

THE HONG KONG POLYTECHNIC UNIVERSITY



DEPARTMENT OF APPLIED PHYSICS

PROGRAMME REQUIREMENT DOCUMENT

OF

Master of Science in Microelectronics Technology and Materials

(Code: 11044)
2023/24 intake cohort

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1. GENERAL INFORMATION

Programme Title	:	Master of Science in Microelectronics Technology and Materials
Programme Code	:	11044
Host Department	:	Department of Applied Physics
Medium of Instruction	:	English
Mode of Study	:	Full-time
Duration	:	1 year
Type of Programme	:	Self-financed
Requirement for Graduation	:	Total 30 credits (Master's Degree); 18 credits (Postgraduate Diploma as an exit award)
Final Award	:	Master of Science in Microelectronics Technology and Materials 微電子技術及材料理學碩士學位 Or Postgraduate Diploma in Microelectronics Technology and Materials 微電子技術及材料深造文憑 (An exit award)
Annual Intake Number	:	60

2. RATIONALE, OBJECTIVES AND PROGRAMME OUTCOMES

2.1 Rationale

The programme targets to address the impending need of talents in the microelectronics industry, both locally in Hong Kong/ the Greater Bay Area (GBA) and at the national level. It would showcase PolyU's drive to fulfil the national development policies. Besides, the booming microelectronics and innovation industries in the GBA are aptly matched with the strong policy supports in the GBA region. The programme addresses the demand for high-calibre talents with both knowledge and hands-on skills in microelectronics technology for contributing to the industry's development.

The programme title of 'Microelectronics Technology and Materials' fully reflects the emphasis of microelectronics technology in the current proposal. Students will be trained

in the process flow of microelectronics manufacturing, starting with device /IC design and simulation, and followed by fabrication and processing, packaging and analysis. Technological know-how would be the main focus of the programme. At the same time, with increasing interest in the novel materials for next-generation applications (such as 5G, IoT development), and taking into the advantage of our department's expertise in materials research, materials aspects pertinent to microelectronics devices will be introduced in the programme.

2.2 Objectives

This programme is designed to provide a unique and professional-oriented education opportunity for Bachelor degree holders and nurture graduates that are competent in the process flow of microelectronics and integrated circuit design, simulation, fabrication and processing, characterization, and inspection. Through a carefully-designed curriculum and diversified learning methodologies, we will develop graduates with analytical and critical thinking, as well as problem-solving skills that facilitate them to pursue careers related to microelectronic device research, design, and manufacturing.

2.3 Institutional Learning Outcomes

All graduates are expected to be able to demonstrate professional competence, strategic thinking, and lifelong learning capability upon the completion of the Programme.

(a) Professional competence of specialists/leaders of a discipline/ profession:

Graduates of PolyU taught postgraduate programmes will possess in-depth knowledge and skills in their area of study and be able to apply their knowledge and contribute to professional leadership.

(b) Strategic thinking:

Graduates of PolyU taught postgraduate programmes will be able to think holistically and analytically in dealing with complex problems and situations pertinent to their professional practice. They will be versatile problem solvers with good mastery of critical and creative thinking skills, who can generate practical and innovative solutions.

(c) Lifelong learning capability:

Graduates of PolyU taught postgraduate programmes will have an enhanced capability for continual professional development through inquiry and reflection on professional practice.

2.4 Intended learning outcomes (ILOs) of the programme

Upon completion of the Programme, students should be able to:

- (i) analyze the properties of semiconductor materials and the performance of microelectronic devices;
- (ii) utilize knowledge and skills in key aspects of semiconductor material processing, microelectronics devices and systems fabrication;

- (iii) evaluate device design and process flows, and devise strategies to improve device performances and process yields; and
- (iv) demonstrate ability on continuous development as a professional in the microelectronics industry, through inquiry and reflection on the current technological development.

2.5 Correlation between the ILOs and the institutional learning outcomes

ILOs	Institutional Learning Outcomes
(i), (ii)	(a) Professional competence
(iii)	(b) Strategic thinking
(iv)	(c) Lifelong learning capability

3. ENTRANCE REQUIREMENTS

A Bachelor's degree with honours in science or engineering or equivalent qualifications. Preference will be given to applicants with relevant work experience in microelectronics industries.

3.1 English Language requirements

- (i) If an applicant is not a native speaker of English, and his/her Bachelor's degree or equivalent qualification is awarded by institutions where the medium of instruction is not English, he/she is expected to fulfil the following minimum English language requirement for admission purpose:
 - a) A Test of English as a Foreign Language (TOEFL) score of 80 for the Internet-based test or 550 for the paper-based test; OR
 - b) An overall Band Score of at least 6 in the International English Language Testing System (IELTS).

4. CURRICULUM

Students are required to complete 30 credits for an MSc in Microelectronic Technology and Materials, in which 18 credits of core and 12 credits of elective subjects. The total number of credits required for graduation is 30.

Core subjects (3 credits for each subject)

- **AP5001 Semiconductor Materials and Processing** (Detailed knowledge and understanding of materials science and the processing of semiconductor materials)
- **AP5002 Semiconductor Devices and Systems** (Operational principles and underlying physical characteristics of silicon-based semiconductor electronic devices such as diodes (*p-n*, and metal-semiconductor junctions), and transistors (bipolar junction, field-effect) as well as their integrations.)
- **AP5003 Integrated Circuits Design** (Digital and analogue integrated circuit design. Simulation, and optimization of electronics integrated circuits.)
- **AP5004 Integrated Circuit Processing and Laboratory** (Microfabrication concepts, materials, and methods that are typically used in a cleanroom especially for the fabrication of integrated circuits.)
- **AMA503 Statistics and Data Analytics** (Fundamental theories of statistics and data analysis, find patterns in data to improve processes in electronic design automation and semiconductor manufacturing.)
- **AP5017 Advanced Materials Analysis and Characterization** (Advanced instrumentation for materials analysis to students from microelectronics and material science disciplines.)

Elective Subjects (3 credits for each subject)

- **AP5006 Thin Film Materials and Preparation Technologies** (Fundamental knowledge on modern syntheses of thin films. Detailed descriptions of various thin-film deposition techniques used in industrial processing are given. Some important industrial applications of dielectric thin-film technologies are explained.)
- **AP5007 MEMS (microelectromechanical systems) and Sensors** (Recent progress on the design and fabrication of MEMS. Understanding the detection and actuation principles of MEMS. The applications of MEMS in sensing of motional, thermal, optical, chemical, and biological characteristics. Integration of MEMS with CMOS integrated circuits.)
- **AP5008 Microelectronics Packaging and Reliability** (Knowledge of materials and techniques for integrated circuit packaging, an understanding of different failure mechanisms, the study of testing techniques, and reliability requirements for the assembly and packaging of integrated circuits.)
- **AP5009 Emerging Memory Technologies** (Concepts of the memory sub-system from the device cell structures to the array and architecture design, emphasizing the industry trend and cutting-edge technologies. The concept of the memory hierarchy is used as an outline throughout the whole course. The in-memory computing and in-sensor computing for artificial intelligence will be also covered.)

- **AP5010 Artificial Intelligence for Materials Science** (Fundamentals of artificial intelligence algorithms and their applications in materials science.)
- **AP5011 Machine Vision for Semiconductor Manufacturing and Inspections** (Introduction of machine vision for semiconductor manufacturing inspection such as microstructural inspection of wafers and IC packaging inspection.)

Elective project (6 credits)

- **AP5020 Project** (Independent project carried out under the supervision of a faculty member with a topic to be proposed by the students. This is a 6-credit subject, and it will last for 2 consecutive semesters)

Suggested pattern of the progression of the programme

Subject Code	Subject Title	Core/ Elective	Credits
Semester 1			
AP5001	Semiconductor Materials and Processing	Core	3
AP5002	Semiconductor Devices and Systems	Core	3
AP5003	Integrated Circuits Design	Core	3
AP5004	Integrated Circuit Processing and Laboratory	Core	3
		Total:	12
Semester 2			
AMA503	Statistics and Data Analytics	Core	3
AP5017	Advanced Materials Analysis and Characterization	Core	3
	2 Elective Subjects or 1 Elective Subject & AP5020 Project*	Elective	6
		Total:	12
Summer Term			
	2 Elective Subjects or 1 Elective Subject & AP5020 Project*	Elective	6
		Total:	6

*AP5020 lasts for 2 consecutive semesters (Semester 2 & Summer Term).

Total Credits: 30 (6 core subjects and 4 elective subjects; *or*
6 core subjects, 2 elective subjects and the Project)

Specific aims, learning outcomes, teaching & learning methodology, assessment and other details of each subject are in Subject Description Forms (Appendix I)

National Education Requirement

Students are required to complete a 3-hour online module plus 3 hours of self-study on “National Education” and pass the assessment (multiple attempts allowed) in the form of multiple-choice questions online, normally within their first year of studies, as a graduation requirement.

5. CURRICULUM MAP

This curriculum map gives a holistic view of the programme to which each intended learning outcome will be taught and assessed in the programme (see “Objectives” and “Programme outcomes” sections.)

The following indicators (I, R, A) in the relevant boxes show the treatment of the programme outcome in a subject:

I (Introduced) That the learning leading to the particular intended outcome is introduced in that subject.

R (Reinforced) That the learning leading to the particular intended outcome is reinforced in that subject.

A (Assessed) That the performance which demonstrates the particular intended outcome is assessed in that subject

Subjects	Programme outcomes	i	ii	iii	vi
<i>Core Subjects</i>					
AMA503 Statistics and Data Analytics			I/A	R	
AP5001 Semiconductor Materials and Processing	I/A		A	A	
AP5002 Semiconductor Devices and Systems	I/A		A	A	
AP5003 Integrated Circuits Design			I/A	R	
AP5004 Integrated Circuit Processing and Laboratory		I/A		R	
AP5017 Advanced Materials Analysis and Characterization		I/A		A	
<i>Elective Subjects</i>					
AP5006 Thin Film Materials and Preparation Technologies	A	A		R	
AP5007 MEMS (microelectromechanical systems) and Sensors	A	A		R	
AP5008 Microelectronics Packaging and Reliability		A	A	R	
AP5009 Emerging Memory Technologies		A	A	R	
AP5010 Artificial Intelligence for Materials Science		I/A	A		
AP5011 Machine Vision for Semiconductor Manufacturing and Inspections		A	A	R	
AP5020 Project	A	A	A	R	

6. LEVEL OF AWARD

The programme will grant the award of Master of Science (MSc) and Postgraduate Diploma (PgD) to the students who have completed the required content as stipulated in each award.

6.1 Master of Science (MSc) Award

All students enrolled into this Programme are expected to complete the study and graduate with a Master degree. To be eligible for the MSc award, a student shall complete 30 credits. Students must complete 18 credits of core subjects, plus another 12 credits of elective subjects/ project.

6.2 Postgraduate Diploma (PgD) Award

For student who fails to fulfill the requirements of the MSc award, the Department may consider granting the student an award of Postgraduate Diploma (PgD) to be eligible for the award. A student shall complete 18 credits, five subjects must be core subjects and one must be from the list of elective subjects.

7. SUBJECT REGISTRATION, WITHDRAWAL AND SUBJECT EXEMPTION

In addition to programme registration, students need to register for the subjects at specified periods prior to the commencement of the semester. An add/drop period will also be scheduled for each semester. Students may apply for withdrawal of their registration on a subject after the add/drop period if they have a genuine need to do so. The application should be made to the Department and will require the approval of both the subject teacher and the Programme Leader (or an alternate academic staff authorised by the Department). Applications submitted after the commencement of the examination period will not be considered. For approved applications of subject withdrawal, the tuition fee paid for the subject will be forfeited and the withdrawal status of the subject will be shown in the assessment result notification and transcript of studies, but will not be counted in the calculation of the GPA.

For Subject Exemption, students may be exempted from taking any specified subjects if they have successfully completed similar subjects previously in another programme or have demonstrated the level of proficiency/ability to the satisfaction of the subject offering Department. Subject exemption is normally decided by the subject offering Department. However, for applications which are submitted by students who have completed an approved student exchange programme, the subject exemption is to be decided by the programme offering Department in consultation with the subject offering Departments. In case of disagreement between the programme offering Department and the subject offering Department, the two Faculty Deans/School Board Chairmen concerned will make a final decision jointly on the application. If students are exempted from taking a specified subject, the credits associated with the exempted subject will not be counted towards meeting the award requirements (except for exemptions granted at admission stage). It will therefore be necessary for the students to consult the programme offering Department and take another subject in order to satisfy the credit requirement for the award

8. NORMAL DURATION FOR COMPLETION OF THE PROGRAMME

- 8.1 Students should complete the programme within the normal duration of the programme as specified in Section 1 above. Those who exceed the normal duration of the programme will be de-registered from the programme unless prior approval has been obtained from relevant authorities. The study period of a student shall exclude deferment granted for justifiable reasons, and the semester(s) when the student has been approved to undertake internship. Any semester in which the students are allowed to take zero subject will be counted towards their total period of registration.
- 8.2 Students who have been registered for the normal duration of the programme may request extension of their studies for up to one year with the approval of the Head of Department. Applications for extension of study period beyond one year and up to two years will require the approval from Faculty Board Chairman.
- 8.3 Students who have exceeded the normal duration of the programme for more than two years and have been de-registered can submit an appeal to the Academic Appeals Committee to request further extension. If the appeal fails, the student shall be de-registered.

9. ASSESSMENT AND PROGRESSION

9.1 Assessment methods

- 9.1.1 Students' performance in a subject shall be assessed by continuous assessment, practical test and/or examinations. The weighting of each in the overall subject grade is stated in the respective subject description form (Appendix I).
- 9.1.2 Continuous assessment may include tests, assignments, projects, laboratory work, field exercises, presentations, and other forms of classroom participation. Continuous Assessment assignments which involve group work should nevertheless include some individual components therein. The contribution made by each student in continuous assessment involving a group effort shall be determined and assessed separately, and this can result in different grades being awarded to students in the same group.
- 9.1.3 For any subject offered by a servicing department (with subject code not beginning with 'AP'), a student must satisfy requirements that may be stipulated by the servicing department concerned in order to achieve an overall passing grade.
- 9.1.4 At the beginning of each semester, each subject teacher should inform students of the details of the assessment methods to be used.
- 9.1.5 The Board of Examiners is appointed to deal with special cases arising from assessment and classification of awards.

9.2 Progression

- 9.2.1 The Board of Examiners shall, at the end of each semester, (except for Summer Term unless there are students who are eligible to graduate after completion of Summer Term subjects or the Summer Term study is mandatory for the programme), determine whether each student is
- (i) eligible for progression towards an award; or
 - (ii) eligible for an award; or
 - (iii) required to be de-registered from the programme.
- 9.2.2 A student will have ‘progressing’ status unless he/she falls within any one of the following categories, which may be regarded as grounds for deregistration from the programme:
- (i) the student has reached the final year of the normal period of registration, as specified in the Section 1 of this document, unless approval has been given for extension; or
 - (ii) the student has reached the maximum number of retakes allowed for a failed compulsory subject; or
 - (iii) the student’s GPA (see Section 9.5.2 below) is lower than 1.70 for two consecutive semesters and his/her Semester GPA in the second semester is also lower than 1.70; or
 - (iv) the student’s GPA is lower than 1.70 for three consecutive semesters.
- 9.2.3 When a student falls within any of the categories as stipulated above, except for category (i) with approval for extension, the Board of Examiners shall de-register the student from the programme without exception.
- 9.2.4 When a student has a GPA lower than 1.70, he/she will be put on academic probation in the following semester. If a student is able to pull his/her GPA up to 1.70 or above at the end of the semester, the status of “academic probation” will be lifted. The status of “academic probation” will be reflected in the assessment result notification but not in the transcript of studies.
- 9.2.5 A student may be de-registered from the programme enrolled before the time frame specified in 9.2.2 (iii) or 9.2.2 (iv) above if his/her academic performance is poor to the extent that the Board of Examiners deems that his/her change of attaining a GPA of 1.70 at the end of the programme is slim or impossible.
- 9.2.6 If the student is not satisfied with the de-registration decision of the Board of Examiners, he/she can lodge an appeal. All such appeal cases will be

referred directly to the Academic Appeals Committee (AAC) for final decision. Views of Faculties/Departments will be sought and made available to AAC for reference.

9.3 Retaking of subjects

- 9.3.1 Students may only retake a subject which they have failed (i.e. Grade F or S or U).
- 9.3.2 Retaking of subjects is with the condition that the maximum study load of 21 credits per semester is not exceeded.
- 9.3.3 The number of retakes of a subject should be restricted to two, i.e. a maximum of three attempts for each subject is allowed.
- 9.3.4 In cases where a student takes another subject to replace a failed elective subject, the fail grade will be taken into account in the calculation of the GPA, despite the passing of the replacement subject.
- 9.3.5 Students need to submit a request to the Faculty Board for the second retake of a failed subject.
- 9.3.6 Students who have failed a compulsory subject after two retakes and have been deregistered can submit an appeal to the Academic Appeals Committee (AAC) for a third chance of retaking the subject.
- 9.3.7 In relation to 9.3.6 above, in case AAC does not approve further retakes of a failed compulsory subject or the taking of an equivalent subject with special approval from the Faculty, the student concerned would be de-registered and the decision of the AAC shall be final within the University.

9.4 Exceptional circumstances

- 9.4.1 *Absence from an assessment component:* If a student is unable to complete all the assessment components of a subject due to illness or other circumstances which are beyond his/her control, and considered by the subject offering department as legitimate, the Department will determine whether the student will have to complete a late assessment and, if so, by what means. This late assessment shall take place at the earliest opportunity, and before the commencement of the following academic year (except that for Summer Term, which may take place within 3 weeks after the finalisation of Summer Term results). The student will not receive a grade for the subject prior to his/her completion of the assessment component(s). The student concerned is required to submit his/her application for late assessment in writing to the Head of Department offering the subject, within five working days from the date of the examination, together with any supporting documents. Approval of applications for late assessment and the means for such late assessments shall be given by the Head of Department offering the subject or the Subject teacher concerned, in consultation with the Programme Leader.

9.4.2 *Other particular circumstances: A student's particular circumstances may influence the procedures for assessment but not the standard of performance expected in assessment.*

9.5 Grading

9.5.1 Assessment grades shall be awarded on a criterion-referenced basis. A student's overall performance in a subject is graded as follows:

<i>Subject Grade</i>	<i>Short Description</i>	<i>Elaboration on Subject Grading Description</i>
A+ A A-	Excellent	Demonstrates excellent achievement of intended subject learning outcomes by being able to skillfully use concepts and solve complex problems. Shows evidence of innovative and critical thinking in unfamiliar situations, and is able to express the synthesis or application of ideas in a logical and comprehensive manner.
B+ B B-	Good	Demonstrates good achievement of intended subject learning outcomes by being able to use appropriate concepts and solve problems. Shows the ability to analyse issues critically and make well-grounded judgements in familiar or standard situations, and is able to express the synthesis or application of ideas in a logical and comprehensive manner.
C+ C C-	Satisfactory	Demonstrates satisfactory achievement of intended subject learning outcomes by being able to solve relatively simple problems. Shows some capacity for analysis and making judgements in a variety of familiar and standard situations, and is able to express the synthesis or application of ideas in a manner that is generally logical but fragmented.
D+ D	Pass	Demonstrates marginal achievement of intended subject learning outcomes by being able to solve relatively simple problems. Can make basic comparisons, connections and judgments and express the ideas learnt in the subject, though there are frequent breakdowns in logic and clarity.
F	Fail	Demonstrates inadequate achievement of intended subject learning outcomes through a lack of knowledge and/or understanding of the subject matter. Evidence of analysis is often irrelevant or incomplete.

'F' is a subject failure grade, whilst all others ('D' to 'A+') are subject passing grades. No credit will be earned if a subject is failed.

Notes:

- Marking rubrics aligned with these Grade Descriptors need not include all aspects of the grade descriptor.
- Marking rubrics aligned with these Grade Descriptors may include other aspects aligned with particular subject matter or field of study requirements but are not included in the grade descriptor.

Indicative descriptors for modifier grades

Main Grade (solid)	The student generally performed at this level, indicating mastery of the subject intended learning outcomes at this level.
+ (exemplary)	The student consistently performed at this level and exceeded the expectations of this level in some regards, but not enough to claim mastery at the next level.
- (marginal)	The student basically performed at this level, but the performance was inconsistent or fell slightly short in some regards.

Note:

The above indicative descriptors for modifier grades are not applicable to the pass grades D and D+

The grade points assigned to subject grades attained by students from 2020/21 are as follows:

<i>Grade</i>	<i>Grade Point for grades attained from 2020/21</i>
A+	4.3
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
C-	1.7
D+	1.3
D	1.0
F	0.0

9.5.2. At the end of each semester, a Grade Point Average (GPA) will be computed as follows, and based on the grade point of all the subjects:

$$\text{GPA} = \frac{\sum_{n=1}^N \text{Subject Grade Point}_n \times \text{Subject Credit Value}_n}{\sum_{n=1}^N \text{Subject Credit Value}_n}$$

where N = number of all subjects (inclusive of failed subjects) taken by the student up to and including the latest semester/term. For subjects which have been retaken, only the grade point obtained in the final attempt will be included in the GPA calculation

In addition, the following subjects will be excluded from the GPA calculation:

- (i) Exempted subjects
- (ii) Ungraded subjects
- (iii) Incomplete subjects
- (iv) Subjects for which credit transfer has been approved without any grade assigned
- (v) Subjects from which a student has been allowed to withdraw (i.e. those with the code 'W')

Subject which has been given an “S” code, i.e. absent from all assessment components, will be included in the GPA calculation and will be counted as “zero” grade point. GPA is thus the unweighted cumulative average calculated for a student, for all relevant subjects taken from the start of the programme to a particular point of time. GPA is an indicator of overall performance, and ranges from 0.00 to 4.30 from 2020/21.

The codes to denote overall subject assessment and for final assessments are included in Appendices II and III.

9.6 Misconducts

9.6.1. The Department regards academic integrity as most essential. Acts of dishonesty in assessments and examinations will be seriously treated. Offenders may be brought up to Student Discipline Committee for action as appropriate.

(i) Students who are found guilty of academic dishonesty will be subject to the penalty of having the subject result concerned disqualified and be given a failure grade with a remark denoting 'Disqualification of result due to academic dishonesty'. The remark will be shown in the students' record as well as the assessment result notification and transcript of studies, until their leaving the University.

(ii) Students who have committed disciplinary offences (covering both academic and non-academic related matters) will be put on 'disciplinary probation'. The status of 'disciplinary probation' will be shown in the students' record as well as the assessment result notification, transcript of studies and testimonial during the probation period, until their leaving the University. The disciplinary probation is normally one year unless otherwise decided by the Student Discipline Committee.

9.6.2 The University reserves the right to withhold the issuance of any certificate of study to a student who has unsettled matters with the University, or subject to disciplinary action.

10. FINAL AWARD

10.1 Graduation requirements

10.1.1 A student would be eligible for award if he/she satisfies all the conditions listed below:

- (i) Accumulation of the requisite number of credits for the particular award, as defined in the Programme Requirement Document; and
- (ii) Satisfying the residential requirement for at least 1/3 of the credits to be completed for the award he/she is currently enrolled, unless the professional bodies stipulate otherwise; and
- (iii) Satisfying all requirements as defined and/or stipulated in the Programme Requirement Document and as specified by the University; and
- (iv) Having a Grade Point Average (GPA) of 1.70 or above at the end of the programme.¹

10.1.2. A student is required to graduate as soon as he/she satisfies the graduation requirements as stipulated above. Subject to the maximum study load of 21 credits per semester, a student may take more credits than he/she needs to graduate on top of the prescribed credit requirements for his/her award in or before the semester within which he/she becomes eligible for award.

10.2 Guidelines for award classification

10.2.1 Classification of awards is based on the final GPA (see the Section 9.5.2 and 10.2.2). There is no automatic conversion between the GPA and the award classification. The Board of Examiners shall exercise its judgement in coming to its conclusions as to the award for each student, and where appropriate, may use other relevant information.

10.2.2. Any subjects passed after the graduation requirement has been met or subjects taken on top of the prescribed credit requirements for award shall not be taken into account in the grade point calculations for award classification. However, if a student attempts more elective subjects than those required for graduation in or before the semester in which he/she becomes eligible for award, the elective subjects, except for subject which are selected by students to fulfill the free electives requirement for graduation, with a higher grade/contribution shall be included in the grade point calculation (i.e. the excessive subjects attempted with a lower grade/contribution, including failed subjects, will be excluded).

¹ For programmes leading to nested awards where satisfaction of the conditions leading to the lesser award is a subset of the conditions leading to the more advanced award, and where students opt to graduate with the lesser award when failing to complete the requirements for the more advanced award, subjects taken solely for fulfilling the requirements for the more advanced award may be excluded in the GPA calculation for the purpose of satisfying this condition (i.e. the student can graduate with the lesser award if the Award GPA of the lesser award can meet the minimum GPA requirement for graduation).

10.2.3. The following are guidelines for Boards of Examiners' reference in determining award classifications:

<i>Award Classification</i>	<i>Guidelines</i>
Distinction	The student's performance/attainment is outstanding, and identifies him/her as exceptionally able in the field covered by the programme in question.
Credit	The student has reached a standard of performance/attainment which is more than satisfactory but less than outstanding.
Pass	The student has reached a standard of performance/attainment judged to be satisfactory, and clearly higher than the 'essential minimum' required for graduation. ²
	The student has attained the 'essential minimum' required for graduation at a standard ranging from just adequate to just satisfactory. ³

10.2.4. The following are the award GPA ranges for determining award classifications:

<i>Award Classification</i>	<i>Award GPA</i>
Distinction	3.60 – 4.30
Credit	3.00 – 3.59
Pass	2.40 – 2.99
	1.70 – 2.39

11. PROGRAMME ADMINISTRATION

The Programme is operated and managed according to the University guidelines.

11.1. Board of Examiners (BoE)

11.1.1. A Board of Examiners (BoE) shall be appointed for this programme. The Faculty Board may approve arrangements whereby area examination committees take responsibility for certain aspects of the programme, and report to the full Board of Examiners.

11.1.2. The minimum number of a BoE's membership (including the Chairman, but not the Secretary) should be five, and it should be composed of staff members associated with the programme and some other senior staff members. In this programme, the BoE Chairman is the Head of Department.

² For awards other than Honours degree, these guidelines for the Pass award are combined to read as 'The student has reached a standard of performance/attainment ranging from just adequate to satisfactory'.

11.1.3. The Faculty Board will meet at the end of each semester to consider the decisions taken by the Boards of Examiners. The focus of the Faculty Board's considerations will be on the programme and on the consistency of decision making across the Faculty whereas the emphasis of the Board of Examiners will have been on individual students.

11.1.4. The Faculty Board shall consider only those decisions on individual students which fall outside the programme regulations or the University regulations. Those which fall outside the University regulations shall be further referred, with the Board's views, to the Academic Planning and Regulations Committee (APRC) for ratification.

11.1.5. In considering the decisions from the BoE, the Faculty Board will normally receive the following information:

- (i) List of graduating students with BoE's decisions on their academic awards and award classifications;
- (ii) Statistic on:
 - Award classification distribution
 - Students who are required to be deregistered; dropping out (i.e. official withdrawal and study-ended); taking zero subject; transferring to another programme
- (iii) For cases with extenuating circumstances including those failing outside programme regulations or University regulations – report from Board of Examiners.

11.2. Postgraduate Programme Committee

The Postgraduate Programme Committee exercises the overall academic and operational responsibility for the programme and its development within defined policies, procedures and regulations. The composition of the Programme Committee is:

- Chairman
- Programme Leader
- Subject Lecturers
- Two student representatives (to be elected)
- Industry representatives (to be recommended)

11.3. Programme Leader

The Programme Leader is responsible for providing academic and organizational leadership for the programme through the Programme Committee. The Programme Leader is accountable to the Head of Department for day-to-day operation of the programme.

11.4. Student/Staff Consultative Group

This group, consisting of the Programme Leader, Subject Lecturers, and student

representatives, meets twice per year to discuss the programme in general, the demands of the programme on students, and possible improvements. It gives students the opportunity to contribute to the operation of the programme.

12. UNIVERSITY REGULATIONS

The regulations in this document are only for those which apply specifically to the Master of Science in Microelectronics Technology and Materials. Students should consult the current issue of the “Hong Kong Polytechnic University Student Handbook” for the General Regulations of the University.

(Should discrepancy between the contents of this document and University regulations arise, University regulations will always prevail.)

13. AMENDMENTS

This Programme Requirement Document is subject to review and changes which the programme offering Department can decide to make from time to time. Students will be informed of the changes as and when appropriate.

Appendix I: Subject Description Forms

The Subject Description Forms of AP's subjects can be found in AP's website:

<https://www.polyu.edu.hk/ap/study/taught-postgraduate-programme/master-of-science-in-microelectronics-technology-and-materials/msc-microelectronics-programme-structure/>

Appendix II: Codes for Overall Subject Assessment

(a) Codes to denote overall subject assessments (and subject components*, if deemed appropriate)

Codes	Interpretation	Remarks
I [#]	Assessment to be completed	An incomplete grade must be converted to a regular grade normally in the following academic year at the latest.
N	Assessment is not required	
P	Pass on an ungraded subject	This code applies to an ungraded subject, such as industrial training.
U	Fail on an ungraded subject	This code applies to an ungraded subject, such as industrial training.
M	Pass with Merit	This code applies to all General Education subjects. The adoption or otherwise of this code to other subjects adopting a “Pass/Fail” grading system would be subject to the decision of individual Departments. The grade “Pass with Merit” can be awarded when the student’s work exceeds the subject learning outcomes in the majority of regards.
L	Subject to be continued in the following semester	This code applies to subjects like “Project” which may consist of more than 1 part (denoted by the same subject code) and for which continuous assessment is deemed appropriate.
S	Absent from all assessment components	-
W	Withdrawn from subject	Dropping of subjects after the add/drop period is normally not allowed. Requests for withdrawal from subjects after the add/drop period and prior to examination will only be considered under exceptional circumstances. This code is given when a student has obtained exceptional approval from department to withdraw from a subject after the “add/drop” period and prior to examination; otherwise, a failure grade (grade F) should be awarded.
Z	Exempted	-
T	Transfer of Credit	-

[#]For cases where students fail marginally in one of the components within a subject, the Board of Examiners can defer making a final decision until the students concerned have completed the necessary remedial work to the satisfaction of the subject examiner(s). The students can be assigned an “I” code in this circumstance.

Note : Subjects with the assigned codes I, N, P, U, M, L, W, Z and T (if the subject is without grade transferred) will be omitted in the calculation of the GPA. A subject assigned code S will be taken as zero in the calculation.

Appendix III: Codes for Final Assessment

Final assessment code	Interpretation
A	1st Class Hons
B	2nd Class (Division 1) Hons
C	2nd Class (Division 2) Hons
D	3rd Class Hons
K	Pass without Hons
E	Required to be de-registered because of failure to meet requirements.
J	University award not applicable, e.g. exchange-in students.
N	Suspension of study due to disciplinary action.
T	Eligible to progress.
U	Expulsion due to disciplinary action.
W	Required to be de-registered because of withdrawal/absence.
X	Pending fulfilment of requirements for award.