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क्रमांक : 4652 /अका./2024 रायपुर, दिनांक : 15 /10/2024

।। अधिसूचना ।।

विद्यापरिषद् की स्थायी समिति की बैठक दिनांक 26.09.2024 में निर्णय क्रमांक 15 में **संशोधित अध्यादेश क्रमांक 178 के अनुक्रम में M.Tech. Opto Electronics & Laser Technology के प्रस्तावित नवीन विनियम क्रमांक 216 OPTOELECTRONICS & LASER TECHNOLOGY** की अनुशंसा का अनुमोदन कार्यपरिषद् की बैठक दिनांक 27.09.2024 में पूरक विषय सूची क्रमांक 1 में किया गया है, जो निम्नांकित है –

REGULATION No. 216

(E.C. under 27-09-2024)

REGULATIONS FOR THE M.TECH PROGRAMME IN OPTOELECTRONICS & LASER TECHNOLOGY OFFERED BY THE Pt. RAVISHANKAR SHUKLA UNIVERSITY RAIPUR, CHHATTISGARH

1. **General**

The Post Graduate interdisciplinary programme in Technology between S.O.S in Electronics & Photonics and S.O.S in Physics & Astrophysics under the Faculty of Science leading to the Degree of Masters of Technology in Optoelectronics and laser Technology of the Pt Ravishankar Shukla Universityis approved by University Grants Commission under its scheme of Innovative Programme: Teaching and Research in Interdisciplinary Innovative and Emerging Areas.This programme is also affiliated with AICTE. The following regulations are made applicable to all the M.Tech. Programmes offered by the Departments/Schools of the University with immediate effect.

2. **M.Tech Programme**

2.1. The Degree of Master of Technology in Optoelectronics and Laser Technology shall be abbreviated as M.Tech in Optoelectronics & Laser Technology.

2.2. The M.TechProgramme Optoelectronics & Laser Technology offered by the School of Studies in Electronics & Photonics of the Pt. Ravishankar Shukla University shall be of four semesters duration spanning over a period of two academic years.

3. **Eligibility for admission**

3.1. Candidates satisfying the following criteria will be considered eligible for admission to the first semester of M. Tech in Optoelectronics and laser Technology and may be called for interview for final selection:

(a) Master's Degree in Physics/Electronics/Photonics/Material Science/Applied Physics/ Nanotechnology or Allied Subject or B.Sc. Engineering/B.Tech /BE Degree in Electronics Engineering/Electronics & Telecommunication Engineering/Electronics & Communication Engineering /Electronics & Instrumentation Engineering / Electrical Engineering/Electrical and Electronics or Telecom

Engineering/Instrumentation/IT/Computer Science Engineering from any recognized University or institution with least 55% marks or CGPA of 6.25 on a 10-point scale, and valid Gate Score.

OR

A candidate who has passed A and B section of Institution of Engineers (India) Calcutta examination or I.E.T.E. Graduate examination conducted by the Institution of Electronics & Telecommunication Engineers, New Delhi with at least 50% marks after having passed the Diploma examination with a valid GATE score may be admitted to M. Tech Programme of the University.

(b) A If seats remain vacant due to non-availability of GATE qualified candidates, the same will be filled up from the candidates possessing qualification as indicated above on the basis of the entrance test to be conducted by the University

(c) No candidate will be admitted, if GATE Percentile is lower than the following minimum prescribed:

For General Category Candidates: 75 percentile
For SC/ST/PH candidates: 50 percentile

(d) In addition to above, sponsored candidates working in Public Sector Undertakings or Government Departments or Research/Development Organizations or Private Industries (approved by university) should have a minimum experience of one year (Sponsored candidates are not required to possess GATE score).
Sponsored Candidates are required to submit at the time of interview a "Sponsorship Certificate" from their employers, on proper Letter Head, stating that for the period of his/her studies at the Institute the candidate would be treated as on duty with usual salary and allowances and that he/she will be fully relieved for the period of study for pursuing his/her studies and further that the fee of the candidate will be paid by the sponsoring organization. The sponsored seats will be filled up by admitting general category candidates in the absence of sponsored candidates.

(e) A relaxation of 5% marks for 55% to 50% or an equivalent relaxation of grade maybe allowed for those belonging to SC/ST/OBC (non-creamy layer) (differently abled and other categories of candidates.

4. **Committee**

4.1. There shall be an M.Tech committee constituted by Vice Chancellor comprising of teachers of the S.O.S in Electronics & Photonics and S.O.Sin Physics & Astrophysics as may be associated with the course /research programs. An external expert may also co-opt to this committee at the discretion of the Vice Chancellor. The Head of the Department of nodal department shall be the Chairman of the committee.The nodal department should act as a Resource Centre and disseminate the programmes developed by it to nearby universities/colleges/institutes.

4.2. The M.Tech Committee shall perform the following functions-

(i) To recommend the name of the students for admission to the M.Tech course.
(ii) To draw the syllabus for the M.Tech course for the consideration of the board of studies of the Department of Physics and Electronics
(iii) To recommend name of supervise of M.Tech candidates and to assign topic for project/Dissertation work
(iv) To Plan and Organize seminars, group discussion etc.
(v) To propose name of internal examiner for evaluation of seminars.
(vi) To propose a panel of three examiners for each course/ Dissertation for the consideration of the Examination Committee.
(vii) Any other function assigned to it by the Vice Chancellor.

4.3. In order to ensure uniformity of standards, the M.Tech , committee, when performing their function under clause4.2 (ii) may liaison with such committees in other Universities, so that the topics and standards of course prescribed under para 4.1 are not very dissimilar especially where the same specialization have been selected by two or more Universities.

5. **Admission:**

5.1. Admissionshall be based on the criteria notified by the University and taking into account the reservation policy of the State Government/University, applicable to SC/ST/OBC (non-creamy layer) /differently abled and other categories as decided by the State Government/ University from time to time.

5.2. An application for the admission to the M.Tech, course shall be made on a prescribed form to the head of the Teaching Department on payment of the prescribed fee, by the 1st July every year.

5.3. Admission to the course shall be made subject to the approval of the M.Tech. Committee.

5.4. A candidate of the M.Tech degree shall not be permitted to join any other course of study or to appear at any other examination conducted by a university or any other agency, except a diploma certificate course run by the University.

5.5. Candidates who have appeared for the Final Examinations may also apply provided the results are made available at the time of admission.

5.6. The admission of any student will be treated as cancelled and void, if at any stage it is detected that he/she has obtained admission based on false information or had by malafide submitted fake mark sheet/degree caste/PH certificate etc. Or suppressed some material information of academic nature or otherwise required for his/her admission in the Institute.

5.7. The fee shall be as per approval of executive Council and shall be as applicable from time to time. Presently an M.Tech candidate shall be required to pay the following fees:

i. Tuition Fee - Rs. 10000/-.

ii. University examination fees, eligibility enrollment fees etc and deposits shall be as prescribed by the University from time to time.

6. **Course Structure**

6.1. Each Semester shall have Continuous Internal Evaluation (CIE) and Semester End Examination and Credit Based Semester System(CBSS) are taken as references for the present set of Regulations

6.2. The first two semesters will include lectures, laboratory work, and seminars. The student will devote the third and fourth semesters on a project work related to a relevant area of the specialization either in the department/school or in an industrial/research/academic institution outside the university.

6.3. Credit Courses:

All subjects/courses are to be registered by the student in a semester to earn credits which shall be assigned to each subject/course in an LTPC (Lecture Periods: Tutorial Periods: Practical Periods Credits) structure based on the following general pattern

- One credit for one hour/week/semester for theory/lecture (L) courses
- One credit for two hours/ week/semester for laboratory/ practical (P) courses or tutorials (T)

Other student activities like study tour, guest lecture, conference/workshop participations, technical paper presentations and identified mandatory courses, if any, will not carry credits.

6.4. In general, each theory course will carry four credits and each practical course will have four credits.

6.5. The minimum number of credits to be earned by a student for the award of the M. Tech degree shall be 100 Credits subjects to the condition that the candidate successfully completes all the core and elective courses prescribed by the Department/School.

6.6. The medium of instructions for M. Tech Programmes will be ENGLISH only.

6.7. Pattern of the M.Tech Programme :

Semester	Course Nature	Course Code	Course Title	Course Type (T/P)	Hrs. / Week	Credits	Marks		
							CIA	ESE	Total
Semester-I	Core	OELT-101	Modern Optics	T	5	4	30	70	100
	Core	OELT-102	Laser Technology	T	5	4	30	70	100
	Core	OELT-103	Optoelectronics	T	5	4	30	70	100
	Core	OELT-104	Optical Communication	T	5	4	30	70	100
	Core	OELT-105	Seminar	P	1	1	-	-	50
	Core	OELT-106	Comprehensive Viva voce	P	-	Grade	-	-	
	Core	OELT-107	Photonics Lab-I	P	10	4	30	70	100
	Elective1 (Select any one)	OELT-108	Quantum Optics	T	5	4	30	70	100
		OELT-109	Advanced Engineering Physics	T	5	4	30	70	100
Semester-II	Core	OELT-201	PhysicsofAdvanced Materials	T	5	4	30	70	100
	Core	OELT-202	FiberOptics&Laser Instrumentationand Solar Photovoltaic Technologies	T	5	4	30	70	100
	Core	OELT-203	OpticalNetworks	T	5	4	30	70	100
	Core	OELT-204	AdvanceOptical Communication	T	5	4	30	70	100
	Core	OELT-205	Seminar	P	1	1	-	-	50
	Core	OELT-206	ComprehensiveViva Voce	P	-	Grade	-	-	
	Core	OELT-207	PhotonicsLab-II	P	10	4	30	70	100
	Elective 2(Select any one)	OELT-208	PhotonicsMaterialsandDevices	T	5	4	30	70	100
		OELT-209	Nano Photonics	T	5	4	30	70	100
Semester-III	Core	OELT-301	Major Project Phase -I	P	36	25	120	280	400
Semester-IV	Core	OELT-401	Major Project Phase -II	P	36	25	120	280	400
	Core	OELT-402	Viva-Voce	p	-	Grade	-	-	-

7. **Mode of Evaluation**

7.1. A student would be considered to have progressed satisfactorily at the end of a semester if he/she has a minimum of 75% attendance.

7.2. Condoning of shortage of attendance(between 65% and 75%) up to a maximum of 10% (considering the days of attendance in University sports, games, NCC NSS activities and medical ground I in each subject of a semester shall be granted by the M.Tech. Departmental Committee with approval of the Vice-Chancellor However such condonation for shortage of attendance shall be given only once during the entire course.

7.3. The student shall be evaluated continuously throughout the semester and marks shall be awarded on the basis of tests/assignments/attendance as detailed below (**Internal Evaluation**):

Internal evaluation will be done in a semester in which a candidate becomes eligible to appear in the concerned semester examination.

However, the internal assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts.

Out of 30 marks allocated for internal assessment for each paper:

- 15 marks are to be assigned for class test.
- 10 marks are to be assigned for assignment/seminar presentation.
- 5 marks are to be assigned for attendance.

The marks for attendance shall be as follows:

(i)	More than 75% but less than 80%	1 Mark
(ii)	80% or more but less than 85%	2 Marks
(iii)	85% or more but less than 90%	3 Marks
(iv)	90% or more but less than 95%	4 Marks
(v)	95% and above	5 Marks

End Semester theory examination papers will be for 70 marks each and shall contain questions from the entire syllabi of the course as per pattern decided by BOS.

7.4. The assessment process for courses like Seminar/Project/Training which form part of the curriculum shall be decided by the Course Coordinator at the commencement of the semester.

7.5. There shall be two seminar presentations during 1st semester and 2nd semester respectively For seminar, a student shall collect the literature on the advanced topic in relevant fields and critically review the literature and submit it to the department in a form of report and shall make an oral presentation before the Department Academic Committee consisting of Head of the Department, Course Coordinator, seminar coordinator and other senior faculty members of the department. For each Seminar there will be only internal evaluation for 50 marks. A candidate has to secure a minimum of 50% of marks to be declared successful if he fails to obtain the minimum mark, he has to reappear for the seminar during the supplementary examinations. The word 'Seminar' implies presentation of Technical Report presentation/discussion on the state of Art of Technology

7.6. The assessment of the practical Examination of Lab courses shall be done at the time of annual examination jointly by the internal and external examiners.

8. **Examinations:**

8.1. The Master of Technology degree shall be awarded to those candidates who have obtained at least 36% marks in cumulative aggregate in theory and practical courses separately and a minimum of 20% qualifying marks in each theory course in Semester I and II and a minimum of 50 % qualifying marks in each Project in Semester III & IV.

8.2. Candidates failing to appear or securing less than 36% aggregate or obtaining less than 20% marks in any of the theory course of semester examinations shall be allowed to pursue the courses for the next following semester and to appear at the examination in the course for that semester and any course of the previous semester, which he/she has not cleared. Failure in all the four papers, shall have to re-appear in the same papers. A.T.K.T. provision shall be in three papers of one semester & maximum three attempts only i.e. (1 main + 2 A.T.K.T.). Failure to secure 36% aggregate or to obtain qualifying marks of 20% in each course in two successive semester examinations, in addition to main examination for Semester I & II, shall if so facto disqualify a candidate for admission to the next higher semester or for re-examination.

8.3. A student can appear any theory paper only thrice i.e., once in the original attempt and twice in a repeat attempt.

8.4. The project can be carried out either completely in the Department or in collaboration with some Industry or an R&D Organization. In the later case, collaboration is to be established by the Individual. Comprehensive Viva Voce will be held at the end of the fourth semester in the last week of July.

A candidate, who fails in the Semester IV Examination, will be required to repeat the dissertation. However, he/she may be allowed to complete it in next six months. Such a candidate will be examined in January of next year. There will be no scope for improvement or revaluation. If the candidates fail to submit dissertation within the prescribed date, he/she will be allowed to submit dissertation in next six months.

No candidate shall be permitted to carry out a dissertation (Phase-II) preferably in an industry or a professional R & D organization and to submit thesis unless he/she has passed all the preceding semester.

8.5. In the case of a student who repeats one or more theory papers, the marks obtained by him/ her in theory, practical and seminars will be carried over for determining the result.

8.6. Use of calculators: The students of M.Tech. classes will be permitted to use non programmable scientific calculators in the Examination Hall.

9. **Comprehensive Viva-Voce**

9.1. A comprehensive viva-voce will ordinarily be held immediately after the end of semester I, II and IV. The comprehensive viva-voce is intended to assess the students understanding of various subjects. He has studied during the M.Tech. course of study. The viva-voce would be conducted by board of examiner consisting of Head, Course coordinator and all concerned faculty member of both electronics and physics

department. The comprehensive vivo is evaluated on the basis of grade. A candidate has to secure a minimum grade to be declared successful. If he fails to obtain the minimum grade he has to reappear for viva-voce during next examination.

RANGE	QUALITATIVE ASSESSMENT/GRADE
91%-100%	**O+ Outstanding**
81%-90%	**O Very Good**
71%-80%	**B Good**
61%-70%	**C Fair**
50%-60%	**D Pass**
Below 50%	**F Failure**

9.2. Classification for the Degree will be as follows:

Division shall be awarded in the Final semester examination based on integrated performance of the candidate for all the semester examinations in the following manner-

(a) An aggregate of 75% and above - I Division with Distinction
(b) An aggregate of 60% and above - I Division
(c) An aggregate of 48% and above - III Division
(d) An aggregate of 43% and above – Pass

Provided the candidate has secured the minimum pass marks as specified in this ordinance.

9.3. Relaxation

a) The Vice-Chancellor in consultation with M Tech Department committee may, under exceptional circumstances, consider any case of a student having a minor deficiency in respect of any of the requirements stated in these regulations and relax the relevant provision of these regulations based on the merit of the case. The grounds on which such relaxation is granted shall invariably be recorded and cannot be cited as precedence.

b) The Vice Chancellor shall award one grace marks to the candidate who is either failing or missing the division by one mark. However, it will not be added anywhere

9.4. A student shall complete the M Tech programme in 4 (Four) consecutive semesters by acquiring the minimum total credit requirement of 100

Overall performance at the end of the semester will be indicated by Grade Point Average (GPA) calculated as follows:

$$GPA = \frac{G_1C_1 + G_2C_2 + G_3C_3 \ldots\ldots\ldots\ldots G_nC_n}{C_1 + C_2 + C_3 \ldots\ldots\ldots C_n}$$

Where 'G' refers to the grade weightage and 'C' refers to the credit value of correspondingcourse undergone by the student.

At the end of the final semester, Cumulative Grade Point Average (**CGPA**) will be calculated based on the above formula.

9.5. Conversion formula as per AICTE

$CGPA = \frac{(\%\ of\ Marks + 7.5)}{10}$, Percentage of Marks = (10X CGPA) - 7.5

9.6. Classification CGPA

First division with distinction ≥ 8.25.

First division≥ 6.75& < 8.25.

Second division ≥5.55 &< 6.75.

Pass ≥ 5.05& < 5.55

Grade Point	% of Marks
5.55	48
6.25	55
6.75	60
7.25	65
7.75	70
8.25	75

9.7. A student shall be declared to be eligible for the award of M.Tech. degree if he/she has

a) registered and successfully completed all the core and elective courses and the projects.

b) successfully acquired the minimum number of credits prescribed in the curriculum within the stipulated time.

c) no dues to the Institute, Library and Hostels andno disciplinary action pending against him/her.

10. **Project Work Scheme Semester III and Semester IV**

10.1. Project evaluation shall be done at the end of III and IV semesters. Students will have to submit a dissertation on his/her project work. The dissertation shall have to be submitted as per the guidelines given in Appendix.

10.2. The problem for project may be selected from an appropriate industry or institution in consultation with Coordinator. The candidate is expected to work under the guidance of a project guide for at least for a period as decided in case the project work is taken up in an external Industry/Institution, the project shall have two guides: one in the participating organization (Industry/Institution) who is the external guide and the other shall be one of the faculty members from Department who is the internal guide.

10.3. The evaluation at the end of Semester shall be conducted by a project evaluation committee will be consisting of Course Coordinator, an internal examiner/project guide and external examiner. The external examiner shall be a technical expert in the concerned subject from any organization other than that of the project guide and is selected form the panel of experts submitted by the examination committee. The dissertation shall be evaluated by the external examiner.

10.4. Four bound copies along with a soft copy of the dissertation shall be submitted to the Head of the Department/Coordinator within the last date prescribed by the Department /School for the purpose.

10.5. The student should submit soft copy of the thesis alongwith ANTI- PLAGIARISM check and the plagiarism report to the department and be included in the thesis. The Thesis will be accepted for submission, if the similarity index is less than 20% of the similarity index has more than the required percentage, the student is advised to modify accordingly and re-submit the soft copy of the thesis. The maximum number of re submissions of thesis after plagiarism check is limited to TWO. The candidate

has to register for the Project work and work for two semesters. After three attempts, the admission is liable to be cancelled.

10.6. The candidate shall make an open defense of his/her dissertation which will be followed by a viva-voce examination. The grade/marks shall be given to the students according to the level and quality of work and presentation/documentation.

11. **Facility for students to do project work with Collaborators outside Pt. Ravishankar Shukla University, Raipur**

11.1. A student may undertake to execute the project in collaboration with an Industry, Research and Development Organization or another academic institution/University where sufficient facilities exist to carry out the project work. The students have to get the prior approval from the Course Coordinator about the choice of the institution/industry/R&D organization with which the students are associated for continuing their project work. They have to get this approval in the 2nd semester itself.

11.2. The M.Tech student may interact and work with an approved external co-supervisor in a collaborating organization Students shall require to submit request through Course Coordinator for permission from the M.Tech, department Committee to proceed to work with the external co-supervisor .The Course Coordinator in consultation with M.Tech department committee shall examine the requests from such students, and fix in advance area of project work and the name and designation of an external guide (Scientist or Engineer in Industry).

11.3. All students working with the external co-supervisor shall be governed by the following guidelines during the period of absence from Pt. Ravishankar Shukla University, Raipur such students shall be required to register each semester as per the registration procedure of Pt. Ravishankar Shukla University, Raipur.

11.4. The students are expected to follow the rules of the collaborating institute but shall continue be governed by the rules and regulations of the Pt. Ravishankar Shukla University, Raipur.

11.5. If they are doing their project work in an educational institution then the institution is to be preferably an institution of national repute like CSIR/DAE R & D Labs, ITs, IISc etc.

11.6. Students availing this facility should continue as regular student of the parent institution itself. They should have an external as well as an internal guide. The internal guide should belong to the parent institution and external guide should be from the institution/industry/R&D organization with which the student is associated for doing the project work.

11.7. Student has to furnish a certificate from the external guide stating the willingness to supervise the Thesis work with the institution/industry/R&D organization with which the student is associated for doing his/her project work and has to submit the same for the approval of the Department committee at the beginning of the third semester.

11.8. They shall be reporting to the external supervisor(s) for their research work on their thesis and shall be in constant touch with the internal supervisor(s) at Pt. Ravishankar Shukla University, Raipur. This may be through a regular video/audio conferencing or through regular reporting.

11.9. The student has to furnish his/her monthly progress as well as attendance report signed by the external guide. The external guide and internal guide are to be preferably present during all stages of evaluation of the project work. In case the external guide is not present, the internal guide can alone take the responsibility of conducting the evaluation with external examiner.

11.10. When working with collaborators outside the Institute, the IP rights will be as decided between the supervisor(s), and the sponsoring agency, if any such arrangement shall be done with the concurrence of the M.Tech. Committee, and shall not interfere with the Ability of the student to write his/her thesis and publish results of the work.

11.11. A student who wishes to take up professional employment after completing the second semester shall obtain person from the Head of the Department/School and Course Coordinator. The student will be permitted to carry out the project work in the recognized government/autonomous/public sectors institution/organization where they are employed on production of a certificate from the Head of that institution/organization to the effect that the student is permitted to carry out the project at the institution/organization.

Such candidates shall carry out the project work under the joint the supervision of a project guide from the Department/School and an external guide from the institution/Organization concerned. The Department/ School Council shall verify the qualification /academic/ research credentials of the proposed external guide before granting permission.

12. **Grievance Cell**

The Departmental Grievance Redressal Committee will act as the grievance cell for the redress of complaints from the students on the conduct of the class test, semester exam, and the valuation methodology The student shall make such complaints to the Head of the Department / Course Coordinator within a week of the display of the marks/grades for a particular course on the Notice board of the Department.

13. **Leave for a Full time M.Tech. student**

13.1. M.Tech. student may be granted on-duty leave for attending seminars, conferences, traveling on project work, etc. without financial support. For this leave, the candidate has to take approval from his/her supervisor as well as the PG Committee.

13.2. Unauthorized absence: Absence of a student without any sanctioned leave will result in the loss of financial assistance if availing GATE scholarship and may result in the termination of the student's admission.

14. **Revision of Regulation and Curriculum**

a) The University may from time to time, revise, amend or change the regulations, schemes of examinations and syllabus. In the case of students already undergoing the course, the change will take effect from the beginning of the following academic year after the changes are introduced and shall cover the part of the course that remains to be completed.

b) The matters not covered in this regulation shall be governed by the Ordinance No. 5 and 6 and other provisions of the University rules.

15. Rate of remuneration payable the examiners of M.Tech examination shall be as prescribed in the General Examination Ordinance.

Enclosed: Guideline & Certificates.

आदेशानुसार,

15/10/24

कुलसचिव

पृ. क्रमांक : 4653 /अका./2024 रायपुर, दिनांक : 15/10/2024

प्रतिलिपि :-

01. माननीय राज्यपाल एवं कुलाधिपति महोदय के अवर सचिव, छत्तीसगढ़ राजभवन, रायपुर

02. सचिव, छत्तीसगढ़ शासन, उच्च शिक्षा विभाग, मंत्रालय, महानदी भवन, अटल नगर, नवा रायपुर

03. सचिव, छत्तीसगढ़ शासन, वित्त विभाग, मंत्रालय, महानदी भवन, अटल नगर, नवा रायपुर

04. आयुक्त, उच्च शिक्षा, ब्लॉक–सी–3, द्वितीय एवं तृतीय तल, इन्द्रावती भवन, अटल नगर, नवा रायपुर

05. अध्यक्ष, समस्त अध्ययनशाला/प्राचार्य, संबद्ध समस्त महाविद्यालय,

06. समस्त विभागीय अधिकारी,

07. कुलपति के सचिव/कुलसचिव के निजी सहायक,

पं. रविशंकर शुक्ल विश्वविद्याालय, रायपुर को सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित।

उप-कुलसचिव (अका.)

GUIDELINES FOR PREPARATION OF M.TECH DISSERTATION

Preamble

While utmost attention must be paid to the content of the dissertation report, which is bring submitted in partial fulfilment of the requirements of the M.Tech degree, it is imperative that a standard format be prescribed. The same format shall also be followed in preparation of the final soft copies to be submitted to the library in future These guidelines lists only the basic requirements for preparing the thesis. Over and above the aforementioned points, a thesis should be reader- friendly in both its appearance and presentation Several aspects of thesis preparation, particularly style of writing and presentation, have not been discussed in great detail. The student should follow appropriate ideas from standard literature of his/her area of research, and adopt a uniform style and format throughout the thesis, such as in the structural divisions/subdivisions of the thesis in the mode of citing references and footnotes in the text, in using dimensions, units and notations, and in preparing tables and figures, etc.

1.**Organization of the Dissertation**

The dissertation report shall be presented in a number of chapters, starting with Introduction and ending with Summary and Conclusions. Each of the other chapters will have a precise title reflecting the contents of the chapter. A chapter can be subdivided into sections, subsections and sub-subsection so as to present the content discretely and with due emphasis. When the work comprises two or more mutually independent investigations, the dissertation report may be divided into two or more parts, each with an appropriate title. However, the numbering of chapters will be continuous right through for example Part 1 may comprise Chapters 2-5. Part 2. Chapters 6-9.

1.1.**Introduction**

The title of Chapter 1 shall be introduction. It shall justify and highlight the problem posed, define the topic and explain the aim and scope of the work presented in the dissertation report it may also highlight the significant contributions from the investigation.

1.2.**Review of Literature**

This shall normally form Chapter 2 and shall present a critical appraisal of the previous work published in the literature pertaining to the topic of the investigation. The extent and emphasis of the chapter shall depend on the nature of the investigation.

1.3.**Report on the present investigation**

The reporting on the investigation shall be presented in one or more chapters with appropriate chapter titles. Due importance shall be given to experimental setups procedures adopted, techniques developed, methodologies developed and adopted. While importantderivations/formulae should normally be presented in the text of these chapters, extensive and long treatments, copious details and tedious information
detailed results in tabular and graphical forms may be presented in Appendices. Representative data in table and figures may, however, be included in appropriate chapters. Figures and tables should be presented immediately following their first mention in the text. Short tables and figures (say, less than half the writing area of the page) should be presented within the text, while large table and figures may be presented on separate pages Equations should form separate lines with appropriate paragraph separation above and below the equation line, with equation numbers flushed to the right.

1.4.**Results and Discussion**

This shall form the penultimate chapter of the dissertation report and shall include a thorough evaluation of the investigation carried out and bring out the contributions from

the study. The discussion shall logically lead to inferences and conclusions as well as scope for possible further future work.

1.5.**Summary and Conclusions**

This will be the final chapter of the dissertation report. A brief report of the work carried out shall form the first part of the Chapter. Conclusions derived from the logical analysis presented in the Results and Discussions. Chapter shall be presented and clearly enumerated; each point stated separately Scope for future work should be stated lucidly in the last part of the chapter.

1.6 **Appendix**

Detailed information, lengthy derivations, raw experimental observations etc. are to be presented in separate appendices, which shall be numbered in Roman Capitals. Since reference can be drawn to published/unpublished literature in the appendices these should precede the "Literature Cited" section.

1.7 **Literature Cited**

This should follow the Appendices, if any, otherwise the Summary and Conclusions chapter. The candidates shall follow the style of citation and style of listing in one of the standard journals in the subject area consistently throughout his/her report.

Examples of in-text citations:

"...end of the line for my research [13]."
"This theory was first put forward in 1987 [1]."
"Scholtz [2] has argued that..."
"Several recent studies [3], [4], [15] [16] have suggested that..."
"For example, see [7]"

Examples of citations for different materials:

Material Type	Works Cited
Book in print	[1] B. Klaus and P. Horn, *Robot Vision.* Cambridge, MA: MIT Press,1986.
Chapter in book	[2] L. Stein, "Random patterns, "in *computers and you*, J.S. Brake, Ed. New York: Wiley,1994, pp.55-70.
eBook	[3] L. Bass, P. Clements, and R. Kazman, *software Artitecture in Practice*,2nded. Reading, MA: Addison Wesley,2003. [Ebook]Available: safari e-book.
Journal article	[4] J.U. Duncombe," Infrared Navigation-Part I: An assessment of feasibility," IEEE Trans.Electron. Devices, vol. ED-11, pp.34-39, Jan.1959.
eJournal (from database)	[5] H.K. Edwards and V. Sridhar," Analysis of software requirements engineering exercises in a global virtual team setup," Journal of Global information Management, vol.13, no.2, p21+, April-June 2005. [Online]. Available: Academic OneFile, http://find.galegroup.com.[AccessedMay31,2005]
eJournal (from internet)	[6] A.Altun,"Understanding hypertext in the context of reading on the web: Language learners' experience ," Current Issues in Education.vol.6.no.12.July 2003.[Online].Available: http://cie.ed.asu.edu/volume6/number12/. [Accessed Dec.2.2004].
Conference Paper	[7] L.Liu and H.Miao,"*ASpecification Based Approach to Testing Polymorphic Attributes,"In Formal Method and Software Engineering: Proceedings of the 6th International Conference On*

	Formal Engineering Methods",ICFEM 2004,Seattle,WA,USA,November 8-12,2004,J.Berlin:Springer,2004.pp.306-19
Conference proceeding	[8] T.J.vanWeert and R.K. Munro, Eds., *Informatics and the Digital Society: Social, ethical and cognitive issues*: IFIP TC3/WG3.1&3.2 Open Conference on Social, Ethical and Cognitive Issues of Informatics and ICT, July 22-26,2002, Dortmund, Germany.Boston: Kluwer Academic,2003.
Newspaper article (from database)	[9] J.Riley,"*Call for look at skilled migrants,"The Australian*,p.35,May 31,2005.[Online].Available:Factiva, http://global.factiva.com [Accessed May 31,2005]
Technical report	[10] J.H.Davis and J.R.Cogdell,"*Calibration program for the 16-foot antenna*,"Elecct.Eng.Res.Lab.,Univ.Texas,Austin,Tech.Memo.NGL-006-69-3,Nov.15,1987.
Patent	[11] J.P. Wilkinson," *Nonlinear resonant circuit devices*," U.S. Patent 3 624125, July 16,1990.
Standard	[12] *IEEE Criteria for Class IE Electric Systems*, IEEE Standard 308,1969.
Thesis/Dissertation	[1] J.O. Williams," Narrow-band analyzer," Ph.D. dissertation, Dept.Elect.Eng., Harvard Univ., Cambridge, MA,1993.

1.8 **Publications by the candidate**

Articles, technical notes etc. on the topic of the dissertation report published by the candidate may be separately listed after the literature cited. This may also be included in the contents. The candidates may also include reprints of his/her publications after the literature citation.

1.9 **Acknowledgements:**

The author of the thesis can acknowledge the help andguidance received from different persons in this section. The wording should be formal rather than flowery or exaggerative as it is to be considered only as a method of recording the help received rather than a way of pleasing someone who has help ed. Any financial support received from funding agencies in the preparation of the thesis should be definitely stated here.

1.9 **Acknowledgements**

The acknowledgments by the candidate shall follow the citation of literature, signed by him/her with date.

2. DISSERTATION FORMAT

2.1. Preparation of Manuscript and Copies

2.1.1. The thesis needs to be prepared using a standard text processing software and must be printed in black text (color for images, if necessary) using a laser printer or letter quality printer in standard typeface. The standard font shall be Times New Roman/Arial of 12 pts with 1.5 line spacing

2.1.2.The thesis must be printed or photocopied on both sides of white paper. All copies of thesis pages must be clear, sharp and even, with uniform size and uniformly spaced characters, lines and margins on every page of good quality white paper of 70 gsm or more.

2.1.3.Thesis should be free from typographical errors.

2.1.4. The size of the paper shall be standard A4, height 297 mm, width 210 mm.

2.1.5. Page Format: The Printed Sheets shall have the following written area and margins:

Top Margin 15 mm.
Head Height 3 mm.
Head Separation 12 mm.
Bottom Margin 22 mm.
Footer 3 mm.
Foot Separation 10 mm.
Text Height 245 mm.
Text Width 160mm.
When header is not used the top margin shall be 30 mm.

Left and Right Margins

Single sided
Left Margin 30mm
Right Margin 20 mm
Page Numbering 2.3.1

2.1.6. **Pagination:** Beginning with the first page of the text in the thesis (chapter 1), all pages should be numbered consecutively and consistently in Arabic numerals through the appendices. Page numbers prior to Chapter 1 should be in lower case Roman numerals. The title page is considered to be page (i) but the number is not printed. All page numbers should be placed without punctuation in the upper right hand comer, 12 mm from the top edge and with the last digit even with the right hand margin.

2.1.7. **Header:** When the header style is chosen, the header can have the Chapter number and Section number (e.g., Chapter 2. Section 3) on even numbered page headers and Chapter title or Section title on the odd numbered page header.

2.1.8. **Paragraph format**: Vertical space between paragraphs shall be about 2.5 line spacing. The first line of each paragraph should normally be indented by five characters or 12mm. A candidate may, however, choose not to indent if he/she has provided sufficient paragraph separation. A paragraph should normally comprise more than one line. A single line of a paragraph shall not be left at the top or bottom of a page (that is, no windows or orphans should be left). The word at the right end of the first line of a page or paragraph should, as far as possible, not be hyphenated.

2.2 **Chapter and Section Format**

2.2.1 **Chapter**: Each chapter shall begin on a fresh page with an additional top margin of about 75mm. Chapter number (in Hindu Arabic) and title shall be printed at the centre of the line in 6mm font size (18pt) in bold face using both upper and lower case (all capitals or small capitals shall not be used). A vertical gap of about 25mm shall be left between the Chapter number and Chapter title lines and between chapter title line and the first paragraph.

2.2.2 **Sections and Subsections**: A chapter can be divided into Sections, Subsections and Sub-sub-Sections so as to present different concepts separately. Sections and subsections can be numbered using decimal points, e.g. 2.2 for the second section in Chapter 2 and 2.3.4 for the fourth Subsection in third Section of Chapter 2. Chapters Sections and Subsections shall be included in the contents with page numbers flushed to the right. Further subsections need not be numbered or included in the contents. The Section and Sub Section titles along with their numbers in 5 and 4mm (16 and 14 pt) fonts, respectively, in bold face shall be flushed to the left (not centered) with 15 mm space above and below these lines. In further subdivisions character size of 3 and 3.5 with bold face, small caps, all caps and italics may be used for the titles flushed left or centered. These shall not feature in the contents.

2.2.3 **Table/Figure Format**: As far as possible, tables and figures should be presented in portrait style. Small size table and figures (less than half of writing area of a page) should be

incorporated within the text, while larger ones may be presented on separate pages Table and figures shall be numbered chapter wise.

For example, the fourth figure in chapter 5 will bear the number Figure 5.4 or Fig 5.4 Table number and title will be placed above the table while the figure number and caption will be located below the figure. Reference for Table and Figures reproduced from elsewhere shall be cited in the last and separate line in the table and figure caption, e.g. (after McGregor [12]).

3. **Auxiliary Formats**

3.1. **Binding**: The evaluation copies of the dissertation report may be spiral bound or soft bound. The final hard bound copies to be submitted after the viva-voce examination will be accepted during the submission of dissertation report with the following colour specification:

M.Tech. Dissertation

3.2. **Front Covers**: The front covers shall contain the following details:

Full title of report in 6 mm 22 point's size font properly centered and positioned at the top. Full name of the candidate in 4.5 mm 15 point's size font properly centered at the middle of the page. A 40 mm dia replica of the Institute emblem followed by the name of department, name of the Institute and the year of submission, each in a separate line and properly centered and located at the bottom of page.

3.2.1. **Lettering**: All lettering shall be embossed in gold.

3.2.2. **Bound back**: The degree, the name of the candidate and the year of submission shall also be embossed on the bound (side).

3.3. **Blank Sheets**: In addition to the white sheets (binding requirement) two white sheetsshall be put at the beginning and the end of the report

3.4. **Title Sheet:** This shall be the first printed page of the Dissertation and shall contain the submission statement the Dissertation Report submitted in partial fulfilment of the requirements of the M. Tech Degree, the name and Roll No of the candidate, name(s) ofthe Supervisor and Co-supervisor(s) (if any), Department, Institute and year ofsubmission

A sample copy of the Title Sheet' is appended (Specimen 'A').

3.5. **Dedication Sheet:** If the candidate so desires(s), he/she may dedicate his/her report, which statement shall follow the title page if included, this shall form the page 1 of the auxiliary sheets but shall not have a page number.

3.6. **Approval Sheet:** In the absence of a dedication sheet this will form the first page and in that case, shall not have a page number. Otherwise, this will bear the number two in Roman lower case "ii" at the centre of the footer. The top line shall be: Dissertation Approval for M Tech.

A sample copy of the Approval Sheet is appended (Specimen 'B')

3.7. **Abstract**: The 500 word abstract shall highlight the important features of the dissertation report and shall correspond to the electronic version to be submitted to the Library for inclusion in the website. The Abstract in the report, however shall have two more parts, namely, the layout of the report giving a brief chapter wise description of the work and the key words.

3.8. **Contents**: The contents shall follow the Abstract and shall enlist the titles of the chapters, section and subsection using decimal notation, as in the text, withcorresponding page number against them, flushed to the right

3.8.1. **List of Figures and Tables:** Two separate lists of Figure captions and Table titles along

with their numbers and corresponding page numbers against them shall follow the Contents.

3.9. **Abbreviation Notation and Nomenclature**: A complete and comprehensive list of all abbreviations, notations and nomenclature including Greek alphabets with subscriptsand superscripts shall be provided after the list of tables and figures. As far as possiblegenerally accepted symbols and notation should be used.

Auxiliary page from dedication (if any) to abbreviations shall be numbered using Roman numerals in lower case, while the text starting from the Introduction shall be in Hindu Arabic.

The first pages in the both the cases shall not bear a page number

3.10. A Declaration of Academic Honesty and Integrity:

A declaration of Academic honesty and integrity is required to be included along with every dissertation report after theapproval sheet. The format of this declaration is given in Specimen 'C' attached.

Specimen'A': Title Sheet

"Title of M. Tech Dissertation (20 font size)"

A Dissertation Submitted in Partial

Fulfilment of the requirements

For the degree of

MASTER OF TECHNOLOGY

in

Optoelectronics and Laser Technology

Submitted by

(Name of Student)

(Roll No.)

Under the Guidance of

Supervision of

Name of Supervisor

_____

_____

_____

Work carried out at

School of Studies in Electronics &

Pt. Ravishankar Shukla University, RaipurChhattisgarh

(Month and Year)

Specimen 'B': Approval Sheet

This dissertation entitled (Title) by (Student Name) is recommended for the award of the Degree of Master of Technology in Optoelectronics & Laser Technology of Pt. Ravishankar Shukla University, Raipur Chhattisgarh

Examiners (Name and Signature)

_____

_____

_____

_____

_____

Date: _____

Place:_____

Specimen 'C'- Declaration

I declare that this written submission entitled" _____" for the award of Master of Technology in Optoelectronics & Laser Technology of **Pt. Ravishankar Shukla University, Raipur Chhattisgarh** represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission.

I declare that I have faithfully acknowledged, given credit to and referred to the research workers wherever their works have been cited in the text and the body of the thesis. I further certify that I have not willfully lifted up some other's work, para, text, data, results, etc. reported in the journals, books, magazines, reports, dissertations, theses, etc., or available at web-sites and included them in this Ph. D. thesis and cited as my own work.

That, if, after checking my thesis for plagiarism by any standard plagiarism checking software, are found copied or come under plagiarism, I will be solely responsible for it and University shall have sole right.

I understand that any violation of the above will be cause for disciplinary action by the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

That, I shall be responsible for any legal dispute/case(s) for violation of any provisions of the Copyright Act relating to my thesis to cancel my research work ab-initio.

_____

(Signature)

_____

(Name of the student)\

_____

(Roll No.)

Date:_____

Specimen 'D' - Supervisor's Certificate

School of Studies in Electronics & Photonics
Pt. Ravishankar Shukla University, Raipur Chhattisgarh

This is to certify that the dissertation work entitled "_____"is a bonafiderecord of original review/research work carried out by Mr/Ms"_____" (Roll No.). under my guidance and supervision submitted to the **School of Studies in Electronics & Photonics** in partial fulfilment of the requirements for the award of the degree of Master of Technology in Optoelectronics & Laser Technology at **Pt. Ravishankar Shukla University, Raipur Chhattisgarh** during the academic year_____. The matter embodied in this M.Tech. dissertation has not been submitted for the award of any other degree/diploma/IPR in India orabroad.

Name and Signature of the External Project Guide _____

Name and Signature of the Internal Project Guide _____

Signature of Course Coordinator

Signature of Head of the Department/School

Date:

NO OBJECTION CERTIFICATE

FOR USE BY FORWARDING AUTHORITY (EMPLOYER)

To
The Registrar,
Pt. Ravishankar Shukla University Raipur (C.G.)

The applicant (name) _____has been a full-time regular/permanent faculty member / employee of our Institution/Organization from_____. This organization has no objection to his/her being admitted to the M.Tech. programme at Pt.Ravishankar Shukla University Raipur (C.G.) from the session starting on_____ as a Full-time student/Part Time. The applicant will be relieved from his/her duties in the Organization to enable him/her to devote full-time to the studies, if selected for admission.

(a) Sponsorship/(Deputation) certificate:

He/She is sponsored (deputed) with full/half/no salary, for full-time/Part time M.Tech. Programme Pt. Ravishankar Shukla University, Raipur (C.G.) and will be relieved from his/her duties for the course.

(b) No Objection Certificate:

He/She is permitted to join as External Registrant for part time M.Tech. Program at Pt. Ravishankar Shukla University Raipur (C.G.) while continuing regular employment in the Institute/Organization. He/she will be relieved from his/her duties as required to fulfill the regular course work requirement as per University norms and later on as per norms of registering Organization for the completion of M.Tech. Programme.

The candidate and his/her sponsorship (deputation)/ NOC will not be withdrawn before the completion of the course/programme.

Official Seal

Signature of the Employer

Station:

Name:

Date:

Designation:

(Note: Sponsorship certificate should be submitted in the same format as indicated in this Application form duly signed by the Employer/ Sponsoring Institute Head and seal.)