreviations are acceptable)

Number of prior MSE 499 credits (not including the proposed credits):

Approval for _____ semester _____. (e.g, Fall semester 2006)

Background:
Objective:
Work Schedule: Be specific (example: MWF 10:30-1:30)
Responsibility to Advisor: (weekly meetings, semester report, etc.)

Student Signature:_____
Signature, Advisor: _____

2.5. SOCIETY OF MATERIALS SCIENCE ENGINEERS (SMSE)

The Society of Materials Science Engineers is a student chapter representing the major MSE professional organizations including the Materials Research Society (MRS), the American Ceramic Society (ACerS) and the Minerals, Metals and Materials Society (TMS) and the Iron and Steel Society. Membership in the above national organizations is possible by joining the "Materials Advantage". Joining this single organization, provides a student with official membership all of the four listed national organizations. The student group, SMSE, promotes communication among students in Materials Engineering, holds social events like pizza dinners and pool tournaments, and outreach. For more information please visit the Student Societies link on the Materials Engineering Home page.

2.6. SCHOLARSHIPS AND AWARDS

There is an official application that MUST BE COMPLETED to be considered for a scholarship in MSE. The link will be found on the MSE undergraduate website. The due date for application is a "hard" date and all applications must be submitted by that date with no exceptions. This date is typically in May but may change from year to year. The actual date and relevant information will be presented in MSE 390, and through school-wide e-mail messages.

Undergraduate scholarships fall into three categories. Scholarships and awards exclusively for Purdue MSE students include the John Deere Foundation, the Sopcak Memorial, the Matthew M. Slone Academic Excellence Award, and the John Bray Award. Other companies that award scholarships include Kaiser, U.S. Steel, Alcoa, and Precision Cast Parts. Purdue University also provides a limited number of awards including the Graduating Student Awards. Finally, national societies like the American Society for Metals (ASM) and the Minerals, Metals and Materials Society (TMS) have annual scholarship competitions.

Appendix I: MSE Faculty & Staff Contact Information

NAME	PHONE #	ROOM #
FACULTY		
Blendell, John – blendell@purdue.edu	49-40149	ARMS 2317
Bowman, Keith (Head) – kbowman@purdue.edu	49-46316	ARMS 2301
Chen, Wayne - wchen@purdue.edu	49-41788	ARMS 3323
Dayananda, M. – dayanand@purdue.edu	49-44113	ARMS 2319
Garcia, Edwin - redwing@purdue.edu	49-40148	ARMS 2307
Gaskell, David - gaskell@ecn.purdue.edu	49-47703	ARMS 2225
Handwerker, Carol –handwerker@purdue.edu	49-40147	ARMS 2331
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Trumble, Kevin - driscol@ecn.purdue.edu	49-44114	ARMS 2333
Youngblood, Jeffrey - jpyoungb@purdue.edu	49-62294	ARMS 2233
STAFF		
Adams, Christi - cladams@purdue.edu	49-44100	ARMS 2300
Brooks, Kevin - msesite@ecn.purdue.edu	49-44118	ARMS 2207
Bystrom, Donna - bystrom@purdue.edu	49-44095	ARMS 2305
Cline, Vicki, Academic Advisor - vicline@purdue.edu	49-44103	ARMS 2315
Elias, Ryan – Dir. of Development - relias@purdue.edu	49-61213	ARMS 2201
Finney, Patti – pfinney@purdue.edu	49-44105	ARMS 2200
Hartfiel, Dana – Purchasing and Student Payroll - hartfiel@purdue.edu	494-5149	ARMS 2201
Hare, Tammy – Travel Reimbursement and Forms - thare@purdue.edu	49-40144	ARMS 2201
Metcalf, Patricia (Ph.D.) - metcalfp@purdue.edu	49-69773	ARMS 2313
Meyer, David - dlmeyer@purdue.edu	49-63480	ARMS 2309